Agricultural Transformation in Africa

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Contents

Participants 7
Abbreviations 11
Introduction 13

Keynote Address: Setting the Stage *Peter Timmer* 19

What is Happening in Africa in the 1990s? *Pierre Antoine, Elon Gilbert, Peter Timmer, Chris Ackello-Ogutu. Chair: Tim Bork* 43

What is the Role of Private-Sector Agriculture and Farm Linkages To the Nonfarm Economy? *Chris Delgado, Carl Liedholm, Mike Maynard. Chair: David Lundberg* 80

What is the Future of Agriculture in Africa and Its Interrelation with Other Sectors? *Kevin Cleaver, Tom Reardon, Chris Ackello-Ogutu, Hank Kaestner. Chair: Paul Guedet* 115

What are the Analytical and Research Issues for the Future? *David Sahn, Pauline Peters, David Seckler. Chair: Jim Govan* 147

How Does Africa Get There and How Does AID Help? *Michael Carter, Asif Shaikh, Chris Delgado. Chair: Myron Golden* . 177

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Abbreviations

AID/USAID	U.S. Agency for International Development
CFA	Franc de la Coopération Financière en Afrique
CGE	Computable General Equilibrium
CGIAR	Consultative Group on International Agricultural Research
c.i.f.	Cost, insurance, and freight
DFA	Development Fund for Africa
EC	European Community
f.o.b.	Free on board
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
HIID	Harvard Institute for International Development
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IRRI	International Rice Research Institute
NGO	Nongovernmental organization
SADCC	Southern African Development Coordination Conference
SPA	Special Program for Africa
SPAAR	Special Program for African Agricultural Research

Introduction

On May 27-29, 1992, the ARTS office of the Africa Bureau of USAID, the Center for Economic Policy Studies of Winrock International, and the USAID Environmental Policy and Natural Resources Training Project sponsored a seminar on Agricultural Transformation in Africa. The seminar was held in Baltimore, Maryland. Participants included Africa Bureau senior management, members of the academic community, and international development organizations, private-sector representatives, and Winrock specialists.

The seminar was a follow-up to one held in 1991. The proceedings, of the 1991 seminar, *African Development: Lessons From Asia*, were published by Winrock. The goal of the first workshop was to explore lessons that could be learned from the successful economic development of much of East and Southeast Asia. While no one Asian model was applicable, and despite Asian diversity, there did emerge several themes relevant to African development. For example, Asian development benefited from (1) long-term perspectives and planning, (2) a commitment to economic growth despite political instabilities, (3) the presence of regional role models for success such as Japan, Taiwan, and South Korea, (4) an educated labor force and well-trained policy makers, (5) macroeconomic stability, which created a favorable environment for private investment, (6) a view of the private sector as government's partner, not its rival, and as vital to economic growth, and (7) heavy investment in agricultural productivity through support for rural infrastructure, research and extension, and price-support systems. The importance of agriculture and support of the private sector were emphasized.

The 1992 seminar centered on four related questions concerning the relationship between agriculture, conservation of the natural resource base, and economic growth in sub-Saharan Africa. First, what constitutes an "agricultural transformation?" Second, what is currently happening in the rural economy and the natural resource base in sub-Saharan Africa? Third, what are the key linkages between the agricultural and nonagricultural sectors and, in particular, between the agricultural transformation and accelerated economic growth? And fourth, what needs to be done to promote the transformation of agriculture?

What is an Agricultural Transformation?

While the seminar never formally defined an agricultural transformation, it is clear from the discussion that one occurs when a substantial number of rural household (1) have incomes exceeding the poverty level, (2) operate farms commercially (selling a substantial portion of the value of their output), (3) specialize in production at the farm level, (4) invest more heavily on the farm, (5) purchase commercial inputs, including hired labor, in significant quantities, and (6) adopt new technologies on a regular basis. At this point a dynamic growth process is in place, with the agricultural sector modernizing, continuing to produce food cheaply, and releasing labor to the nonagricultural economy.

What is Happening in Africa?

The simple answer is that we don't know. Macroeconomic data and microeconomic data are telling different stories. Yet two trends are incontestable. First, Africa's population is doubling every 25 years. This means that these economies will have to grow 3 percent a year to stand still, that population densities are likely to be three to four times higher by the mid-21^{st} century than they are now, and that landlessness, land disputes, and continuing rural disruption are likely to continue. Second, juxtaposed with this population growth is an ecological decline that will be hard to arrest or even slow down.

However, despite this Malthusian specter, several facts are encouraging. First, other than in countries with chronic civil strife, there is no evidence of widespread increased malnutrition. In fact, life expectancy in Africa has continued to increase. Second, there is no evidence of increasing food prices. If anything food prices have declined. Third, it seems clear that the average productivity of labor in agriculture has increased. This is demonstrated by the increased level of nonfarm activity undertaken by rural households. In fact, the growth of nonfarm employment is a strong indicator of reasonably high levels of growth of agriculture. Finally, recent evidence from a number of USAID missions for the first time suggests a rapid uptake of new seeds and fertilizer in response to better economic environments.

Linkages Between the Agricultural and Nonagricultural Sectors

Keynote speaker Peter Timmer started off with a strong statement of the "getting agriculture going is a necessary condition for rapid economic growth" thesis, which echoed the discussions of the first 1991 seminar. Further discussion tended to emphasize two important considerations: the price of food, and the size of the agricultural and associated sectors in overall GDP. The first is the most complicated.

The price of food. Typically, the poor majority spend upwards of 50 percent of their income on food. The higher the price of food, the higher the urban monetary wage must be in order to encourage people to leave the farm or to leave food production. But the higher the wage rate, the higher labor productivity must be if a country is to compete in world markets. It is pretty clear that growth is connected to openness and export growth and thus to labor productivity and wage rates. Given Africa’s starting point, with low labor productivity, it can only compete if real wages are also slow, which means food prices must be low.

The size of the rural economy. The second issue is an arithmetical one. If agriculture is 60 percent of the economy and it is growing at 2 percent, then the rest of the economy must grow at 12 percent if overall growth is to be 6 percent. If agriculture grows at 3 percent, then the rest of the economy needs to grow at 10.5 percent, and if agriculture grows at 4 percent then the rest of the economy has to grow at 9 percent. The faster agriculture grows, the less of a drag it is on other sectors.

It would seem then that the centrality of agricultural growth to overall growth depends on the size of the agricultural sector and the degree to which food prices are determined by agricultural productivity. Moreover, we can rank countries on a continuum depending on the potential to increase productivity (or on the rate of return to investments, which is the same thing). A road in Mauritania is likely to have less impact (in agricultural growth terms) than one in Senegal which, in turn, is likely to have less impact than one in Uganda. Thus a growth strategy in each country would likely have different roles for agriculture.

What Needs to be Done

The seminar did not go very far into the issues of how to accelerate agricultural growth – it’s easy for such a discussion to disintegrate into a laundry list. However, here are lists of the issues.

There was no dissent from the view:

- that there is a shelf full of agricultural productivity-enhancing technologies.
- that extension, or technology diffusion, is an area of failure. We can probably count on the private sector to disseminate embodied technology -–hybrid seeds, fertilizer, etc. – but what about crop management practices and other forms of disembodied technology?
- that another area of lack of success is agricultural and rural credit, including cooperatives.
- that the new directions being pursued in natural resources management are promising but may be too little too late.

On the other hand, there was no consensus:
- that market liberalization is both a success and an area to be pursued further. Markets need to continue to be made more competitive with reduced transactions costs. Everyone agreed that linkages between rural and urban areas need to be improved.
- about the causes of high transactions costs. Where are the key intervention points?
- about steps needed to improve the quality of aid. Capital is scarce, but donors are wasting more of it than they are using effectively, especially in agriculture.

What Do We Need to Know?

It would be an exaggeration to say we know a great deal less than we do know, but there are clearly some important areas of ignorance:
1. We don’t know how fast agriculture is growing.
2. We don’t know how to make credit available efficiently.
3. We don’t know how to get farmers to invest in soil conservation.
4. We don’t know how to get donors to work together.
5. We don’t know how to diffuse technology.
6. We don’t understand the political and social ramifications of the agricultural transformation.
7. We don’t know how to reduce transport costs without huge investments in roads.
8. We don’t know how to encourage private-sector investment or mobilize private-sector savings.

Acknowledgments

Many people contributed to the seminar and proceedings. We would like to thank the members of the seminar coordination team, consisting of Tom Hobgood and Ben Stoner under the leadership of Jerry Wolgin, AID; Vicki Walker, Winrock International; and David Read Barker and N.S. Peabody, III, the Environment and Natural Resources Policy and Training Project (EPAT). We are also grateful to Steven Breth, Winrock International, for producing this book.[1]

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[1] This introduction is edited version of a cable sent to USAID missions upon completion of the conference.

Wednesday evening, May 27, 1992

Keynote Address: Setting the Stage

Speaker: Peter Timmer

Seckler

I'd like to welcome you to what is now fondly called the second annual AID-Winrock Africa seminar. It's my pleasure to introduce Jerry Wolgin who is the AID official host of this session. Jerry is the director of the Office of Analysis, Research, and Technical Support for Africa Bureau of AID. I will now turn it over to Jerry who will introduce our main speaker.

Wolgin

As David said, this is the second annual AID-Winrock conference on important issues in Africa. This is a risky venture that we're undertaking, basically because the first one was so successful, at least to our minds, that we have high expectations about this one.

In this day and a half, we are interested in looking at what's going on in agriculture in Africa and reexamining the evidence on agricultural productivity to see if there is any sign that the agricultural transformation is beginning to take place. We're interested in looking at the role of agriculture in the overall development of Africa, the degree to which it needs to be a leading sector, and what that means about strategies for economic development in Africa. Rather than just focusing on the next project or the next activity, we want to take a look at what we hope African agriculture and African economies will look like in 25 years if Africa and we are somewhat successful. Finally, we want to see what strategies might get us from here to there. To start this process we're fortunate to have Peter Timmer.

Timmer

My task is to set the stage, and to do that I want to take on three questions. The first is what is an agricultural transformation? People who have been working in Asia know it when they see it, but there aren't too many examples yet in Africa. The second question, and the one I want to spend most of the time on, is how important is the agricultural transformation? And the third, which I can only set up because that's what we're going to do in the next 2 days, is how do we bring it about in Africa if, as I will argue, it is terribly important indeed?

"Starting points and institutions really matter, and you do not get market economies by assumption."

The seminar that Winrock and AID put together last year set me to thinking in a fairly formal way about what the lessons from Asian agricultural development were for the African context and in particular to ask whether rice economies are "different" in some fundamental fashion. I don't think the session last year really came to grips with that question of how different a rice-based economy is from the much more heterogeneous environments in Africa. But certainly that session has been very influential in terms of my own thinking about these questions.

Next, in the sequence by which I come to this topic, was a conference that IRRI held in Bangkok last year on agricultural systems. Now, most of us tend to think of agriculture as a system, at least in some informal sense. We don't have to be locked into the term to understand that agriculture depends on inputs. It depends on household decision making, productivity decisions, output, and a whole set of connections that at least loosely justifies the term system. But it was the first time in 15 years that IRRI had gotten together the rice specialists from around the world who thought of the rice economy in system terms. They asked me as part of that conference to try to rethink some of the linkages between agriculture and industry: this opportunity came 30 years after Johnston and Mellor published their classic paper on agriculture and economic development, and which, for the first time, enabled the mainstream economics profession to see where agriculture fit in the general scheme of development, as opposed to just being a sink for population and a source of tax revenue for development plans.[1]

The third piece of the background that I want to put on the table is some work that I have been doing on the restructuring of socialist economies. I have worked on China since 1975. I have been working in Vietnam since 1989 and indirectly in Poland, trying to bring a different perspective on the role of agriculture than Jeff Sachs and the macroeconomists in the IMF and the World Bank bring to restructuring. In Russia I was recently a member of the World Bank agriculture policy team.

"Agricultural transformation …is the process of converting household-oriented, subsistence-type structures to commercial units that have highly efficient linkages to the urban and world economies."

What comes out of this effort to restructure socialist economies (and I think the parallels to restructuring African economies are surprisingly direct) is the importance of economic history. Starting points and institutions really matter, and you do not get market economies by assumption. You don't create them overnight just because you've stopped saying that you're doing socialist economics. So those are the three starting points for what I want to talk about.

First of all, what is this agricultural transformation? I really believe that Potter Stewart had it right. Potter Stewart as a Justice of the Supreme Court said he couldn't define pornography, but he knew it when he saw it. In a sense, the same thing is true of agricultural transformation. You'll know a successful agriculture when you go out in the field and you see one. You also know when it isn't a successful one.

I'll try to define it and then work through what I think are the stages that bring it about. It's a particularly economic perspective that I take because it focuses on the decision units in the rural economy. I think of the agricultural transformation as a process. It is the process of converting household-oriented, subsistence-type structures (that is, decision-making units in rural households that are concerned with production primarily for home consumption and subsistence needs and that have relatively few and highly imperfect market connections to the urban economy and to world markets) to commercial units that have highly efficient linkages to the urban and world economies.

I stress the highly efficient linkages to markets because I want to include factor markets as well as product and input markets in these linkages. Anyone who has done any multi-market or general equilibrium modeling will realize that the minute we have perfect markets connecting rural households to urban and foreign economies, we no longer have an identifiable agricultural sector, because rural households then make their decisions on the basis of the perfect information and low transactions costs – highly efficient signaling from the urban and world markets. And if the factor markets are working as well as the product and input markets, then rural per capita incomes have to be roughly similar to the incomes that you can make as a wage earner in the industrial sector, or in the banking sector, or as a government official. The end point of the agricultural transformation is that we have a hard time identifying agriculture as a separate activity. Biologically, we can identify it. As agronomists we can identify it. But as economists we nearly lose track of it as a separate identity because people in agriculture are making decisions similar to the kinds of decisions that are being made outside of agriculture, and the markets are working quite well.

Unfortunately, there isn't any place in the world where that happens. We don't have a full agricultural transformation anywhere. We are probably close in the United States. Europe is a long way behind. Japan is a long way behind that. And the rest of the world lags significantly behind any of those leaders. That says that agriculture does in fact retain this identity, but it retains this identity because the markets aren't working well. If we believe in a market-oriented strategy of development, then this definition of the agricultural transformation tells us in a sense what our goal has to be.

The goal, it seems to me, is to get the per capita income of people in the rural economy to levels that are commensurate with the per capita income levels of people in the urban community. I say commensurate, rather than equal to, because I recognize the psychic benefits of living either in the city or in the countryside, depending on your preferences. Many people prefer the amenities of the rural life.

There are four stages that I think can be identified in the process of the agricultural transformation. For those of you who are really interested in this, there's an article in the *Handbook of Development Economics* called "The Agricultural Transformation."[2] So this is not new relative to that, but I think it's useful for the purposes of this meeting to put the stages on the table because we're in very different stages around the world, and my sense is that Africa is still in the early stage.

I like to identify stages with people. I find it easier to remember. But it also associates these stages with a broader sort of intuitive feel for what is going on as opposed to specifying these with any mathematical precision. The first of four stages is the Mosher stage, which is the stage of "getting agriculture moving" for those of you who remember the title of the classic volume that Art Mosher wrote. The second stage is the Johnston-Mellor stage, which has its starting point in the 1961 article in the *American Economic Review* that Bruce Johnston and John Mellor did.[3] It is a way of thinking about agriculture that's important. I would subtitle this stage "agriculture as a contributor to economic growth." We've gotten agriculture moving in the Mosher stage, and then are using that rising productivity as a contributor to the overall growth process. That's where building the linkages to the rest of the economy becomes really important.

The third stage I call the Schultz-Ruttan stage for Ted Schultz and Vern Ruttan. This is the stage where we try to integrate agriculture more fully into the macroeconomy. In the second stage, agriculture is a contributor to growth. We're doing reasonably well in integrating the input markets and the output markets and we're using price policy and tax policy to get those contributions. But at that stage the factor markets are not terribly well integrated. The Schultz-Ruttan

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concerns, if you've read much of their work, has been how you make the factor markets work better, how you speed up the process of adjustment, how you improve the flexibility of rural decision making. Ted Schultz worried a lot about human capital and how you get those resources into higher productivity activities. So this third stage of the process is integrating agriculture into the macroeconomy, which is a factor-market question. It's capital and labor in particular. You're not going to move the land. I mean, yes, there are shopping centers and a few housing projects that go up. But by and large, the land in agriculture is fixed and the moveable factors are the labor and capital. This third stage is where we really try to get those factor and capital markets integrated into the rest of the economy.

My fourth stage, named after D. Gale Johnson, is the role of agriculture in industrial economies. And it's a highly problematical stage. Anybody who has been following the interminable GATT negotiations for the last 5 years will recognize that agriculture doesn't go away as a political problem even when it goes away as an important economic activity in the macroeconomies of the industrial societies. I name it after Gale Johnson because it seems to me that *World Agriculture in Disarray*[4] comes out of his concern about what was happening to world commodity markets because of industrial countries' interventions in their domestic agriculture. He has thought more creatively about the problems that come up in this, but I might just as well have named it after Mancur Olsen for explaining why it is such a continuing problem in political terms even though agriculture is much less important in economic terms.

Those are the four basic stages, it seems to me, that agriculture goes through. What's interesting is that what is needed from the government in terms of a policy environment is different in each stage. What it takes to get agriculture moving – the institutional changes, the new technologies, building a market structure, incentives for farmers, and fairly massive investments in rural infrastructure, if you're going to have a functioning low-cost, efficient, and competitive marketing economy – is very different than the, in a sense, disinvestment that needs to take place when agriculture is mature. In industrial societies it forms a small share of the consumer budget. The primary concern seems to be that you can't get the human resources and the capital out of agriculture fast enough. But in the down cycles of the macroeconomy you get significant unemployment in industry and therefore you don't want people coming out of agriculture, so you do foolish things to keep people in the agriculture sector. In addition, environmental concerns in rich countries, because they're luxury goods, become important enough that people worry about preserving agriculture as a way of life without regard to the commodity value of its production.

The point to remember about the agricultural transformation is that policy toward agriculture has to change. It has to change from getting agriculture moving to where you want it in order to contribute to growth. The nature of the incentives will change. The price policies will change. The way you invest in markets will change.

If the government's political process does not permit agricultural policy to respond to the new economic environment, then you are going to get some serious structural problems in agriculture in the course of the agricultural transformation. The evidence seems to suggest that the problems become far worse, the faster the rate of economic growth.

In *Agriculture and the State*, of which I am the editor, Peter Lindert has a chapter on the history of agricultural policies back to the 18th century.[5] It's clear when you look at how societies treat their agriculture, in the long sweep of historical development, that our policy never keeps pace with the needs of the agriculture sector. There are, I think, good political reasons why that is true. There may even be some economic reasons as well, some of which I want to talk about.

My second topic is, how important is this agricultural transformation? Let's not forget two facts about the economic development process. One is the single most robust fact that we have in all of the development literature, perhaps the single most robust fact in all of economics: the share of agriculture in the national income of the country declines as the income of the country increases. There are year-by-year exceptions to that, temporary reversals, but through the sweep of history and cross sectionally – take a point in time and look at poor countries relative to middle and upper income countries – the share of agriculture is inversely related to the per capita income.

Agriculture becomes less important as per capita income rises. If we don't understand that, we're going to have some really serious problems down the road. But, if we understand it too well, we can have some serious problems right now because one obvious conclusion from the fact that agriculture is going to be unimportant is to make it unimportant right now. If it's going to decline, why worry about investing in it? Whey worry about the roads, the irrigation, the research, the farmer knowledge, and all the things that go into building a modern agricultural system, if 20 years down the road, if we're successful, we're not going to need all those things. We're going to have to get those resources out of agriculture.

That's a real paradox because, as it turns out, you can't make agriculture's share decline unless you make agriculture grow rapidly. You've got to make the investments in agriculture. If a country is poor to start with, it cannot make the economy grow rapidly unless it builds an agricultural base.

The second fact, and we don't really have the same analytical underpinnings to this that we have for the decline in share of agriculture, is that world prices for major agricultural commodities are declining, and they have been declining for a long time. Wheat and rice prices have been declining since before the American Civil War, as best our statistics will demonstrate. And for wheat prices, if we go back into the European record, they have probably been declining since the little ice age in the 16th century. The real value of what agriculture produces is on a downward trend. In one way, that answers the question, how important is agriculture? It declines as a share of the economy, and what it produces is less valuable per ton along the way.

The temptation in the early stages of the development process is to say the hell with agriculture. We don't need it, it's too tough, it takes a lot of resources, and besides who's really interested?

Let me review quickly three stages of thought about the role of agriculture in development. First, in the 1950s and 1960s, the main paradigm of economic development was a socialist planning model. It grew very directly out of the Soviet experience with central planning in the 1920s and 1930s. And if you examine the logic of that model, it points in one direction. You tax agriculture to stimulate agricultural growth. For those of you who are interested, there's an article in the *American Economic Review* by Raaj Sah and Joe Stiglitz on the economics of price scissors, the term the Soviet economists used in the 1930s in discussing whether or not you could speed up the rate of growth by taxing the agricultural sector on behalf of industrialization.[6] Sah and Stiglitz concluded, in the context of a rather sophisticated CGE model, that indeed there were circumstances under which it was logically feasible to tax the agriculture sector in order to speed up the economic growth rate. Unfortunately the conditions that they thought were reasonable, most economic development specialists would not have thought were reasonable. But the point is, it's still a live intellectual debate and it conditioned how most development economists thought about agriculture in the early stages of development. When most countries in the Third World were achieving their independence and were setting out on their development strategies, the paradigm was the Soviet-Indian central planning model. It was a paradigm that Albert Hirschman reflected in his famous quote, "Agriculture stands damned by its lack of linkages to the modern growth process." That is, economic growth is about industrialization.

Well, you're the leader of a new country. What kind of development strategy do you follow in that intellectual milieu? It would have taken an extraordinary and courageous leader to put any resources at all into the agricultural sector. Maybe you put a few resources in agriculture because lots of people were there, or maybe you put something there for your friends, but by and large you take as much out of that sector as you can in order to build the cities and the factories and the government. That's what agriculture was for. It would provide the resources to do that.

Of course, it didn't work. It didn't work because that wasn't how the earlier countries in the development process had treated their agriculture. It didn't work because if you don't invest in agriculture, it can't grow. And if it can't grow, it can't provide the dynamic sources of growth that you want. And by the 1970s and 1980s, it was increasingly clear that it wasn't going to work. So we get what I will call the "market-led-growth-through-free-trade" strategy.

"Free trade, it turns out, doesn't solve the growth process much more effectively than socialist planning. It might correct some of the biases against agriculture, and it did. . . But simply turning agriculture loose on world markets, even if it was better than what we had, was not in fact a formula that countries that have

There were other things going on in the 1970s and 1980s and you, more than most, will appreciate that you had to deal with basic human needs and reaching the poorest of the poor. Those were not sustainable objectives either, not without rapid growth.

But free trade, it turns out, doesn't solve the growth process much more effectively than socialist planning. It might correct some of the biases against agriculture, and it did. Letting farmers have market prices instead of what the marketing board was paying them certainly was a stimulus to agriculture. But simply turning agriculture loose on world markets, even if it was better than what we had, was not in fact a formula that countries that have grown really rapidly have followed with their own agricultures and with their own development.

The third stage is where we are now. I want to call it "political economy in the role of the state" because I think we are beginning to understand that market-led growth is important, but so is the state, and we don't quite know how to put those two things together comfortably. It's not economics and it's not political science. It is this strange thing called political economy, but you can't prove theorems in this field. You really have to have historical and comparative experiences. You have to invest in understanding dynamics.

The problem that we face in this environment, in what I will call the new political economy environment, is that we have to worry again about the role of the state. I'm delighted that we all understand that markets are important. In Indonesia in the 1970s in the national planning agency, I remember arguing that, at least in the food and agriculture sector, you couldn't do what needed to be done, that is, to raise productivity of small households in the rural economy, with central planning. The only way to reach those people was through markets and with incentives. And it was one thing to have the goals of a socialist planning system if you wanted equal incomes and improved welfare and a powerful economy and powerful states. It was fine to have those goals, but if you really wanted to reach the tens of millions of smallholder households out there, you would have to use markets. It was the only conceivable mechanism by which the necessary signals could be transmitted, by which productivity could be raised.

I still work in the national planning agency when I go to Indonesia, and I still work in the state planning commission when I go to Vietnam. So they're still around. Now I find myself arguing that, my God, there's really a role for the government. Everybody understands that there's a role for markets, but the pendulum seems to have swung so far that now we're trying to disenfranchise the state. I find myself now arguing in favor of state intervention – the necessity for a fairly powerful involvement on the part of government in the development process.

The tasks that we have under this rubric in the 1990s are in a sense the same, but in many ways more complicated than what we faced before. I think I have not yet used the term sustainability, but the time has come – we have to worry about sustainability. We have to worry about poverty alleviation, and at least in the African and Latin American contexts and in the Vietnamese and eventually in the Burmese situation, we have to worry about restarting the growth process. Sustainability, poverty alleviation, restarting growth – in a sense, this is what we should have been worrying about in the 1950s and 1960s. So these tasks are still in front of us.

At one level we've made progress. The socialist planning paradigm clearly discriminated against agriculture. The market-led growth strategy at least provided market-level incentives to agriculture. However, I think we will see a renewed emphasis on political economy and the role of the state because the markets are not going to solve all the problems that we have. The political economy perspective offers the potential to understand what the real role of agriculture is in the development process and to do something about it, if markets aren't doing the right things.

"I am convinced that the government has to provide a good deal of the stability in the macroeconomic environment and, when the country is poor, in the food price as well, if people are to have the confidence to save and invest in the agriculture sector specifically and in the macroeconomy more broadly."

My last general theme is why markets undervalue agriculture. The question is why market prices for agriculture commodities fail to reflect the full social value of agricultural output, why they just don't get agriculture's role right. If prices don't get it right, then the state is going to have to intervene, if getting the role of agriculture right is important.

Why do we undervalue agriculture? First, there is a set of nonmarket contributions that agriculture makes to the growth process. One is the contribution to stability. Stability is terribly important in the early stages of the growth process. The institutions for risk management that we have grown accustomed to in the advanced West, especially the financial institutions, simply don't exist. So I am convinced that the government has to provide a good deal of the stability in the macroeconomic environment and, when the country is poor, in the food price as well, if people are to have the confidence to save and invest in the agriculture sector specifically and in the macroeconomy more broadly.

I think within a couple of years, I'll have the empirical evidence to show how important that stability is. I can make the analytical and historical case; pretty soon we'll be able to make the statistical case as well.

For large countries in Asia, you cannot stabilize your macroeconomy if you don't stabilize your food economy. And you can't stabilize your food economy in the context of a highly unstable world market unless you control a substantial degree of the food supplies domestically. That is, in most large countries one role of agriculture is to help the country be reasonably self-sufficient in food supplies. The argument probably doesn't hold for Africa. I'm eager to hear what you think the importance of stability in the food sector is in Africa. It was crucial in Asia.

The second nonmarket contribution to growth comes because agriculture contributes to increases in total factor productivity. Let me quote my friend and colleague Larry Summers who said last year, a 0.2 percent increase in total factor productivity in developing countries would do more for their living standards than an additional $100 billion of capital invested at the going rate of return. Small changes in total factor productivity make enormous differences in the growth process. In fact, about 80 percent of the differences in the economic growth rates of East and Southeast Asia, Latin America, and Africa are attributed to differences in total factor productivity rather than to differences in saving and investment rates or differences in labor growth rates.

Why should agriculture contribute to changes in total factor productivity? It's a mystery, but it's an empirically robust mystery. There are three things that routinely contribute to explaining differences in growth and total factor productivity. One is what I will call the stability variable, which is measured by rates of inflation or, if you get really sophisticated, deviations of inflation from the trend rate of inflation. Inflation just confuses investors. You don't know where to put your money because the allocation signals from prices are getting confused. Second, is openness. It's hard to know exactly how to measure openness, but rates of growth of exports are always highly significant in explaining changes in total factor productivity. And the third is the rate of growth of agriculture. The higher the rate of growth of agriculture, the higher is the rate of growth of total factor productivity. This is not growth in GDP. This is growth in total factor productivity after accounting for changes in capital and labor in the economy. Higher rates of growth of agriculture contribute to the efficiency with which resources get used in the economy.

Why? I have some tentative ideas. I'm fairly certain that smallholders use capital a lot more efficiently than the industrial and service sectors in the formal economy. Partly that's because we don't even measure the capital that farmers use on their land. We don't count their savings when they plant fruit trees or when they dig their own irrigation ditches or when they do that kind of sweat-equity investment. We don't even count it in the national income accounts, so it doesn't show as capital. But at least one other plausible story we might tell is that smallholders are simply more efficient in their economic decision making because they control the resources much more closely and have a direct, personal stake in the outcome. Second, I suspect, but cannot yet prove, that nonmarket linkages to rural services and small-scale industry are probably important, not just through the financial market, but through the multipliers in the rural economy that don't get picked up in formal market accounting.

"Smallholders use capital a lot more efficiently than the industrial and service sectors in the formal economy. Partly that's because we don't even measure the capital that farmers use on their land. We don't count their savings when they plant fruit trees or when

The third nonmarket contribution, and what I think may well be the most important, is learning by doing on the part of governments. There's a whole literature on learning by doing that Ken Arrow started with the costs of airframe manufacture back in the 1960s. Learning by doing is a nonconvexity in economics. It creates externalities. All of our nice neat Arrow-Debreau world falls apart when you've got these kinds of effects.

This is a very controversial topic. How is it governments learn to do the right thing? How do they learn what good economic policy is and how to implement it? There's lots of theorizing about that, but little that has any concrete connection to it. My hypothesis is that the rice economies of Asia, where the growth process has been so spectacularly successful, are really different because they forced governments to learn how to do economic growth, because if they didn't the people were going to starve, and that wasn't acceptable. These are ancient societies where the government has the responsibility, as the king did in France, of seeing that the people were fed. And if they fail in that, then they fall.

But I have the growing sense as I talk to my colleagues at HIID and elsewhere about the difference between the rice economies in Asia and the more heterogeneous food economies of Africa that rice really is different. Think about what a rice-based society has to do and what it has to work with. Rice is a smallholder technology. The only way we can make the large farms in California profitable is to subsidize them heavily. They'd really go under if they had to compete head-on with Javanese and Thai farmers.

There are high rewards to farmer knowledge and management in these small-scale systems. If you put the smallholder technology and the high rewards to farmer knowledge together, then you see that you need inputs, you need incentives, and you need a way of getting the surplus output to the cities. You really must have markets to manage this process. You can't raise productivity in the Asian rice setting without active input and output markets and incentives for farmers to use them. You need markets on one side, but on the other side you really need massive government involvement in the rice economy. Huge investments are needed in irrigation and research and in the marketing infrastructure that lets those input-output markets and price information reach all those tiny farmers.

Last, raising productivity in the rice sector was the absolute key to food security in these countries because they faced a highly unstable and thin world market. There are only 12 million tons traded in the whole world rice market. And, of course, China is growing 300 million tons. Indonesia is growing 40 million tons. Thailand is growing 16 million tons. Small variations in one of those countries' output, if it were to spill over into the world market, simply would not be accommodated. So all of these countries look internally at meeting their domestic demands, primarily from their domestic production.

That obviously can get carried too far. Even Indonesia carried it too far. But if you can carry it far enough that you've got the stability without carrying it so far that it creates instability domestically, you've probably got the best of both worlds. Learning how to do that requires sophisticated management skills on the part of government vis-à-vis markets. By and large, Asia has learned how to do that.

"Modern scientific agriculture is going to be part of the solution to sustainability. If it turns out it's part of the problem, then we're all in real trouble. I can't think of anything that captures solar energy more efficiently than high-yielding scientific agriculture, and solar energy is the one renewable resource that we have."

I said there were three reasons why agriculture was undervalued, and the set of nonmarket contributions that I've just mentioned is just one. The second reason is that agriculture contributes to poverty alleviation. I won't dwell on the details, but just let me assert that a dollar in agricultural GDP contributes more to poverty alleviation than a dollar in GDP from industry or a dollar from services. Think about John Mellor's argument about wage goods and everything else, and you begin to think, there are reasons why that might be true. It is true. At least it is true in Asia.

The third reason we undervalue agriculture is because of its contribution to sustainability of overall economies and the environment. I know agriculture, especially modern, scientific agriculture, has been under the gun. A lot of people think it's part of the problem. We've got to revert back to bullocks and no fertilizer, and so on. That's crazy. Modern scientific agriculture is going to be part of the solution to sustainability. If it turns out it's part of the problem, then we're all in real trouble. I can't think of anything that captures solar energy more efficiently than high-yielding scientific agriculture, and solar energy is the one renewable resource that we have.

Vern Ruttan would say we do not yet know how to do sustainable agriculture in all of the environments of the world, but we're going to have to figure out how to do it. And I think he and I would both be very optimistic that we'll figure out how to do that if we set our minds to it. I'm convinced that agriculture is a part of the sustainability solution rather than the problem.

The last question is how we bring about the agricultural transformation that we want in the African context. My task at this workshop is to provide the setting, and I've talked a good deal about the Asian context. First of all, I think there's some bad news that should be put on the table to start with. The agricultural transformation will require an active role on the part of the government. To make agriculture a successful part of the economic transformation, to successfully transform agriculture itself, and thereby successfully transform the economy, will require active involvement on the part of the government.

The problem, the bad news, of course, is that African governments have to stop doing what they're doing. They have to stop doing the wrong things and they have to start doing the right things. I don't have a clue how to get a government to do that. I know that there are three steps that will define the successful solution. They're going to have to provide growth. They're going to have to provide stability. And they're going to have to provide equity.

The growth is going to come from building institutions and physical infrastructure that support a competitive market economy. It is not wrong to build market economies. Market economies are terribly important. Building competitive markets, opening those markets to world trade, getting the exchange rate right, I have no quarrel with whatsoever. It's just not enough. Necessary, but it is not sufficient for achieving modern economic growth. And I think the best way to learn how to build a market economy is to do it in agriculture.

The second thing these governments will have to do is provide stability. Markets do not provide stability. Indeed anybody who understands traders will understand that they make their income from instability. No trader can make a living in a perfectly stable commodity market. You've got to have movement. The question is how do you balance the necessity for private traders in markets and enough stability that people have confidence about the future. It's a tough task. But we have to do it in both the macroeconomic setting, with respect to inflation and fiscal control, and when countries are poor as African countries are, we have to do it with food prices as well. Food prices are so important in the overall welfare of consumers and producers that some reasonable degree of stability is essential.

Last, and maybe most important, given the nature of the growth process, these countries have to provide equity – equity in the form of a sense of participation in the growth process on the part of virtually everybody. Markets don't provide equity either. Equity is important because without that sense of participation in a growing economy, you cannot sustain the willingness of the population to support the long-run growth strategy. I'm not talking about the years that it takes to sustain a policy through structural adjustment in order to get on the growth path. I'm talking about decade after decade of sound, tough macroeconomic policy that leads to rapid economic growth. And if people don't buy in, not year to year, but decade to decade and generation to generation, then you're going to lose the support for the strategy itself, and then you're going to lose the whole growth process. In that sense, it seems to me, providing equitable access to the growing strategy is as important as the growth strategy itself.

Wolgin

I'd like to open it up for questions.

Bonner

The natural question that comes up in looking at your conjecture is, do you need to have agriculture as part of what takes place in places like Singapore and Hong Kong and possibly Malaysia?

Timmer

I think Singapore and Hong Kong are clear outliers precisely because they did not have an agricultural hinterland that they had to worry about. If you look at where the resources for growth came from, Singapore and Hong Kong are unique in not having substantial sources of foreign aid or mineral-based or agricultural exports, that provided the foreign exchange for the growth process. But simultaneously they didn't have to make the investments in a rural infrastructure, in irrigation systems, in a research and extension network. They didn't have to worry about an agricultural population that would be dragging down the economy if they hadn't made the investment. In a sense they were free to go straight to a manufacture-led export growth.

Malaysia seems to me to be really almost the inverse of that. In a way, I suppose this Singapore-Malaysia contrast is the story that we're talking about. If you don't have an agricultural sector, then of course you're not burdened by it. And I would argue, that developing agriculture is hard and expensive. The development process would be easier if we didn't have to worry about this backward, peasant-oriented, household-based agricultural economy. Singapore and Hong Kong didn't have to worry about it, so they could grow at 8 percent without making those investments. But any society that has a substantial agricultural population must incorporate them into their economy if they want the rest of the economy to grow. Otherwise, they're just too much of a drag. Or if they're not a drag in economic terms and they're still important just in quantitative terms – 60 percent or 70 percent of the population in the rural economy – they will become important in political terms if you leave them out. I'm not saying that this is entirely an economic argument, although I think I can make the case on purely economic terms. But there's clearly a political dimension to it as well. The Malaysian case makes that very clear. Resources are going into the rural economy because that's where the Malays are. They're trying to ease the pressure on their cities.

"By and large, markets are good at giving us growth, but they're not very good at giving us stability and equity, and we cannot sustain the growth process unless we have a balance

Hicks

You ended your talk, Peter, on growth, stability, and equity. As we deal with the Africa context, those things are almost competing. How do you do that in Africa and get the kind of activity and growth that would permit development to occur?

Timmer

The growth, stability, equity trilogy is not something I invented. Certainly Dick Cobb remembers that growth, stability, and equity is the Indonesian development trilogy. That's what is built into the long-term development strategy of Indonesia. Any time one of those three things starts getting too far away from the other two, there are powerful external and internal pressures to redress the balance. The point I was trying to make was that by and large, markets are good at giving us growth, but they're not very good at giving us stability and equity, and we cannot sustain the growth process unless we have a balance among the three – growth, stability, and equity. You are right, these things are at tension with each other. Indonesia could grow 2 or 3 percentage points a year faster if they didn't have to worry about who got the proceeds. That does concern them, and it means they're putting more resources into agriculture than would be optimal to maximize the GDP growth rate. But to maximize the long-run GDP growth rate, putting those resources in agriculture has meant an enormous amount in poverty alleviation. And that poverty alleviation has allowed the government to sustain a development strategy for 25 years in a country that Gunnar Myrdal in 1967 wrote off as a basket case. No sensible economist believed that Indonesia could be anything other than poor.

I recognize that it's controversial to say that the government has to be right in the center holding that balance together. I understand you come from societies where the government is not only not in the center of that trilogy, it's off on one side pulling on its own account. It's making things far worse.

My experience in Africa is limited, but I did participate in the first food policy conference in Kenya in 1981. I remember that the week of that conference everybody there, including senior minister, traveled the countryside and received a reasonably good exposure to Kenyan agriculture and to the policy environment. I remember walking out of the conference with John Thomas and I said, "John, this is a country that is cheerfully and gleefully raping its countryside." And he looked at me and said, "Peter, it's the best in Africa." Well, maybe. But I was right. When you actually look at the policy environment, yes, they keep the exchange rate reasonably balanced so that you do get growth. But in terms of the kinds of biases that you see in Asia versus Africa, Kenya was not even close to maintaining this balance.

Wolgin

You said a large rice economy has difficulty in depending on world markets to keep food prices stable, whereas an African economy with maize and sorghum, and whatever else, doesn't affect the world market price, and they have a world market sort of commodity system, which is perhaps more stable in terms of year-to-year prices than they can expect from their own efforts. So stability comes from being open to the markets rather than from government intervention. Our experience has been that when the government attempts to use price stabilization schemes, they've always accelerated instability rather than slowing it down.

Timmer

That's probably an accurate description. It's complicated by the fact that, at least in the countries that I've been following, we're looking at a white maize market rather than a yellow maize market. And that's a much thinner market. But I think what creates serious instability in those

"Citizens looked to the government to solve certain problems that were beyond the capacity of households and villages to solve, and they held the government accountable. I think that's an expectation that is millennia-long in Asia. And this sense of accountability of the government is terribly important because most

societies is that they flop from f.o.b. to c.i.f., repeatedly. There will be surplus for a couple of years and they will export, and it drives the price way down because you've got high transportation costs and a very thin white maize market. Then a drought comes and they flop to being importers. All the countries that are producing white maize are affected by the droughts simultaneously, and the price goes up. I think if you were to actually look at the coefficient of variation of domestic white maize prices in the countries where that's the staple, you would find higher price instability than we see for rice domestically in the Asian countries. So I suspect that instability is a problem, but it looks to me like you have much greater production and instability in those systems than is typical in the irrigated rice systems of Asia. In Indonesia if you had a 5-percent downturn from production that would be a huge shortfall.

I taught a course at the World Bank on price policy with a lot of people from North Africa, where production varies 50 percent a year. If stability is important, the question is, how do you go about achieving stability in the African context? Then 50 percent production instability means that you've got to have enormous flexibility in your foreign exchange reserves. It almost certainly means that you ought to shoot for being an importer all the time and price off that rather than flopping f.o.b. to c.i.f. If that means that sometimes you have surpluses, you ought to just subsidize exports, but keep your prices not at world levels but at c.i.f. levels all the time. If countries just said, look, we're going to price off c.i.f. and be done with it, that would take away probably 50 percent of the instability.

Seckler

I think there's an interesting twist on your rice economy. And that is I don't think it's so much that rice per se as it is the old Wittfogel thesis of the irrigated civilization, hydraulic civilizations, because in Asia you've had two or three thousand years of experience where the entire fate of the civilization depended upon the ability of the government not only to build, as Wittfogel said, but to maintain irrigated systems and manage them. You know, Herbert Hoover was an irrigation engineer and when he went to China, he brought back a Chinese saying, "When the dikes fail the dynasty will change." It meant that the first sign of weakness of the dynasty was the inability to maintain the irrigation system. I think that's fundamentally important. It has a lot to do with your learning-by-doing business and government, because in rainfed agriculture, there really isn't much you can do. You wait for the rains and hope it will happen. In the irrigated world, you can do something and will be held accountable.

Timmer

I agree with a large part of that. I think here's a case where history really matters. You tend to come at the world through irrigation systems and I tend to come at the world through price policy because that's how we grew up thinking about worlds. I guess they're both important, but I do think that irrigation makes an enormous difference in how the Asian societies function. There's another Chinese saying, however, which is, "The mountains are high and the emperor is far away."

Seckler

There's always a Chinese saying.

Timmer
Learning how to take care of yourself locally was also important. Successful price policies with stability and incentives built in are really a post-World War II product. And if you ask what has transformed Asian economies from being poor irrigation-based societies to being rich or rapidly growing irrigation-based societies, I think it is the competence of government not just to maintain the irrigation systems but to take the green revolution technology and bring it into that managed irrigation system in the context of a market economy that rewarded farmers for using it.

Seckler
I think the point is rather that the skills developed in the irrigation sector spilled over into these other sectors.

Timmer
Citizens looked to the government to solve certain problems that were beyond the capacity of households and villages to solve, and they held the government accountable. I think that's an expectation that is millennia-long in Asia. And this sense of accountability of the government is terribly important because most governments in Africa in fact are not accountable.

Notes

1. B. Johnston and J. Mellor, "The Role of Agriculture in Economic Development," *American Economic Review* 51(Sept. 1961): 566-93.
2. C. P. Timmer, "The Agricultural Transformation," in *Handbook of Development Economics*, ed. H. Chenery and T. N. Srinivasan (Amsterdam: Elsevier Science Publishers, 1988) 275-331.
3. Johnston and Mellor, "The Role of Agriculture in Economic Development."
4. D. G. Johnson, World Agriculture in Disarray, 2nd ed. (Basingstoke, UK: Macmillan Press, 1991).
5. Peter Lindert, "Historical Patterns of Agricultural Policy," in Agriculture and the State: Growth, Employment, and Poverty in Developing Countries, ed. C. P. Timmer (Ithaca: Cornell University Press, 1991) 29-83.
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Thursday morning, May 28, 1992

What is Happening in Africa in the 1990s?

Panel: Pierre Antoine, Elon Gilbert, Peter Timmer, **Chris Ackello-Ogutu. Chair: Tim Bork**

Antoine

I realize that I may be one of the few biological scientists around this room and I am going to undergo brainwashing in economics and trade and policies a little later, but I hope that you will accept something, which is indeed closer to the ground. It's difficult in 15 minutes to talk about a continent that is so diversified and has so many ecosystems. However, I believe that there are a number of trends and constraints that are similar in West Africa, East Africa, and southern Africa. Before we go into the chemical and biological factors per se, let me review a few statistics.

Population in sub-Saharan Africa is around 500 million people. With an average growth of about 3 percent, population will likely triple during the next 30 years before a substantial slowing of the growth rate takes place. Eighty percent of the world's poorest countries are in Africa. Levels of illiteracy are quite variable of course, but on the average 70 percent of the population is illiterate. There is definitely a deficiency in the human condition: a lot of poverty, malnutrition, and also many endemic parasitic diseases. To this list we can add recently the catastrophic threat of AIDS, though no one is very sure how to interpret the data or how it will influence human resources in the countryside.

Seventy-five percent of the population is employed by agriculture. The exodus to the cities is not really justified by attractive employment opportunities. Since 1960 the standard of living has stagnated or fallen. This is unlike Asia and the other continents. Agricultural output has not been able to keep pace with population growth. That means that there is a decrease in actual agricultural output per capita.

Questions posed to the panelists

1. What are the trends in production, land and labor productivity, agricultural prices, rural incomes, nutrition, commercialization?
2. What is happening to population pressure on the land, size of holdings, land tenure, conflict over land use, soils, and fertilizer?
3. Is agriculture releasing labor to nonagricultural activities? Are rural nonagricultural manufacturing and services developing? How are gender roles and division of labor within the family changing?
4. Are there signs that agricultural transformation is occurring in terms of commercialization, technology changes, land-labor ratios, productivity, and intensity of production? Where? How important is it?
5. What are the interrelations between extensive/intensive agricultural systems and the environment: pollution, wildlife, biodiversity, and ecotourism?

In the past 20 years, the African countries have substantially lost agricultural markets to Asian and Latin American competitors. They may have lost 50 percent of their exports on a relative basis. Only tea exports have increased on a percentage basis. This is a rather bleak view, yet, I believe that agriculture remains the centerpiece of African development.

Let's focus now on the resources. I have resources of three topics: biological, water, and land or soil. First, let's look at plant resources: germ plasm and seeds. I think that the attitude of the African farmer is very different from the attitude of the Asian farmer and that his first objective is to minimize risk. The farmer is generally little interested in high-yielding varieties, such as those developed in Asia in the context of the green revolution, because they generally perform well only under a controlled environment where there is no shortage of water and where chemical inputs can be widely used. That situation is not typical of Africa. In general, there is little irrigation available and inputs are scarce.

So, the problem is not so much to develop high-yielding varieties that take a lot of care, but to develop the varieties that will adapt to a difficult environment and eventually will be disease resistant and will yield moderately well despite nutrient deficiencies. There are plenty of those varieties available on the shelf. One of the problems of the international agriculture research centers has been that they focused on plant breeding programs. That's true for the national systems as well. The difficulty is their availability to the farmer. They exist on the shelf. They exist in the stations. But the bottleneck is at the level of seed availability, multiplication of seeds, and whether the farmer knows how to get access to those varieties and how to grow them.

"The problem is not so much to develop high-yielding varieties that take a lot of care, but to develop the varieties that will adapt to a difficult environment and eventually will be disease resistant and will yield moderately well despite nutrient deficiencies.

What remains a serious constraint in the area of germ plasm, therefore, is that 90 percent of the African farmers, according to some surveys by Mississippi State University, are still growing their seeds themselves and the know-how is not there, the germ plasm is not there. I believe that it is possible to develop large seed marketing systems with a few crops like corn, for example. There are some big agribusiness concerns that focus on that. But, for the most part, the farmer must be helped to be more self-sufficient in gaining the seed base. You can have all the necessary knowledge of cropping systems and land management, and so on, but if you don't have a good seed base to start with, you're in trouble. So seeds are the constraint, not the availability of varieties.

The second biological component in resources is livestock. I won't say much about that except that a slow evolution is under way in this sector. Until recently the human population densities of Africa were low. As a result, specialized crops and livestock production were considered the most efficient means of producing both crops and livestock. Since mid-century, however, human populations have soared, resulting in increased competition for land between livestock and crop production.

Winrock has just prepared an assessment of animal agriculture in sub-Saharan Africa.[1] I quote from the conclusions:

When population densities are high and markets, technology, and inputs are not readily available, intensity of land use increases and mixed crop livestock production becomes the most efficient and sustainable mode of food production because of complementarities between crops and livestock raising. Key elements in the contribution of livestock to intensification are traction (power), manure (fertilizer), and enhanced income per unit of land.

As a direct consequence of increased population pressure on agricultural land, both crops and livestock have essential and interconnected roles to play in the future development of agriculture in sub-Saharan Africa. Crops and livestock can no longer be viewed as separate and inevitably competitive enterprises. If food production is to be increased to the level needed to feed the region's growing populations, if greater agricultural sustainability is to be achieved, and if adverse environmental effects of cultivation are to be minimized, livestock must be properly utilized in agricultural development processes.

This is something new. Until now I think we talked about livestock. We talked about crops. I think that more and more, because of the population pressure on the land, there will be a need to integrate the livestock into the system. And it is obvious that this will affect the population and create a number of social pressures.

Water resources in sub-Saharan Africa are the most unpredictable of all the inputs necessary for agriculture production, and yet the very source of life. The areas subject to high risk of drought are estimated to cover about two-thirds of the subcontinent. Irrigatable land is less than 20 percent of the entire area. In practice less than 3 percent of the total land is irrigated, and most of it is in Sudan. This parameter alone explains why a comparison between Asian and African agricultural challenges may be worthless. Africans don't practice irrigation. There have been a few intensive large-scale irrigation schemes. Many have failed. The cost is very high. The December 1991 issue of *Spore* reviews the advantages and disadvantages of large- and small-scale irrigation. Their conclusion is definitely in favor of small-scale irrigation.

"Soil fertility maintenance and improvement is the most underrated problem in

Last, I believe soil fertility maintenance and improvement, that is, the physical and chemical component, is the most underrated problem in Africa. Soils are taken for granted. People think that they will be always be there, that they can mine nutrients. In fact, this is not the case. The World Resources Institute says that in the past 20 years, 10 percent of the soils have been degraded beyond repair.

Soil fertility could be maintained by using a variety of techniques: biological soil improvement, organic fertilizers, inorganic fertilizers, and of course soil conservation measures. On the average a food crop in Africa uses between 300 and 600 kg/ha per crop (N, P_20_5, K_20, MgO, S). Right now the average use of chemical fertilizers is about 7 kg/ha per crop. Organic fertilization, use of manure, mulches, and so on certainly cannot compensate for the difference. We have a gigantic problem because fallows are getting shorter. The population increases. Physical degradation sets in, along with compaction, overgrazing, and so on. Despite the fact that we could say, well, we can start a fertilizer industry, we can help the farmer in using fertilizers, the development of that industry is so complex, we've lost so much on problems of supply policies, access, know-how, and so on, I believe that it cannot really be achieved in the next 20 or 30 years.

My conclusion is that we have some very serious constraints – seed, water, and soil fertility – that are not going to go away overnight. If we ignore them, I think that we're committing kind of a crime, and we're certainly not helping people who are expecting our help.

Gilbert

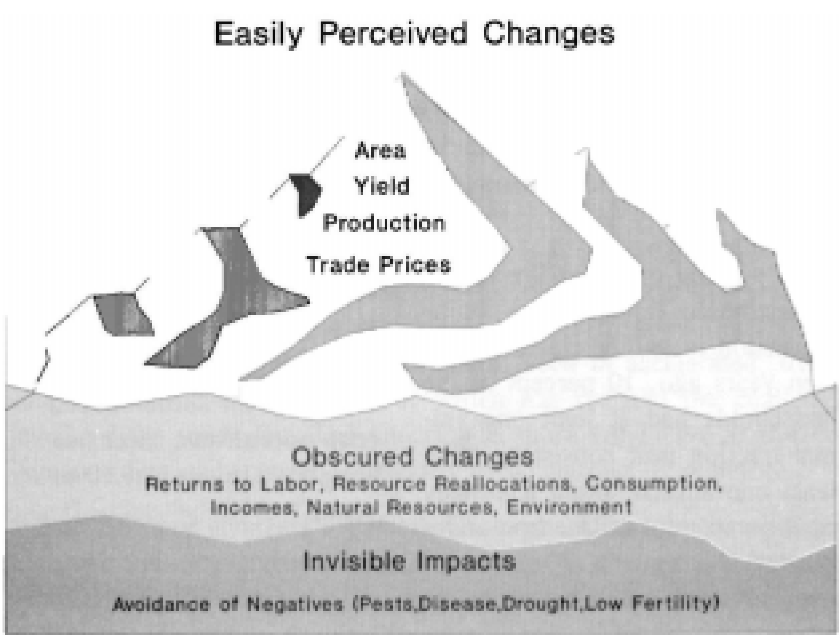
Is agricultural transformation happening in Africa? I feel it is. There are major changes in a positive direction. What do I mean by positive direction? It means improvement in productivity over what would otherwise have been the case. This is important to keep in mind because a lot of the changes that we are observing are responses to negative situations. They are in effect keeping people's situations from deteriorating at a faster rate than they otherwise would.

"One finds situations in which yields per crop have declined, but where a significant improvement in productivity over what

What does it look like? Often you can hardly see it. You have to be careful with national statistics and yields per crop. Both suggest bad news. I'm not saying that bad news is totally incorrect, but it can be misleading, especially yields. If it is true that in many countries farmers adopt technologies not to increase productivity of land but for other reasons, why should we look primarily at yields per crop as the measure of advances in productivity?

Instead we might better include other indicators. One of Peter Timmer's studies is very much on target in this regard – namely changes in input-output relations. Second, if we look at changes in nonfarm activities and migration, cropping patterns, enterprise mix, input mix, and consumption patterns, we can see significant changes taking place in a number of countries in Africa.

The impact iceberg (see diagram) is derived from a study for the Africa Bureau on maize research impact in Africa (MARIA) and illustrates the discovery process that we have gone through in selected countries to understand what has happened as a consequence of the introduction and dissemination of innovations for maize.



There are, first, the easily perceived changes, namely area, yield, production, trade, and prices. We should certainly look at these, but they are just the tip of the iceberg. Second, there are the obscure changes which include returns to labor, resource reallocations, consumption, consumption incomes, and natural resources and the environment. They are "obscured" in part because we don't have a lot of data in an easily accessible form. We have a number of points in time and space that may or may not be closely related to one another. To find causal relationships between those points, we often have to rely on our imaginations. Finally, we have the invisible impacts, which include the avoidance of negatives such as pests, diseases, drought, and declining soil fertility. One finds situations in which yields per crop have declined, but where a significant improvement in productivity over what would otherwise have existed has taken place.

The Gambia is an illustration of observed transformation. Over the past 15 years, there has been little increase in area under cultivation (there has been an upward movement in the last 3 years, but no clear trend for over a decade prior to that), no trend in yields overall, and minimal increase in total production. However, there have been several changes including major shifts in the cropping patterns (decline in the areas for groundnuts and long-duration cereals, particularly late millet and sorghum), an increase in early millet, very pronounced increases in maize and sesame, and a 25 percent decline in rainfall.What's going on here? We look a little further and we find changes in purchased inputs and a major expansion in animal traction. Fifteen years ago, 10 percent of the households had at least one animal traction unit consisting of at least one animal, often a donkey or a horse, plus a sine hoe and a planter. Today over 70 percent of the farm households nationwide own at least one animal traction unit. In parts of the country, notably the North Bank Division, the figure is over 90 percent. In other words, in portions of The Gambia, animal traction is virtually universal for some upland crop operations. That has happened in the last 10 to 20 years.

"In portions of The Gambia, animal traction is virtually universal for some upland crop operations. That has happened in the last 10 to 20

Second, there has been a major reduction in what we call stranger farmers, migrants who come in primarily to supply labor but also to farm on their own. Third, there has been an increase in fertilizer use. The evidence is mixed because use has been influenced by erratic prices and availability, but The Gambia is among the highest users of fertilizer per hectare in the region. Fourth, there has been a reduction in fallowing. Finally, there has been significant outmigration and increases in school enrollment in this period. In parts of The Gambia, the economically active population between 16 and 64 has remained virtually stagnant over the past decade.

Now, wait. Reduction in fallowing: Didn't I just say that there had been no increase in area under cultivation? Isn't that a fundamental contradiction? How can you have a reduction in fallowing and no increase in area under cultivation? To help clarify this apparent contradiction, I suggested talking to farmers to help us understand what's happening. Although indeed The Gambia does not have anywhere near as much unused good quality land as it used to, the reduction in fallow does not appear to be driven primarily by land shortages. Rather, it is related to animal traction. Once a farmer brings land into cultivation, he or she wants to keep it in cultivation as long as possible. It may be at least partially de-stumped to facilitate the use of traction. The use of traction, in turn, makes it possible to control weeds more efficiently and thus keep fields in production longer. Well-cleared fields plus traction increase the speed of farming. And that is what has driven animal traction in The Gambia and Senegal. The spread of traction has been accelerated, ironically, by the decline in rainfall, which has reduced the challenge levels of the tsetse fly. The situation is more conducive to the expansion of animal traction, especially using equines, than before.

Put all of these elements together plus some indicators that nonfarm employment has increased significantly (even though we have an economy that is not very buoyant) and we have major change or even a transformation, by African standards, in The Gambia. But we can easily miss it entirely.

Bork

Now we're going to turn to Peter Timmer. He's going to talk about trends that connect macroeconomics and the agricultural sector. He's going to talk about trends in productivity focusing on labor yields and land and total factor productivity.

Timmer

We have talked about economic retrogression, the trends that are moving in the wrong direction, but we've talked about it as if it were a continuing and long-term process in Africa. Malcolm McPherson, a colleague at HIID, divides the economic performance of Africa at this overall macroeconomic level into three periods. From the early 1960s to the mid-1970s, Africa is not an outlier in the context of the economic performance of the rest of the Third World. It had increasing GDP, it had rising per capita incomes, it had expanding exports, it had higher levels of investment, it had low rates of inflation, it had very modest foreign debt. Until the mid-70s, it was outperforming a substantial number of Latin American and Asian countries.

The second period that McPherson identifies is the mid-70s until 1982, until the debt shock, and we can put a day and an hour on that one. Mexico says, we're going to default. Suddenly the international financial community looks around and says, uh-oh, we've got a real problem on our hands. That triggers a whole new environment externally for Africa. From the mid-70s and until 1982, GDP growth rates declined – not GDP itself, but growth rates declined. Investment rates fell. Inflation accelerated. Foreign debt mounted rapidly and we begin to see difficulties with debt servicing.

With the shock in 1982 until the present, most of the economies are in an actual state of decline. From 1982 to the present, per capita incomes and investments have actually fallen. There has been excessive expansion of the money supply, high rates of inflation, and lower levels of exports, not just lower export growth rate. Import capacity almost collapses, especially the capacity for commercial imports. Domestic savings are actually falling, and the external debt is clearly insupportable. It simply cannot be financed.

So those are the three periods that Malcolm sees when he looks at the overall macroeconomic environment. The situation is not one that is getting better through the 1980s. It increasingly looks like it's on a cumulative negative downward spiral since the debt shock in 1982. As I said, that's the point of view of a macroeconomist.

Where does agriculture fit in this? Interestingly, in the 1980s, agriculture begins to outperform the rest of the economy. The share of agriculture in GDP, which should go down as the economic transformation takes place, has gone up in Africa. Africa is deindustrializing. Just a few numbers to make the point: the agriculture share in 1965 compared with agriculture share in 1988 for Tanzania goes from 46 percent to 66 percent, in Zaire from 21 percent to 31 percent, in

Zambia no change, in Ghana from 44 to 49 percent. Only in Senegal did it go down from 25 to 22 percent. Look at the annual growth rates in agricultural GDP in the periods 1965 to 1980 and then 1980 to 1988. In Tanzania it grows 1.6 percent from 1965 to 1980 and then agriculture grows at 4 percent in the 1980s. We don't have the early period for Zaire, but agriculture is growing at 3.2 percent in the 1980 to 1988 period; in Zambia, from 2.2 to 4.1 percent, almost doubling; and then Senegal, from 1.3 to 3.2 percent. Ghana goes the other direction. This diversity is troubling and people have to be aware of it. This diversity is quite real.

Agriculture is outperforming the rest of the African economy in the 1980s. And at one level, it seems to me we ought to be optimistic. That says there is some production response to a policy environment that has reduced the anti-agricultural bias in overall economic policy. You free up the exchange rate. You get rid of a lot of price controls. You open some import markets. Even if these changes are very limited, agriculture has the potential to respond. And that seems to me to be what those growth rates are saying.

Unfortunately, if we go underneath those numbers, the trends are not quite so encouraging. If we look, and here I am sensitive to what Elon is saying about the kinds of data that support these numbers, at the productivity levels underneath the aggregate output levels, then things are more worrisome. If we look at the contribution of agriculture to the growth process in terms of its contribution through productivity, according to the regression results that Steve Block has put together, the patterns for agriculture in Africa looked exactly like the patterns for the rest of the world in the 1960s and early 1970s; a big contribution from agriculture to the growth process, highly significant, big coefficient, and virtually the same coefficient in Africa versus the rest of the world. When you go to the 1970s and up to 1980, the contribution drops sharply and is barely significant. And for the 1980s, agriculture's contribution to economic growth is negative. The coefficient is insignificant. This growth process that we see in the aggregate, the higher rate of growth in agriculture is not being transmitted into the rest of the economy. Now, maybe that's because the markets aren't working yet. Maybe this is a process that takes a lot of time, but whatever the reason, we better understand the failure of agriculture to connect to the rest of the economy in the 1980s in the way that it has stimulated other economies everywhere else. As different as Africa is, I don't think it is so different that it needs not to connect.

Last two points: labor productivity and crop productivity. Last year, Vern Ruttan showed us what happened when you put changes in output per unit of area, that is crop yields, on the vertical access and output per worker on the horizontal axis. Normally, you expect those trends over time to increase up and to the right. Higher yields per unit of area as you get new technology and more productive inputs and higher yield per worker, which allows higher real wages. Eventually that moves rapidly out toward raising real wages in agriculture to be commensurate with real wages in the rest of the economy.

"The agricultural economies of Africa are simply not connected to the rest of the economy – not connected in

Vern showed Africa was going down to the left rather than up and to the right. It was doing worse in both cases. Steve and I have tried to desegregate this type of Hayami-Ruttan diagram by crop and by country to see what is going on. And the answer is there's no pattern at all. Sometimes it's up. Sometimes it's down. It depends on the country, on the crops, on the time period. There is no apparent pattern in the data. Now, maybe it just means that the data aren't any good. But my guess is there's something more fundamental going on underneath here, and that's that the agricultural economies of Africa are simply not connected to the rest of the economy – not connected in any meaningful sense to the urban economy. I think we need to revisit the question of whether the agricultural economies of Africa are connected through functioning product, input, and factor markets to the so-called macroeconomy.

Bork

We've talked a little bit about economics and what is happening there. Now we're going to turn to the social, cultural, and political aspects.

Ackello-Ogutu

I think we are concerned about Africa because the performance of the economies generally, and agriculture specifically, is declining not only compared with other developing regions but also compared with the past. And, of course, it is declining compared with the developed economies. Two decades ago it was probably better.

I would like to go through some factors relating to stability or instability. It was mentioned that there is instability caused by a narrowly based economy – instability caused by emphasis on a few enterprises. But I would also talk about instability that is arising from population growth and migration. I don't have much experience with the West African scene; I shall therefore speak basically in reference to eastern Africa, specifically Kenya.

"Emphasis needs to be redirected to nonconventional export products, particularly horticultural crops and flowers, which are fairly profitable and thus offer excellent

Let me first address instability arising from production. We all know that agricultural production in Africa is confined mainly to food crops such as maize, millet, sorghum, and root crops. That restriction causes considerable problems especially because of the drought factor. Low crop productivity caused by farmers' inability to use biological and chemical technologies for economic reasons has been aggravated by frequent droughts.

Food-crop production shortfalls have led to rural poverty, instability, and apathy. Consequently, migration to urban areas has increased. That in turn is increasing the poverty or the proportion of the poor in the cities, some of which are expanding fairly rapidly – 10 percent per year or even more in some countries. So, when we say that agriculture is providing food and resources to the industrial sector, in the case of labor it may not necessarily be employable labor. Poverty precludes attainment of the requisite discipline and educational background.

The other production aspect regards cash crops. I think there are good prospects in the traditional export crops such as cocoa, cotton, coffee, tea, etc. But emphasis needs to be redirected to nonconventional export products, particularly horticultural crops and flowers, which are fairly profitable and thus offer excellent opportunities for countries to widen the enterprise base.

"Governments thus use land as a weapon to dish out favors to contain discontent and as a means of rapid financial rewards to individuals and institutions considered to be faithful to prescribed views. There doesn't seem to be a direct positive relationship between land

Livestock has been neglected but has important linkages with the rest of the economy. Africa relies predominantly on off-take from pastoral lands whose resource base and productivity are rapidly declining. There are now environmental dimensions that need to be taken into account. Issues related to use of nonfarm inputs, chemicals, and artificial insemination also need to be given serious attention in both pastoral and agro-pastoral areas. Many governments are not emphasizing the importance of livestock in the agricultural base and as a means of stabilizing food supplies and rural incomes.

Turning to the population and land aspect, although the population growth rate in Africa is quite high, wars, inter-ethnic conflicts, and diseases ironically seem to be containing the situation – I hope this won't be taken in the wrong moral perspective. But, as I have already mentioned, migration from the rural areas, despondency, and apathy are readily discernible. These are phenomena that have become prevalent only in the last 20 years.

There is, however, a lot of variability in Africa. Although population pressure is acute in the high-potential areas, there are many African countries where the land resources still are quite significant. Even within countries, there's a lot of variability. Although the pressure is mainly on the high-potential areas, there is also pressure on the low-potential areas because people are resettling in lands that were traditionally reserved for wildlife or pastoralism. Such lands are invariably not stable enough for arable farming.

Land adjudication is fairly advanced in countries such as Kenya but equity in distribution is an issue that must be deemed to be fairly sensitive in most African countries. Africans have realized the importance of land ownership especially in the face of high inflation rates. Governments thus use land as a weapon to dish out favors to contain discontent and as a means of rapid financial rewards to individuals and institutions considered to be faithful to prescribed views. There doesn't seem to be a direct positive relationship between land security and investment in farming aimed at improving productivity values, which are aspects that need to be looked into. Irrigation is not being practiced due largely to the heavy capital requirements, particularly in relation to low, regulated market prices for food crops. Production of food crops often constitutes the major occupation of resource-poor farmers.

On gender issues, I think in the past we emphasized the wrong aspects of equality between women and men. Women farmers are obviously overburdened by agricultural and domestic chores. Fortunately, emphasis, at least in terms of research, is now being redirected toward more meaningful aspects, such as raising the productivity of the women in order to reduce their drudgery. I think this whole process is being revisited, and there are a lot of nongovernmental organizations now directing their efforts toward women farmers and women's groups. It is not all in vain. In West Africa, for example, you see a lot of vigorous market women and in eastern Africa there are a lot of women's groups. Although the latter are often misused by politically minded leaders, they have the potential to raise agricultural productivity at least indirectly.

In the past we stressed the problems of women rather than looking at the division of labor within the household involving all family members: school children, unemployed adults, men, and women. It is now clear that gender roles should be investigated in a proper perspective rather than merely highlighting the housewife's misery and burdens in isolation.

Finally, I would agree that there are signs of transformation going on. I've looked at transformation in various aspects – the mechanical transformation, the biological chemical transformation, institutional transformation, policy reforms – and I think lately we have been reminded of the communication and information technology transformation, which is important and should be spearheaded by governments, especially if exports are going to be improved. Of course, the governments have to participate in creating an enabling environment for exports by negotiating with foreign governments and providing information.

In those respects, transformation is indeed taking place. There is a need for a larger role to be played by the government to provide the necessary environment. We've talked quite a lot about comparing Africa and what is going on in Africa with Southeast Asia. I don't know if that is helpful or whether it raises unnecessarily too many questions without providing answers.

Hobgood

In contrast to the gloom-and-doom scenarios regarding African agriculture, I was struck by what our missions were reporting this last year. Some interesting things seemed to be beginning to happen. Eleven out of the sixteen missions that reported on the impacts of their programs were talking about progress being made in farmer adoption of improved technologies or increased fertilizer use. It seemed in some cases to be associated with increased exports. The technologies that they were adopting were food-crop technologies but also associated with increased exports and in most cases with marketing reforms.

The question is whether we are beginning to see some impact from our longer-term efforts at technology development and transfer linked with our more recent efforts in marketing reforms. I wanted to ask whether Peter is beginning to see any changes at all, either crop-specific or country-specific, that would indicate that something is beginning to happen.

Timmer

The simple answer is no, but it's because we're looking at fairly long time periods – 1980 to 1990. If we begin to see an uptick in results from 1989 to 1990 and preliminary results for 1991, that's not going to make much difference in a decade-long trend. So we're going to have to pull out the last couple of years and ask in a nonstatistical fashion, do we see something beginning to happen different from the trends of the 1980s? That's an important question, but it's not one for which we've seen really powerful evidence so far. I think your point is that some mission reports are not as pessimistic as we are around the table. At one level I don't find that surprising. You can't keep doing this unless you're making some progress somewhere. And you surely would like to report it when you see it, and that's good. I mean, that really is good because these people are trying to make the thing happen.

Second, you note that some of these positive things that are beginning may be the result of a long-term effort to develop appropriate technologies in the African context – a decade of structural adjustment and changes in attitudes toward markets, pricing, openness of economies, and so on. Are some of those longer term efforts beginning to pay off? I want to emphasize again that this really is a long-term process. If we learned anything at all from the Asian experience, it's that you have to stick with favorable development policies, not for years but for decades. The United States per capita income 150 years ago was $850 in current dollars. That's twice as high as the average in Africa now. And it's been 150 years since we started out at double the African level.

"If we learned anything at all from the Asian experience, it's that you have to stick with favorable development policies, not for years but for decades."

That kind of sustained long-term growth process is very discouraging to aid agencies that operate on 1-year or 3-year or sometimes even 5-year cycles. But I don't know any other way to make development happen other than to have this long-term focus. I hope we all come away understanding that, yes, you have to live with, sort of, the fads of the day. But you also understand that increasing labor productivity over the long haul is the name of the game.

Delgado

There is an apparent opposition of views and perhaps even of facts between Elon and Tom on the one hand and the other speakers on the other hand. That seems to me germane to the subject of this session, "what is happening." At the end of the 1970s, sort of the beginning of the structural adjustment era, there was widespread consensus that the capacity to respond to a change of incentives for agriculture was low, that there wasn't much new technology on the shelf or there wasn't a continual process for generating such technologies anyway, that infrastructure was poor, that resources were being depleted, and so forth. Now, it seems to me, to answer the question, "What's happening to Africa in the 1990s?" we do have to resolve the contradiction of Elon and Tom saying, maybe the figures don't look too good but the capacity is going up, and rural capital accumulation is going on, while other people are saying, the figures seem pretty good but look at Senegal, which goes all around the land borders of Gambia, where you have fertilizer use that fell by a factor of four over the 1980s and where you have a complete decapitalization of the peanut base. Of course, Gambia is a country where you have had macroeconomic adjustment and Senegal is one where you haven't. Instead of looking at trends and yields and so forth, we should really look what has happened to the capacity for aggregate supply response. That is where we will get the answer to the kinds of policies I think we need in order to use agriculture as an engine of growth.

Gilbert

I'm glad Chris interpreted my comments as being positive. I think there are many hopeful signs. Malawi is another example where we may see a classic transformation and intensification in agriculture. The big question there is whether Malawi can make the political transition without everything being blown asunder. That's where potential transformations get derailed.

"Malawi is another example where we may see a classic transformation and intensification in agriculture. The big question there is whether Malawi can make the political transition without everything

Antoine

The issue is not to be optimistic or pessimistic. There is impact being made. But is the impact being made fast enough while the population pressure is rising, while food production shortages are looming, and while environmental disaster is coming?

Timmer

I want to be sure that we don't lose the point that Chris put on the table. What is the appropriate policy response? And I want to disagree with his comment that 10 years ago we all agreed that the production response was going to be pretty small and that we all

"The degree of income diversification into nonfarm informal activity by rural households in Africa is really quite high,

understood the weakness of infrastructure and the poor technology. If you look at what the World Bank and even AID was saying about the appropriate policy for African agriculture and development, it was, get the prices right, open the markets, and devalue the exchange rate. Bring the budget under control and you solve the problem, thank you.

Ten years later, we understand that didn't work. Obviously there was a debate at the time as to whether that simple approach would work, and we did not have widespread agreement within the development profession. The Berg report[2] was blunt about how straightforward it was going to be to do this. So I don't want us to understate how complicated the policy debate has been and still is. Part of it is factual. Part of it is obviously ideological. But it's a very complicated policy debate that's still going on.

Reardon

On whether one may infer from GDP data that there has been a deindustrialization in Africa, I think the jury is still out. A number of studies in recent years have shown that the degree of income diversification into nonfarm informal activity by rural households in Africa is really quite high, contrary to the traditional image. I doubt that most of these activities – the kinds of dynamic informal-sector activity growth that Carl Liedholm discovers or the off-farm income activities we're finding in West Africa – are actually showing up on GDP accounts.

Pierre Antoine's comment that the farm household in Africa is mainly interested in minimizing risk is, for policy purposes and for agricultural research purposes, a central issue. I think that there are two parts to that image that need to be reexamined. The first is the automatic characterization of the rural household as being a farm household or a farmer. The overwhelming evidence that's coming in is that these are firms that have multisectoral activities. In West Africa for example, where traditionally one thought that these were autarchic subsistence households, more than half of the income is coming from nonfarm activities. These are multisectoral firms sensitive to the terms of trade across sectors and willing to shift factor allocations among those sectors, depending on what they see. Second, when one says that they're mainly interested in minimizing risk, one has to juxtapose certain facts with that statement to really test it. Three phenomena come to mind. The first is that in certain situations there has been rapid adoption of high-yielding or high-value crops in, for example, the West African semi-arid tropics. Cotton production has increased rapidly in many areas, with smallholders adopting as rapidly as they could. Second, though, one also finds significant nonadoption of soil conservation measures, of fertilizer, etc. Environmentalists and agricultural research institutes have thrown up their hands, saying, what's wrong with these farmers? Why are they minimizing risk, acting conservatively, etc.? And yet, third, you also find significant dynamic investment in off-farm enterprises in those same areas. So they are dynamic investors in one sector, stagnant or lackluster investors in another sector, and then, in some subsectors of agriculture, they are quickly adopting new technologies and new crops and in others they aren't. I think one would have to then amend the image of the objective of the farm household or the rural household rather to be that they're interested in stabilizing and maximizing inter-year food security, bringing up their incomes by whatever means they can.

Bork

You're talking about informalization as opposed to deindustrialization. What effect do you think that has on the raw data that are being used by a macroeconomist?

Reardon

It isn't that there's a problem with the aggregate data that are being used if one adjusts the expectations of what one is getting from the data. From macroeconomic data you can say fairly well what are the trends in formal-sector activity. They keep good tabs on that. I think you can say what's happening to agricultural output within 20 or 30 percent. What I don't think you can do with the data, and this merely requires an adjustment in how the results are presented, is to follow the huge amount of informal or nonfarm activities in rural areas. It's not so much that the aggregate data are so bad, but they only cover a small part of the phenomenon. I think that should be underscored in use and analysis.

Timmer

We should understand there are two reasons why industrial accounts vis-à-vis agricultural accounts in the GDP numbers might give us an incorrect picture. One is that certainly before structural adjustment has taken place, we're using the wrong prices to value output. You have very depressed prices for agriculture. You have highly protected prices for the industrial sector. When you value your domestic output at those incorrect prices, it looks like you have a big industrial sector and a small agriculture sector. That's a characteristic of socialist economies, for example. Just putting simple world prices in for what you're producing can make enormous differences. In the Soviet Union, for example, you'd kick agriculture up by 20 or 30 percent and industry down by similar amounts just by doing price adjustments.

The second reason is once the process of adjustment starts and you open it to competition, then you deindustrialize in the formal economy because you start shutting down some of those things. The actual physical output goes down. And we do not typically capture very well what's going on in the informal sector. Even in the urban informal sector, small-scale workshops spring up to take the place of the jobs in the large-scale formal sector. And we don't capture very well what's going on in the rural informal sector.

It is interesting that if you look at the growth linkages between agriculture and the rest of the economy, Africa was an outlier in the 1960s and 1970s. Steve Haggblade and Peter Hazell showed that the multipliers were much smaller in the African context than they were in the Asian context,[2] and that's probably being changed now. My guess is that we're rebuilding the micro-connections between agriculture and the rest of the economy.

Antoine

When I say the African farmer tries to minimize risk that doesn't mean they are not willing to adopt proven technologies. There is a major difference. The African farmer will adopt any technology that is proven successful. They are adopting a lot of performing varieties. Yet they won't risk investment in fertilizers, inputs, and so on, if they don't have a guarantee that it's a good gamble. So I think it's really a question of defining the terms.

Sahn

Saying that the 1980s were a failed decade and that the early 1990s are not doing much to reverse that trend is overtly pessimistic, particularly at the macroeconomic level. If one looks at the strides that have been made in getting prices right and achieving macroeconomic stability, as measured in terms of inflation, budget deficits, trade balances, and so forth, things look better, and I don't see how one could argue with that. A lot of that has to do with the infusion of foreign financing, which in SPA countries is on the order of 13 percent of GDP. That helps a lot. But nonetheless, whether that's to pat the donor community on the back or whatever, the fact is things do look better, especially the macroeconomic picture.

Also Peter framed this discussion around the question of what it will take to make agriculture the leading sector. We've got it wrong. I think we should be talking about the reverse. We should be talking about the rest of the economy's failure to stimulate agriculture and give agriculture a chance to do what it could potentially do in terms of having linkages both with the rural nonfarm economy as well as with the urban economy. One should look at the structure of macroeconomic policies, exchange rates, and commercial policies that have discriminated against agriculture, the failure of industry and manufacturing to generate a demand for agricultural products, and the failure of policy and investment in infrastructure to enable that demand to be met through local production rather than through imports. In most African countries, it's cheaper to import rice or maize from the U.S. or Thailand than it is to bring it in from the hinterland. That's the failure of policy to stimulate agriculture rather than the failure of agriculture to provide wage goods for the urban sector or for manufacturing and industry.

We have to look at where policy has failed and that's the point of departure. Then once we get that set of questions and that set of policies correct, then the second question is how agriculture can more effectively serve as the leading sector and stimulate the rest of the economy.

I think Pierre Antoine's comment about the availability of seeds and the multiplication of seeds is important. But I have a little trouble with the characterization of that as the overriding problem in adoption of technology or better performing varieties in Africa. I think agricultural research has failed to a large extent in Africa and that the technology and the germ plasm has not been available to promote technological change. Malawi is a good case in point. There was basically no adoption of new technologies until the past 2 years. And what made the context change was the availability of new types of germ plasm. So there is a question whether the appropriate technology is even available. I don't think we have the proper seeds in many cases.

"We did a review of all the major crops—sorghum, millet, corn, cassava, and rice—and for very few were we able to identify severe problems in germ plasm. I have come to realize that there has been an overemphasis on plant breeding work."

Bork

I would like someone to comment on the data we get out of Africa. It's a serious problem. The southern African drought shows that even areas that we think have a relatively good situation are fragile.

Antoine

I would like to disagree on germ plasm. I have been raised in the mentality of the international agricultural centers. I have also worked in national research systems. And I thought until recently that development of the germ plasm was the number one priority and the one that would resolve the problems. But in a study sponsored by the World Bank and published last year,[3] we did a review of all the major crops – sorghum, millet, corn, cassava, and rice – and for very few were we able to identify severe problems in germ plasm. I have come to realize that there has been an overemphasis on plant breeding work. Many of my colleagues in international centers would agree, not that they want to stop the program. The problem is for the germ plasm to reach the farmers. It's an effort that must take place on a continuing basis, but we have not paid enough attention to the problems of cropping techniques, soil fertility, and so on.

"Part of what has happened in Africa over the last 25 years has been the total destruction of government capacity to do almost anything, and in particular to maintain roads, to do agriculture research, to

Timmer

I don't think I'm disagreeing with David Sahn on which direction the causality ought to be going now. I was arguing that the empirical evidence says that in the 1980s, agriculture ceased to be a contributor to the growth process in Africa, whereas it had been a significant contributor in the 1960s and early 1970s. But in the 1980s something structural changed in a fundamental way.

"Maybe we shouldn't try to follow an Asian model of agricultural development. If you really believe that, then we have to find another way of developing

Now, David's interpretation, and I agree, is that the macroeconomic environment that would support agricultural growth collapsed, and in return agriculture could no longer support rapid growth. But I don't think we should underestimate what a pessimistic conclusion that is, because it means we really have to go back to the Mosher stage of the agricultural transformation. We have to go back to getting agriculture moving. And I say that's pessimistic because in that early stage it takes large investments to get the agricultural institutions, the infrastructure, the irrigation, all the things that are going to allow agriculture to grow rapidly, and you cannot have the overall economy growing rapidly in that phase of development. It's only when you get to the second stage that you can begin to suck resources out of a rapidly growing agriculture and that you get rapid overall economic growth. Africa has retrogressed from the second stage in the late 1960s to the first stage in the 1980s and 1990s. It's going to be difficult to restart the process of rapid economic growth until we put a lot more resources into agriculture.

Wolgin

It's extremely important to know what's happening in order to decide the next steps and what to do. It's not really a matter of pessimism or optimism, although, it seems to me, if you come up after listening to Pierre and you start saying, wait a minute, all these things are happening. Maybe we shouldn't try to follow an Asian model of agricultural development. If you really believe that, then we have to find another way of developing without putting agriculture as the base. Although I want to keep that open, I don't want to yet accept that.

It seems to me that there are three issues. One issue is, is something happening now? Is there a supply response to policy changes? Is there a supply response to institutional change? Are farmers behaving the way one would hope they would? Are they investing now? Some things that Tom said suggest that if we look at it from the perspective of farmers and cultural attitudes and their ability or willingness to make big choices, to take risks, trading off risks against expected returns, by and large farmers are rational folks and they make investments where it makes sense and they save where it makes sense. And one can expect farmers to be fairly responsive to an environment that encourages them to make investments.

The second issue is the difficult things that Pierre talked about, the underlying conditions, the importance of rainfall, the variability of rainfall, the lack of good soils, and the increase of population and that pressure on the resource base, and the declining soil fertility. That suggests that high rates of productivity change are needed just to stay in place. And that gives some suggestion as to what we should be doing.

The third issue is the creation of the policy and institutions to link agriculture to inputs service and markets. Part of what has happened in Africa over the last 25 years has been the total destruction of government capacity to do almost anything, and in particular to maintain roads, to do agriculture research, to maintain credit systems, to do policy. If we're going to depend on governments to provide a lot of these services, we're looking for a total restructuring, redevelopment, recreation of government capacity, and that may take some time.

On the other hand, there are a lot of institutions that are able and may be able to provide some of the needed inputs. For instance, it's my understanding what happened in Malawi was not only research output from the research station, but also there was a privatization of seed. It was a liberalization of marketing and that the synergism of macroeconomic policy, agricultural marketing policy, privatization of input delivery, and work at the agricultural research center all came together at the right time to create the environment where farmers are now able to make choices.

"One of the problems with macroeconomic data on agriculture in Africa is that it is almost impossible to get really good data on root crops. And in fact root crops

We ought to take a look at some of these institutions that are needed in order to get agriculture moving more quickly. Some of them are already in place. Agriculture in the worst times of decline did much better than perceived because people found ways of coping because they were moving into nonagricultural activities in the rural areas. But it seems to me that the focus needs to be finally on the kind of investment you need to make these linkages.

Peters

I think that it's incumbent upon us to try to bring together what seems to be a difference between Gilbert and Timmer. My experience working at the grassroots level is very much the same as Elon Gilbert's. There is enormous adaptability, enormous experimentation, enormous responsiveness, even in the face of extremely difficult economic and political conditions. I agree with Tom Reardon who pointed out that most farm households are multisectoral firms, which means then that we're having to deal with not just an agricultural sector but other sectors at the same time. The linkages between agricultural work, employment, informal activity, and so forth are often the keys to understanding what's going on.

One of the problems with macroeconomic data on agriculture in Africa is that it is almost impossible to get really good data on root crops. And in fact root crops have been shown to be increasing. They're very responsive to changes. This was pointed out after the Berg report[5] came out. There was criticism of the fact that it focused on cereals and ignored root crops.

A second problem is multi-cropping, multi-sequencing of crops. In southern Malawi, in the area where I work, there are very complicated systems with multi-cropping and crop sequencing, so that fields are used in many different ways. But the agricultural extension staff who measure yields, record only the maize if they think that maize is the major crop in the field. Now, there may be three or four other crops growing in that same field. We already know in Malawi the tremendous responsiveness of farmers to price changes, but it is a responsiveness in the sense of shifting between crops. Given the complex cropping system, this means it is difficult to assess the implications of such shifts. African agricultural systems are heterogeneous and complex. Therefore, it's difficult to come up with a single measure of output or productivity.

Another thing that's important to reinject is political change. At the microeconomic level, the responsiveness and adaptability of farmers circumvent extremely difficult political situations. Sara Berry has documented for Nigeria a lack of investment in many cocoa plantations precisely because there's a lot of political insecurity affecting land tenure with specific gender implications; thus, women find it difficult to press their land claims.

In Zambia and Tanzania, there is documentation of the fact that people have withdrawn from the formal mechanisms and that there has been an explosion in the informal transactions and an enormous amount of movement across national borders. There has been a huge movement of maize from Zambia into Malawi at certain points and also into Mozambique. So a lot is happening there that is invisible at the national statistics level. And there are more subtle effects. Even in Malawi where there has been a relatively positive performance, the disproportionate direction of agricultural and other support to the estates at the expense of the smallholder has deterred adoption of various forms of maize and other forms of crops. Therefore, the political environment, the pattern of allocation of resources that depends on the political structure, is crucial to our understanding.

Finally I was interested in Pierre Antoine's remark that crop-cattle systems seem to be becoming more important. In Botswana the research shows clearly that although one's focus normally is either on diamonds or on agriculture or on cattle, in fact the cattle-crop nexus is far more important for most of the people. And in northern and central Malawi, there are clear indications of the fact that this particular relationship of crops and cattle or goats is very important. That is another part of the changing structure of agriculture that is a task for us to try to document more carefully.

Bork
You seem to be questioning the data that we're using.

Peters
At the national level, yes.

Bork
You are also questioning how we measure productivity. We've got kind of this macroeconomic viewpoint that paints a bleak picture. How do we measure productivity or how do we know what is happening outside of this kind of broad-brush macroeconomic approach?

Peters
The key is to recognize that any aggregate statement is always smoothing various peaks and troughs. Often the interesting things are precisely in those peaks and troughs. I referred earlier to this adaptability and responsiveness. One sees the same thing in Elon Gilbert's research on

The Gambia. There is a great deal of dynamism going on in agricultural systems. One of the problems is that because they are so heterogeneous at a national level, let alone a pan-continental level, one is comparing apples and oranges. And that I think has been the frustration with talking about Africa to people coming from Asia because when you're talking about countries that have millions of people and a relatively homogeneous system of agriculture, usually rice, there are certain parameters that are in place over the whole region. In Africa one has microclimates, micro-niches, and diverse cropping and stock systems. This makes it important to capture such diversity before assessing on a national level.

Shaikh

It seems to me we are talking about fundamentally different agricultural transformations when we talk about Africa and Asia. I'll talk just about the Sahel because that's an area that I know better. We are dealing with an agricultural system that is by and large a low-input system – extensive agriculture, rainfed, by and large nonmarket with increasing transformations toward pockets of market. And in many respects it's too early to judge from what we do or do not see at the level of national statistics, or, I would argue, at the microeconomic level in terms of promising trends because the base, the actors, are in rapid transformation including the social base, the village structure that we're talking about, the administrative structure, and the entire economic framework. How the power relationships shake out over the next 10, 20, 30 years is going to be a critical determinant of what happens in the sector and what kinds of trends affect the macroeconomic level.

> **"What's very interesting, however, is that a lot of the bad performers in the 1960s and 1970s, like Tanzania, became good performers. And a lot of the good performers, like**

I'd like to see us focus on what changes are inevitable when we look 30 years into the future, and what policy makers can do to influence them. It's not just a matter of dealing with individual farmers. I don't think that our macroeconomic statistics are yet giving us the kinds of data that would be a reliable indicator of where things are likely to go over the next generation.

Cleaver

I'd like to speak to two things: trends and urban policy. The World Bank just finished the African indicators project. We updated some of these trends to 1990 and found that in the 1980s there was no change in growth of agricultural production at the aggregate level. The figure is about 2.1 percent per annum on average in sub-Saharan Africa from the 1980s to 1990. It was 2 percent per annum from 1965 to 1980. So you have a pretty constant aggregate figure. What's very interesting, however, is that a lot of the bad performers in the 1960s and 1970s, like Tanzania, became good performers. And a lot of the good performers, like Cameroon and Côte d'Ivoire, became bad performers. So you had quite a lot of variation even at the aggregate level. And I agree with the statements that the aggregate statistics aren't very good, but they're the best that we have.

> **"Countries that are in adjustment are performing agriculturally better than those not in adjustment. The down side is that on average even the adjusting countries aren't hitting that 3 percent**

Associated with this, however, are some worrying trends. The best figures that we have indicative of food security suggest perhaps a doubling of the percentage of the African population that is food insecure by our definition. Perhaps up to 40 percent of the population of sub-Saharan Africa now doesn't obtain enough food. We have a fantastic increase in food imports. Despite the decrease in the levels of food security, you have something like a 7 percent per annum increase in imports, including food aid. So something out there is obviously not going well. If you associate these figures with things like stunting, infant mortality, education of females, the aggregate picture, not just from national accounts figures, is very bleak indeed.

It's interesting, however, to separate those countries that are doing much better from those that are doing much less well. One of the categories that we have tried to do is countries that are in adjustment and those that aren't. In fact, countries that are in adjustment are performing agriculturally better than those not in adjustment. The down side is that on average even the adjusting countries aren't hitting that 3 percent per annum agricultural growth rate. So it's better to be an adjustment than not from an agricultural sense, but it isn't sufficient.

I found Peter Timmer's statement about the lack of linkage between agricultural growth and what's happening in the rest of the economy worrying. After all, agriculture is growing at 2 percent per annum on average. We operate under the assumption that if you have agricultural growth, there's going to be an impact. His point that in fact the linkages may be becoming less is new to me.

In relation to urban policy, I have a hypothesis that I'd like to put on the table. In the past in Africa, it seems to me, there has been a very powerful urban bias in policy – public expenditure programs, for example, that are excessively directed to the mega-cities. It is not just an urban bias, it's a mega-city bias, which has effectively put infrastructure development in the mega-cities. There is little in the hinterlands, exacerbated by the fact that you have overvalued exchange rates, very commonly a price policy that is confiscatory, and subsidized food consumption in many cities that has exacerbated that lack of linkage to agriculture. In the countries that have had that problem in a big way, you see a not too curious thing and that is that rural populations are essentially producing for their own consumption, with a little bit of commercial stuff in local areas. And it's no surprise that you get agriculture growing at about 2 percent per annum, because that's what the rural population is growing at. Agriculture is growing on average at a rate that feeds local population. It's no surprise that Pierre Antoine finds that agricultural technology is out there, but it isn't being used. I agree with him, but I think that the reason for that is that it's not in demand. Farmers haven't demanded this technology because of the lack of linkage to the urban market.

So I would like to put a sound urban policy on this agenda as a necessary condition for agricultural growth. A sound urban policy being one that is more neutral, that allocates funds to secondary towns and cities, not just the mega-city, that doesn't look to simply low-cost consumption of foodstuffs for urban population, but also looks to the rural population. As I've studied this myself, I've increasingly notched up the priority attached to what I call sound urban policy, as an important ingredient for agricultural growth.

An interesting experiment would be to see what has happened in those countries that have a sounder urban policy. I would submit that countries like Kenya and Zimbabwe have had a sounder urban policy, that is, one that is much more neutral. Price policy has been better. Exchange rates have been less out of line – public expenditure programs in particular. If you look at Kenya, there has been a lot of public expenditure in rural roads and in secondary towns and cities. They have secondary towns and cities in Kenya. You don't just have the Kinshasa for example or an Abidjan, which you do in the CFA countries.

"If you don't look to the countryside, as Asia did to feed its cities, then the traditional links between the agricultural economy and the urban industrial economy

Timmer

I buy basically everything you say. It corresponds to a conversation I had on the distance between the large cities and the countryside in most African countries. The two exceptions are Harare and Nairobi. But how to reverse that is going to be a really difficult question. It's not just the domestic policies that have led to that subsidization of urban consumers. We as donors have helped with that and, indeed, we as industrial countries that subsidize our agricultural exports have helped with that as well. That cheap grain available to the African cities has to be a severe disincentive to looking to the countryside to provide food. And if you don't look to the countryside, as Asia did to feed its cities, then the traditional links between the agricultural economy and the urban industrial economy simply aren't going to be there. The evidence that Steve Block and I have put together suggest that those linkages progressively deteriorated in Africa through the 1970s and 1980s.

Reardon

While I agree that there is a competition perhaps between secondary cities and major cities in rural areas for infrastructure funds, and while I agree that there might be less than the optimal amount of connection between the cities and the countryside in the product markets, it would be a mistake to say that the cities are disconnected from the rural sector, from the factor market side. For example in Senegal, a large share of rural incomes is coming from work in Dakar. It's relatively easy for rural households to have access to the hypertrophied tertiary sector in Dakar. And if you hit that sector through employment policies or structural adjustment policies or whatever, the food security effects won't just be in the urban sector of the Sahel, for example, it will also affect the rural food security situation. So they are very much linked on the employment side.

Second, while I agree with David Sahn that good macroeconomic policies can be important to agricultural performance, I think it's important to note that these are necessary but not sufficient.

I'll finish with an anecdote that I heard at a conference several years ago comparing Indonesia with Kenya. Ammar Siamwalla was pointing out that there's less instability in prices in Indonesia because Bulog, the state marketing agency, has merely to tell traders that they are going to stabilize prices next month. The traders believe them because Bulog has an open window at the Central Bank to draw funds to stabilize the market. Siamwalla compared that to the situation in Kenya where the stabilization agency can buy up to a certain point and all of the market participants know that when they're done with that, they're done. Then the instability can recommence. So the leverage of public institutions in Asia and in Africa to affect stabilization is vastly different because of fiscal resources.

Timmer

It took more than a decade to build that institutional capacity in Indonesia. It didn't just happen because it was in Asia. They really invested in the institution.

Carter

We're saying, is it happening? Or is it not happening? And we're looking at macroeconomic and microeconomic explanations. Coming from Latin America, I feel unhappy with understanding in an unconditional way what "it" is. I think we have on our minds maybe a little two dimensional Hayami-Ruttan picture of what the agricultural transformation is. But we're missing dimensions if we just think of that output-per-worker sort of space as defining the agricultural transformation, because certainly looking at Latin America, we can see that it can happen in ways that are sometimes very socially destructive.

I was reading a little Argentinean economic history recently on the great democratizing force of grain production in the 19th century and how all the sorts of good things that we associate with agricultural transformation happened. It's written by an economic historian. Then at the end of the article he sort of looks over the Andes Mountains, in a metaphorical sense, and says, my gosh, look what was happening in Chile at the same time. You had a grain expansion. You had an agricultural transformation in this sort of two dimensional Hayami-Ruttan space, yet the form that agricultural transformation took was incredibly destructive socially. So it's not just growth, but it's the social sustainability of that growth. I think we need to be quite careful.

Antoine

Peter's remarks that economies are not connected in Africa explains why it is so important to pay attention to the environment. If you look at the map of Africa and studies made on land potential by FAO, you find that countries like Sudan, Zaire, and Uganda combined could provide enough food for the continent. You can also read that with increasing input, Africa could feed six or seven times its present population. But the fact that Uganda cannot feed central Africa, that Côte d'Ivoire doesn't necessarily have an impact on northern Mali, and so on says that we have to look at the environment on a very localized basis. Often there is overuse of land in one place, there is land degradation, there is environmental degradation, while in other places in fact, there is luxury. We cannot average those data.

I remain convinced that a lot has been done in agricultural research and that the big stumbling block now is not agricultural research itself, but the linkage between agricultural research and the farm. You can call it transfer of technology. You can call it education. You can call it extension if you want. But at that level there is a big gap and it's due to a variety of things. Some of them being the fact that there is no demand because there are no markets. But the linkage to me is becoming the key.

Timmer

I want to reinforce what Pierre says. All countries are diverse, but what happens with functioning markets is that people leave the poor resource areas and migrate to the high-resource areas where the jobs are, where productivity can be higher. You can't solve the productivity problems by forcing people to stay on low-productivity soils, in low-productivity environments, and not provide them either with new technology or whatever it's going to take to break out of there. If you force them simply to deal with their environment, you are going to keep them

"You can't solve the productivity problems by forcing people to stay on low-productivity soils, in low-productivity environments, and not provide them either with new technology or whatever it's going to take to break out of there. If you force them simply to deal with their environment, you are going

poor. The only way to break out of that is mobility. That's fundamental. All societies have had to do that.

Second, incompatibility between the microeconomic and macroeconomic view is an important question because it goes right to the heart of how we know what's going on. Do we get our information to monitor implementation policy from microeconomic field surveys? Or do we get it out of our macroeconomic data? When the two are telling us the same thing, it's easy. When it's optimistic, that's great. When it's pessimistic, it's bad, but at least it's consistent. The problem comes when you're getting different stories from the macro and the micro. It doesn't necessarily mean that one is right and the other is wrong. It really can be the case that the macroeconomic story looks different than the microeconomic story because the microeconomic data just doesn't add up yet to what the macroeconomic picture is telling us.

You don't want me to compare Africa with Southeast Asia. You keep telling me that I shouldn't do that because it's harder in Africa. But why then was per capita income in Africa double per capita income in Southeast Asia just 20 years ago? If it's so much harder in Africa and you had this enormous advantage and starting point, why can't I say Southeast Asia did something right, Africa did something wrong? I'm making it more stark than I believe, obviously, but my point is that there are important lessons out of the rapid growth in Southeast Asia, precisely because they started from such a low base.

Ackello-Ogutu

I would like to emphasize the preoccupation of Africa with food production, which arises naturally from the high population growth rate and poverty in the rural areas. It is important to come to grips with that in the policy reforms that we expect governments to undertake. The food problem is affecting the adoption of innovations. I think we agree that the technologies are on the shelf, but adoption remains as a major stumbling block. The extension services are generally capital- and labor-intensive. Kenya, for example, experimented with various types of extension services: integrated, training and visit, and farming systems. Funding continues to be inadequate and success, particularly in food crop production, is still elusive. I feel that more effort should go toward devising extension services that can deliver viable technologies to the farmers within the limited budgets available.

The development of markets affects the adoption of technologies, but due to Africa's preoccupation with food crops, the benefits arising from improved markets may only be modest. More emphasis must in future be placed on cash enterprises rather than subsistence production.

My contention is that the African farmer is currently receiving recommendations and technologies that are too capital-intensive. Fertilizer, for example, is quite expensive especially when applied to subsistence crops. Many improved husbandry methods requiring minimal nonfarm inputs are yet to be appreciated by the African farmer. Practices such as use of clean seeds, timeliness in planting, and post-harvest hygiene are still taken for granted by farmers and only accorded lip service by policy makers even after their potential financial rewards have been amply demonstrated by researchers.

With regard to land-to-man ratios, we hope that the high population densities may eventually have some positive effects in terms of conservation and in terms of investment in productivity-enhancing innovations. For example, in dairy production in Kenya, zero grazing is being adopted in densely populated areas, thus economizing on the major constraining resource, grazing land.

The final point concerns the government's role in creating an enabling environment. In the face of democratization processes now going on in Africa, I think we may be asking too much. Governments have their hands full right now. They are going to have their hands full with the rigorous domestic political demands as well as with demands from donor agencies. This phase may take 10 or 20 years, but one hopes that the calls for accountability, especially in the use of public funds, will eventually yield fruits and that governments will ensure that markets function freely and efficiently. If this happens, agriculture will most likely benefit.

Notes

1. *Assessment of Animal Agriculture in Sub-Saharan Africa* (Morrilton, Arkansas: Winrock International, 1992) 125 p.
2. *Accelerated Development in Sub-Saharan Africa: An Agenda for Action* (Washington, D.C.: World Bank, 1981) 198 p.
3. S. Haggblade, P. Hazell, and J. Brown, "Farm-Nonfarm Linkages in Rural Sub-Saharan Africa," *World Development* 17(1989): 1173-1201.
4. David Seckler, Doug Gollin, and Pierre Antoine, *Agricultural Technology in Sub-Saharan Africa* (Washington, D.C.: World Bank, 1991).
5. *Accelerated Development in Sub-Saharan Africa.*

Thursday morning and afternoon, May 28, 1992

What is the Role of Private-Sector Agriculture and Farm Linkages to the Nonfarm Economy?

Panel: Chris Delgado, Carl Liedholm, Mike Maynard. Chair: David Lundberg

Delgado

What are the problems and opportunities of agribusiness in Africa? At this meeting last year, which had heavy representation from the private sector, both national and expatriate, people were quite vocal. I recall discussion of the need for credit, banking systems, ways to repatriate profits, access to foreign exchange, and having a government that you can deal with reliably on regulatory matters. The point is that institutional development for privatization is really the issue of the day. These institutions seem to be largely lacking in many of the SADCC countries. In West Africa, the nature of institutions to promote agricultural development in the next 10 years will be a particular point of contention in donor-mediated efforts.

Moving on to the second question: Are wage rates set by the marginal product of labor in agriculture? Historically, wage rates in nonagriculture in Africa, certainly in the formal sector, have been way above the marginal product of labor in agriculture. The fact that nonagricultural wages were so much higher than agricultural wages in the 1980s was seen by many as the outcome of urban bias in development strategies. Incentive policies that favored urban over rural households tended to accentuate this gap. In addition, foreign assistance inflows of the order of 20 percent of GDP tended to boost urban wages faster than agricultural productivity through their impact on government salaries and the consumption patterns of government workers, except where the development productivity of labor was very high, as in mechanized enclave operations, such as plantations.

Questions posed to the panelists

1. What are the problems and opportunities of agribusiness in Africa?
2. Are wage rates set by the marginal product of labor in agriculture?
3. What are the key constraints in marketing, transport, processing, and storage of agricultural commodities?
4. Can labor-based export production proceed without an agricultural base?
5. How important to the rest of the economy are declining real prices for domestic agricultural products that result from increased productivity?
6. Are ample supplies of cheap food needed for an industrialization strategy and can one depend on world markets?
7. Are there notable declines in world market prices that should affect agricultural development strategies?
8. What determines the terms of trade between agriculture and nonagriculture activities?

The rural-urban wage gap is in fact decreasing fairly rapidly over time under structural adjustment. The more important issue, and here we will find a difference among parts of Africa, is the relationship of the marginal product of labor in agriculture to the average product of labor in agriculture. Key differences in this respect exist between West Africa and central Africa on the one hand, and Asia and eastern and southern Africa on the other. If one is going to make gross generalizations, eastern and southern Africa are much more like Asian cases than they are like West African cases. The conventional wisdom is that the marginal product of labor in West Africa is close to the average product of labor, and the latter is close to subsistence living. The view is that land remains abundant, and as population has grown, people have moved out onto land of about the same quality. Each extra worker produces about the same as before on this newly cultivated land, unlike the typical South Asian case.

The South Asia case is actually much more like Zimbabwe or Zambia, where for some time population growth has led to a falling marginal product of labor and thus falling wage rates. In a market economy, which agriculture always is, even when governments try to interfere, wage rates will quickly equate to marginal products. In the South Asian case, the average product of labor is relatively high because of technological change and all sorts of sectoral policies. On the other hand, the marginal product of agricultural labor is typically very low because of population density. The key point is that in South Asia historically and in much of eastern and southern Africa currently, there is a basis for rural capital accumulation and using agriculture as a growth strategy. Landlords are in a position to capture those high average products because workers are not being paid much. Wages tend to stabilize at the low marginal product of labor. If you are a bright, enterprising person with a college degree in agriculture, or you have access to money, it is feasible to return to and invest in the family farm because you can hire 100 people to go out and do the stoop labor for you.

"In South Asia historically and in much of eastern and southern Africa currently, there is a basis for rural capital accumulation and using agriculture as a

In much of Western and Central Africa, no matter what your resource base, you cannot do that. Why would workers accept a low salary on someone else's land, when they can capture the full product by farming on freely available land? This makes the process of capital accumulation in agriculture structurally a more difficult thing in Western and Central Africa. Of course, as population density goes up in the high-potential areas such as the Ivorian cocoa zone and elsewhere in West and Central Africa, this situation is changing rapidly and one can potentially make quite a bit of money being a landlord.

From a policy viewpoint, this raises the issue of what we should be looking at to evaluate the scope for capital accumulation. There are clearly different stages of land tenure: communal tenure, clan usufruct but no transfer of land out of the clan, individual usufruct but no transfer from the individual, eventually sale to neighbors or within the village, and then finally sale and the possibility of alienation and collateralization of land. As that occurs under population pressure, the scope for market-oriented processes to promote capital accumulation in private hands and the transfer of that through the price mechanism to other kinds of nonagricultural uses goes up rapidly.

"Transport costs are clearly the villain."

But what can policy do to speed things in a way that benefits everyone? That leads directly to the third set of questions raised, concerning the key constraints in marketing, transport, processing, and storage of agricultural commodities. Transport costs are clearly the villain. A number of studies that IFPRI has been involved in with other institutions show that in Mali, for example, costs for bulk transport of grain over different kinds of roads goes from 50 to 300 CFA per ton-kilometer, with a mean of about 65 CFA. Burkina Faso is 60 to 70 CFA per ton-kilometer. That is roughly US$0.25 per ton-kilometer. Other surveys from the late 1980s in Zimbabwe show costs of from $0.18 to $0.25, depending on the area and the type of road. If you take those figures, you get $200 to $300 per ton total cost to transport grain a thousand kilometers inland, grain that perhaps costs $200 c.i.f. at West or East African ports. This says a lot about the nature of the strategic problem of developing agriculture in Africa.

And that leads to questions four to eight, which I see as being largely related. They boil down to Peter Timmer's question as to the importance of a low, stable food price at the early stages of economic development. The policy issue here is the handle for getting overall growth going: What can be done to jump-start the process?

In most of Africa and Asia, household surveys are quite clear that food is a major wage good. For the poorer section of the population, food accounts for about 75 percent of total expenditure, give or take 10 percent. It accounts for 50 percent of increments to expenditure. Changes in the food prices are quickly transmitted into changes in the cost of labor. The same phenomenon applies to nonmarket systems; the opportunity cost of growing the food yourself is the equivalent of the wage rate in a market system.

The relationship of food prices to development strategy in an Asian-type environment is slightly different from the relationship in a West African one. In "Asian type," I include most of SADCC, Kenya, and Ethiopia. Relevant criteria include population density, the evolution of institutions, soil organic content, and so forth. In that environment, comparative advantage may well be in the main food item, at least up through import substitution. Technological change in food production and the existence of landless labor are the key structural characteristics of the Asian type of environment for agricultural development. In that case, the purpose of having a cheap food supply is to keep agricultural wages low; capital accumulation will occur in agriculture from the divergence between the high average product of labor (from technological change) and the low marginal product of labor (from oversupply of labor). Landlords will get rich and market incentives will increase both the supply of and demand for investible funds in agriculture. In such a scenario, a low, stable food price relative to industrial prices transfers capital from agriculture to industry. Now, if you cannot grow the food profitably yourself, you may want to import in such a way that regularity of supply is assured. Policies should then reduce the transaction costs for those imports.

In both West and Central Africa, comparative advantage is probably in a nonfood crop or a nonfood activity in most, if not all, areas. There has been relatively less technological change in staple foods. You probably have less pressure on the land. Here the purpose of low, stable food prices is to keep costs of nonfood production low, by keeping the costs of labor affordable. Where food is not the primary commodity of agriculture to have comparative advantage, relatively low food prices will assist farmers, the change agents, to increase resource transfer, that is, their own labor time and capital, from subsistence food production into commercialized agriculture.

There is an interesting parallel. People have mentioned the paper by Haggblade, Hazell, and Brown on the existence of lower growth linkages from agricultural development in Africa relative to Asia.[1] The idea is that if you have an extra dollar of agricultural income in Asia, you will get more of a multiplier effect on overall growth as that is respent there, other things being equal, than would be the case in Africa. Household surveys in both continents have shown that fairly conclusively. In more recent methodological work, Haggblade, Hammer, and Hazell have shown that the reason you get that result is that in Africa you have a greater inelasticity of the supply of nontradeables over time than in Asia.[2] This is essentially a reflection of greater labor constraints in the African context. I am saying that those labor constraints are linked to food constraints. The key way to get growth multipliers up where comparative advantage is outside the food sector is, again, a low, stable food price, which will do something about the supply of nontradeables. This price stabilization should come primarily from freeing movement of foodstuffs, including imports, among regions.

This then is the particularly African trait of semi-open economies, which comes from high transport costs. The price of the main wage-good, food – you might say the thing that allows you to get the elasticity of nontraded inputs up – is determined largely by weather, because the intersection of domestic supply and demand is occurring somewhere between widely separated import and export parity prices for food. Put differently, there are lots of places in the world where you have 50 percent production fluctuations in grain production. There are not many places where you have 50 to 70 percent price fluctuations year after year in the major grain, and it is because of the structural characteristic of high transport costs that delink domestic economies from world economies. So what do you do about it? You either improve your domestic food production, where it is appropriate, or you improve your food import system.

I think it is important to look at agricultural growth linkages more formally when developing a strategic vision for where to go with agricultural development policy in a specific circumstance. One of the key aspects of linkages is, what do you count as a benefit? When you actually do a linkage study, you have to define what is beneficial. Typically, it is done within parts of a country or perhaps on a national level. It has never really been done in a region in the sense of West Africa or SADCC. And anything that slips out of the defined zone is considered a loss.

Linkages are fundamentally a closed-economy concept. Most linkage work has been done in relatively closed Asian economies. It may well be appropriate to consider only the impact of agricultural development within small areas of Asia, but it clearly is not appropriate in less densely populated and more spread-out Africa. In Africa, the capturing of linkages, that is, the ability to use agriculture as a motor of growth, must involve free regional trade within large areas. That is certainly true in West Africa for trade between the Sahel and the coast. To really capture the overall development benefit of agricultural development in that case, you have to look at the impact of something that happens in Côte d’Ivoire on something that happens in Burkina Faso, and vice versa.

"We tend to think that most nonagricultural activity is urban, but it turns out most nonagricultural activity in Africa is rural."

Liedholm

What I should like to put forth is a description of what I would call the missing part of the private sector in most countries and particularly the missing part of the rural sector. Specifically I want to talk about micro-enterprises and small enterprises. These are enterprises doing anything other than agriculture. Small enterprises employ fewer than 50 persons; micro-enterprises have 10 persons or less. I would like to provide information based on detailed studies that we've been carrying out as part of the Gemini AID project in numerous countries including 14 countries in Africa. Essentially what we've done as a first step is a baseline survey of how many and what kinds of small and micro-enterprises exist in these countries, using cluster sampling techniques that give representation to both rural and urban areas so that allegedly you can blow up the results and get some aggregate findings. The numbers are coming in rapidly and they haven't all been put together. But it may be of some help as you think particularly of the role of these small and micro-enterprises and their interaction with agriculture in particular. I suspect I can inject a small glimmer of optimism about a part of the economy in Africa that may have some dynamism built into it.

Clearly in rural areas, there's lots going on besides agriculture. If you look at the conventional measures that have been put forth based on population censuses, in the rural area maybe 10 to 20 percent of the labor force is engaged in something other than agriculture. But those numbers understate the amount of rural nonagricultural activity going on because it misses the part-time activity. It misses the activity going on in the rural towns up to 20,000 inhabitants that are agriculturally based types of towns. And if you include the small and micro-enterprise activity going on in these areas, or combine that with the amount of income generated, you find that we're not talking about 10 to 20 percent but as much as 30 to 50 percent, sometimes 60 percent, of employment or rural household income coming from nonfarm sources. So you're dealing with a component of the economy, part of that missing iceberg, that is important. And the linkages to agriculture are important. One surprising finding is that if you look at small and micro-enterprises, both rural and urban, in Africa, in every case two-thirds or more of the enterprises and the employment generated by them are in rural rather than urban areas. We tend to think that most nonagricultural activity is urban, but it turns out most nonagricultural activity in Africa is rural.

"The productivity of small and micro firms tends to exceed that of the larger

What are the nonagricultural activities we're talking about? There are two big items – manufacturing and trading. Counter to what Haggblade reports, we find that manufacturing tends to be more important than trading. If you look at manufacturing data from these studies, both rural and urban, and then include manufacturing or industrial activity including large-scale manufacturing in Africa, again the vast majority of manufacturing employment, whether it be large or small or micro, is more rural than urban. Yet, Africa is still a rural rather than an urban phenomenon. So again, that point is crucial in terms of understanding the elements.

The big three manufacturing activities are consumer goods – but not just food processing – textile production, and wood production. These enterprises are small and micro. The majority have fewer than five workers. So really small enterprises dominate the scene in Africa. That raises questions from many people: They're really not manufacturing firms; they're really not viable trading firms; they're really not very efficient; they're a place to soak up excess employment, but they're low-productivity activities. I can't give you any findings from the marketing or trading side, but I can give you information from the manufacturing side based on detailed follow-up studies that we've done in a couple of countries. When you compare these small or micro-manufacturing firms in rural areas on a product-by-product basis with their larger scale urban counterparts – in other words, a one- or two-person textile firm in a rural area with a large textile plan in the capital city – and do measures, even total productivity measures, with very detailed information on profitability, where you put in border prices and you attempt to put in the shadow prices to eliminate much of the distortions, in most cases the productivity of small and micro firms tends to exceed that of the larger firms. Now, there are quality differences you have to take into account, but even so they're fairly robust figures.

One other interesting sidelight: We group firms by size – 1-person firms, 2- to 20-person firms, 10- to 50-person firms, and then the larger beyond – and of all the categories below the 50, the one that tends to have the lowest efficiency of all is the 1-person firm. But there's a quantum jump in efficiency once you move from a 1-person firm in most enterprise types up to a 2- to 10-person firm. So you don't have to get to 10 persons or more to get that jump in efficiency. It comes very quickly as long as you emerge from that one-person size category. So evolution of enterprise size from just one to just slightly bigger can give important increases in economic efficiency.

That leads me to the transformation element. The most recent studies we've done have tried to look at the changes going on in these small and micro-enterprises. Have they been growing? Have they been not growing? Have they evolved to slightly larger sizes that would be more efficient?

Table 1. Average Annual Growth Rates of Small and Micro-Enterprise Employment (%).

Country	Urban	Rural[1]	Entire country
Kenya	21.2	N/A	N/A
Lesotho	12.2	4.3	5.9
South Africa	23.9	N/A	N/A
Swaziland	12.3	5.2	6.6
Zimbabwe	9.0	6.7	7.4
Botswana	17.4	8.7	11.4
Nigeria[2]	15.6	N/A	N/A
Ghana[2]	11.9	N/A	N/A
Niger	8.9	5.4	6.4

Sources: Liedholm and Mead (1992); Daniels and Fisseha (1992).
[1] Rural includes rural areas and secondary towns.
[2] Manufacturing enterprises only.

The figures of the growth rates of firms from the time they started show a couple of interesting things. One is the difference in the growth rate of individual firms, between the rural and the urban (Table 1). The rural growth rates are smaller than the urban by almost half. But even though there's this differential, in the rural areas the growth rate of employment of these enterprises is not insubstantial, particularly when most countries are looking for any growth, and here you're getting growth of 5 or 6 percent. What you're really getting is one-person firms very often evolving to the two to five or getting into a more efficient range. So there's a dynamism there.

There's another thing I want to mention about dynamism. Only a third of the enterprises grow at all (Table 2). Two-thirds of the enterprises stay the same size. So if you look at the mix, there's one-third that are growing. When I give you those aggregate figures, they include both the growing and the nongrowing, so the growing firms are growing much more rapidly than those numbers would indicate. That indicates it's important to be able to sort out why some firms grew and some firms stayed the same size.

Another part of the dynamism is that new firms are being born all the time and some existing firms are dying. There's a turning going on. We find that about 10 percent of these firms come into existence every year. But about 8 percent of the firms also are dying every year. We now have some information on births and deaths. We're finding that there's a tremendous churning going on that is missed by the aggregate figures and that firms are emerging and disappearing right and left. We've begun to look at dead firms, firms that disappeared, and the reasons for their disappearance and to compare them with the firms that survive. We are discovering several things. Most firms die in the first 3 years. Half of them die because business is bad, but a third of them die for personal reasons – the entrepreneur retires, gets sick, something like that. And then in Nairobi, a third of them die because the bulldozer came. Government action. Boom. Let's plow them in. That is another reason for disappearance. We are now trying to compare the characteristics of firms that survive versus those that don't survive. And we're also looking at the characteristics of firms that expand versus those that stay the same size.

Table 2. Composition of Employment Change in African Small and Micro-Enterprises (%).

Country	No change	Expanded	Contracted
Kenya	59.6	37.6	2.8
Lesotho	73.6	18.2	8.2
South Africa	49.4	48.3	2.3
Swaziland	68.9	28.3	2.3
Zimbabwe	77.0	19.3	3.7
Botswana	65.8	26.8	4.8
Nigeria	32.0	46.0	22.0
Sierra Leone	58.0	39.0	3.0

Sources: Liedholm and Mead (1992).

We did a study recently in Zimbabwe that startled everybody. We found many more enterprises than they thought existed, and most of them are rural. How could that be? But we had also looked at the growth rates of those firms in the low-productivity areas of agriculture and the high-productivity areas. And we find, of course, faster growth of firms in the higher agricultural productivity areas than in the lower agricultural productivity areas, which seems to be verified in a couple of other countries. Again, that stresses the important links between agriculture and the nonfarm economy.

"On balance, country after country, the policy is biased and skewed against the small and micro firms compared with their larger counterparts."

Then there are the linkages issues that have already been mentioned. I don't want to go into detail except to remind you that in the Haggblade-Hazell kinds of studies, there are two kinds of linkages. There are the consumption linkages from agriculture and there are the backward-forward linkages with agriculture on the production base, both as inputs and as process. Obviously, the consumption linkages are the strong ones. Those are the ones Hirschman always forgot about. And the backward-forward linkages tend to be lower in this case and particularly lower compared with Asia. Reasons have been put forth to explain why these aggregate linkages are lower in Africa than in Asia, like the lack of the infrastructure and less irrigated agriculture, which maybe give less linkage, lower density of population, and all of those. But you want to be careful about thinking those linkages are less and cast in stone because there's evidence that they are probably understated in African official data and that if you looked at it more carefully they're going to be somewhat higher. Also, the type of agricultural strategy you follow has implications for different types of linkages. A mechanization strategy or a large-farm strategy has different kinds of linkages, let's say, than a small farmer, biotech kind of strategy. The problem is again that the data on the bigger firms and farms are not as good as they should be. So conclusive answers aren't there. But it clearly indicates that, as you think of alternative strategies, you better think of the implications of those strategies for the linkages back to the nonagriculture sector. And even if they're lower, they are not unimportant.

I must interject one other point. It appears that since the 1980s there has been what someone called a sea change in the real wages in Africa. They've been coming down, which has implications as you think of export potential and other things.

What do you do? I reiterate a point about the urban bias. If you stack up the policy environment as it affects firms of different size and location, big versus small, some things favor big, some things favor small, but on balance, country after country, the policy is biased and skewed against the small and micro firms compared with their larger counterparts. I'll give an example: maize milling in Zimbabwe. There are five big mills in the capital refining white maize. These large firms are able to buy the grain from the marketing board at 50 percent subsidy. All the small mills pay the official price. That's not a level playing field, particularly when one's a hammer mill, one's more refined. If you've got food shortages, you want as much as possible of that stuff churning out. You don't want to refine everything out. So those kinds of distortions exist. It would be great if you could identify them from these kinds of studies. All it takes, instead of complicated direct credit programs is a stroke of the pen to get the policy for the large mills changed. Don't give them the subsidy or at least let the little firms compete on equal footing, particularly if it's efficient. And rather than call it deindustrialization, I'd call it a movement toward more efficient import substitution, from the inefficient larger to the more efficient small and micro. Now, that's not going to be true in every industry and every product group, but there are lots of them out there and lots of them in rural areas where that can make a big difference.

"It's not that people are pessimistic about Africa. It's just that they're more optimistic about some other parts of the world."

Lundberg

We'll now move from the small and medium to the bigger...

Maynard

The biggest.

Lundberg
... with Mike Maynard of Cargill.

Maynard
Cargill is an optimistic investor. We don't invest money if we are pessimistic about where it's going. Having said that, we're like every other company. We have a limit to our resources. We have internal discussions, arguments, feuds, gunfights over where it should go. And, we are victims of circumstances as well. At a meeting last week where we were talking about investment strategies into the former Soviet Union and Hungary and Poland. That adds further demands on the limited amount of money that we have. It's not that people are pessimistic about Africa. It's just that they're more optimistic about some other parts of the world. And that optimism may not be well founded. It may not be founded on anything. It's just a fact of life they may get more excited when they talk about the former Soviet Union, and they may get less excited about Uganda or Tanzania because they've heard the story before. I don't think that we have an answer for it, although we have a series of criteria that we run through. We are victims of personalities and opportunities the same as every other company.

Cargill is moving away from being a pure trading company where the quality of what we were trading didn't really matter in certain instances because there's a market for everything. There's also less dependence on volume because there are always niches for products. But as Cargill moved away from a trading company into agricultural processing, an agribusiness entity with tradings and add-ons, we've become much more aware of the volumes and qualities. I think Cargill's disadvantage, as opposed to some investors in Africa, is that we're not farmers. We don't want to go into The Gambia and grow groundnuts. We don't particularly want to go to Tanzania and grow cotton. But we're happy to process it. We're happy to value-add it. We're happy to ship it.

That brings me to problems for agribusiness in Africa. I can go back through institutional stability, level playing field, ownership of assets, value of assets. We're very aware of vested interests, and I think those are manifested when we talk about acceptance of policies at a certain level within government, and that's really, "sign on the line," because you won't get the money otherwise, and in what actually happens at the operating level where we're talking around a table as to exactly which nut and bolt or which field or which processing plant we actually want to get involved in.

We're affected by the need to have local partners. We're happy to work in conjunction with partners, but there is a problem with lack of capital, lack of technical and marketing know-how. I think that, in going back to the level playing field, we are as an expatriate investor not starting from the same base as a lot of local people are.

We do try as an investor to be innovative in the way that we structure deals. We are prepared to get involved downstream with the farmer, and we are prepared to go upstream as well in terms of value-adding. In The Gambia, we've been asked to look at the acquisition of the groundnut-processing business. Why don't you come and look at the processing plant? Our question is, well, do we really need groundnuts in today's world? Who's buying groundnuts? Shouldn't we be looking at whether we need to process groundnuts at all, rather than shouldn't we be the people processing them, and shouldn't we be using this facility?

I think we run into problems with existing institutional positions. When we look at some of the ex-socialist states, we run into up-country problems with the old unions, the cooperative societies, the regionalism, the borderism. And this goes beyond tribalism or race. It's entrenched positions. It refers to the point I made earlier about people being wary of change and not fully conversant or not fully able to respond to changes that are being made at policy level or at the government, presidential, prime ministry level.

I can turn around to say that most of those problems can be turned into opportunities. We're optimistic. We want to invest in Africa as we want to invest in the rest of the world. We have certain criteria, as all private investors have. We're not looking at externalizing large sums of money. We're happy as an investor to reinvest in the country in which we earn those funds. One of our problems in some of the less well-performing countries is to generate enough funds for the next investment, and that's not the same as all companies that are investing in Africa or Asia.

Lundberg

What we'd like to do is push the dialogue out from this end of the table and hear your view on the role of farm linkages to the modern economy.

Wolgin

I'm particularly interested in Carl's data. If in fact you have nonfarm rural employment growing at about 6 percent a year and the total rural population is growing at 3 percent a year, and, say, the share of nonfarm activity in terms of labor is about a third, and that takes place over a 24-year period, what happens is that if you start with the nonfarm activity being 30 percent, by the end of the 24 years, it becomes 60 percent. And if agricultural production's only increasing by about 2 percent a year, in fact the productivity of labor doubles even though it looks like it's not growing very much because agricultural production is still growing less than the population is growing. If those numbers were the case, you wouldn't see high rates of macro increases in production. You wouldn't be measuring what's going on in the nonfarm sector, which you don't measure anyhow. But in fact, labor productivity, or average product of labor, is increasing fairly substantially over that time for whatever reasons. That's a possibility.

I once heard you say that most nonfarm activities were constrained by the demand, and the demand was somehow related to the growth of agriculture itself. So is it possible for nonfarm rural activity to continue growing at a much higher rate than the agricultural sector itself is growing?

Timmer

Carl, before you answer, let me give another calculation. And it's a different scenario. I want to see which one you think is more plausible, because I had the same set of queries that Jerry did; more or less the same stylized facts. I think I started with a higher percentage of rural employment in the nonagricultural sector that he did. But it's 6 percent in your micro- and small enterprise employment growth, half of the rural employment in the micro- and small enterprise sector rather than in agriculture, only half of it in agriculture. But the nonurban employment is about 70 percent of the total. If you assume that nonagriculture growth is zero, that is, the urban economy is absolutely stagnant and if you assume that real agricultural growth is zero, then employment is growing at 2.1 percent a year. This is probably a little low, but is this a demand push of labor into these micro-enterprises or is this a pull of labor out of agriculture because there's a dynamic demand for the output?

Liedholm
Those are interesting calculations that you have come up with, but be careful on the growth-rate figures I gave you. Those are the growth rates of existing firms. So that is not necessarily the growth rate of all of those activities.

Wolgin
But you said that there were more firms being born than dying.

Liedholm
It looks like it.

Wolgin
If that were the case and the size at birth of the establishments are the same, then that is the same.

Liedholm
It looks like it, but I'd want to be a little bit more careful on the birth and death rates. We need a little more time. It's possible that the net creation of employment coming from net births over net deaths may also contribute to this particular point. Where does the demand for these products come from, as you say? If you're in the rural area, clearly it's coming from rural households predominantly but not exclusively, maybe 70 to 80 percent. But it's a major source and talking about increments of demand, you're looking at increments of household income coming hopefully before increases in agricultural productivity or somewhere in the economy. But there's an added dimension – import substitution seems to be accounting for some of this growth rate, which may or may not be able to continue. In other words, a substitution of a domestic market for clothing and some other things that may have in the past been supplied by either imports or large urban firms. Over the last few years we've seen this switching and that the domestic market is being satisfied by smaller firms. So that part is not tied to the growth of agriculture. The question is, what's the balance between the two? And that is another thing to investigate.

Another related point, and I think it alludes to what Peter was saying, how much of the growth of employment is demand pull because there's a demand out there for it? How much of it is a supply push? They don't have any other opportunities. They're just moved into this as an activity of last resort that may provide a building pattern, but really isn't contributing to growth. We have some preliminary information on that from Kenya, but it isn't rural, it's urban. In the Kabara settlement area, Joan Parker has tried to look at the increase in employment in small and micro-enterprises over time, figuring out how much of that is demand pull and how much is a supply push – just sort of a sponge effect. She hasn't looked at the trading part, but in the manufacturing part of it, or the major subsectors, about two-thirds is demand pull. And only a third was sort of a push back in.

Delgado
This is an absolutely fundamental issue: Can a growth strategy based on rural, small-scale enterprise sustain itself over time unless agriculture follows? The answer basically depends on whether you're dealing with a closed economy, an open economy, or a semi-open economy. By semi-open I mean one with high transport costs for bulky items of the kind we were describing earlier. In a closed economy, as in the Johnston-Mellor article,[3] clearly rural nonagricultural enterprises cannot grow all alone. That's the balanced growth area. You need to have both

agriculture and labor-intensive industry growing along the same path. Otherwise you don't have a sustainable growth process. In the pure open economy of the Latin American model, it is a non-issue because you only have small-scale enterprises if they make sense in an export sense or producer-tradeables sense. Rural small-scale enterprises will sink or swim on that basis, not on whether agriculture does anything. And if you need more food you'll import it at a constant world price, as a price taker.

The reality of most of Africa is that it is a semi-open economy. Whether or not a growth path is sustainable depends largely on how the food-supply question is managed. Because if it's not managed right, if the sectoral policies that either foresee the growth in production that's necessary or the cost reduction in transport that's required do not in fact occur, as at present, a strategy based solely on the promotion of small-scale nonagricultural enterprises is not a sustainable growth pattern.

Sahn

These figures on employment creation say nothing about value added for workers. In looking at retrenched workers, particularly in urban areas, we're finding enormous increases in new enterprises, but if we look at the value added per worker, it's extraordinarily low. It's not subsistence level. It usually takes two or three people in the family to eke out a living to feed the household.

Related to that, in our study in Guinea, about 85 percent of enterprises are single-person enterprises. Another small percentage are two-person enterprises, but those two-person enterprises are two people from within the same household, a mother and a daughter, usually 6 or 7 years old or so. What I'm saying is there are virtually none of these more-than-one-person higher productivity enterprises that Carl alluded to earlier. I'm curious whether he's finding the same thing because it's really not such good news if these enterprises are low-productivity holding pens for people who lose their jobs as a consequence of resource constraints in rural areas.

Hobgood

Look at two pieces of information that were talked about this morning: 30 to 80 percent of cash income is from nonfarm sources, and the fact that the linkages between the farm and nonfarm activities are very low compared with Asia. I'm wondering what the policy implications of those two pieces of information are? Some have, for example, drawn the conclusion that rather than get involved in agriculture, why not put more emphasis on education – increasing the productivity of people who are working in the nonfarm activities – or on infrastructure.

Reardon

There has been a lot of reference to the northern Nigeria work of Haggblade and Hazell.[4] In comparing some of the recent Sahel survey findings, for example, in Burkina Faso, Niger, and Senegal, we found that the share of off-farm income is much higher than what was found in the northern Nigeria studies, which were done earlier.

I think that the situations are quite different. By contrast, there is quite a lot of income diversification. But in the excitement of finding out that in many areas of Africa there's a lot more income diversification than people had thought – that the traditional image of the autarchic subsistence household didn't hold any longer – and the excitement in the policy realm about what that might mean for technology adoption or food security, etc., I think it was forgotten that, certainly in the Sahel, most of these activities are based on agriculture, either forward or backward linkages in the production sense.

"At the bottom income level, much more of the off-farm income comes from labor. It's the middle groups that have links directly back into agricultural production. And then the top quartile is much more diversified."

In work using various data sets in the Sahel, we have found that all of the small-farm activity off-farm was directly linked to agriculture in the Guinean, or high-potential, zone. In the northern zones, about 80 percent of those activities were directly tied to agriculture. It would be a mistake to say that somehow these small-firm activities are just hanging there in space unconnected to the agricultural roots of the area. Where they aren't connected to local agriculture, we've found that they're connected to, for example, coastal agriculture or plantation migration. Or in the worst of cases, they're connected to the tertiary sectors in the cities, which is fed to a large extent by foreign aid. So that if the foreign aid, which for example feeds to a large extent the tertiary sector in Dakar, is reduced, then a lot of people going back to the countryside will again depend even more on local agriculture or, via migration, on plantation or humid coastal agriculture.

The key policy issue is the relationship between agriculture and nonagriculture at the household level. The issue is, given a certain level of agricultural performance, how to get households in zones that have potential for growth-linkage activity to invest in those growth-linkage activities and with the profits that are generated by those activities to reinvest in agricultural productivity investments at the household level – to take the money that they got in manufacturing and commercial activities and buy fertilizer, buy animal traction. In semi-arid West Africa because of terrible credit constraints, underdeveloped credit markets, etc., we've found in that own-financing of investments is necessary. There has to be a way to encourage reinvestment into the farm activities and start a growth spiral with a solid base of local agriculture.

Liedholm

It's difficult to get accurate data on anything related to value added or return per worker in the small and micro-enterprise areas, just as it's difficult at the farm level. So I can't give you much information on that for many countries in Africa, but in a few countries we have some very accurate data from in-depth, twice-weekly interviews. But I can only answer that with respect to manufacturing. I can't give you any information on the value added or return on trading.

On the manufacturing side, it turns out, the value added per family member or per unit, if you use that as the measure or unit of labor, if you use that, is not bad. It's higher. It turns out that it's not huge, but it is high enough that it will give a return above the agricultural wage if you took off the other elements of it and give a reasonably good return. Of course, because capital on a flow basis is such a small element, it is really the labor part of value added per worker or the profitability part that is the major element. And when you put all of that in as the return per family worker and then compare that with the equivalent wage – you do all the adjustments – it turns out for most of the manufacturing activity, it's substantially above on a wage-per-hour basis, or however you do it. The prevailing rural wage and even some of the industrial wages are quite good. On the other part of it though, I made this important distinction between those of a one-person or two-person family activity and those that hire workers. What I was saying is that there is a quantum jump in that value added per worker or the return when you start hiring people or have a slightly larger activity.

Sahn

Are most of the manufacturing firms the larger enterprises and do you have any idea what share of the enterprises are manufacturers?

Liedholm

In the rural areas about 60 percent are manufacturing. This is the big surprise. Manufacturing is a rural phenomenon more than an urban phenomenon, and it tends to dominate even trading.

Ackello-Ogutu

What are we talking about here? I think it's a question of definitions. When you are referring to Africa and you are talking about small-enterprise manufacturing, should that be interpreted in the same context, for example, as in Southeast Asia or Latin America or in the U.S.? What products are we talking about? What is being manufactured? Where is it going?

"There has been a conscious effort by a number of households to diversify income sources and a perception that, in spite of the increases in labor productivity in agriculture, nonagriculture

Peters

I find in Malawi that it also makes a difference to look at off-farm activities and their links to agriculture. They vary within the households by income levels. At the bottom income level, much more of the off-farm income comes from labor. It's the middle groups that have links directly back into agricultural production. And then the top quartile is much more diversified.

A question to the panelists: One of the major areas of private-sector agriculture that seems to be now starting in Africa is contract farming – can they comment?

Gilbert

A comment on the demand pull versus supply push: The animal traction revolution in Senegal and The Gambia illustrates demand pull. Land is available and could be more intensively cultivated. The fact that area expansion did not accompany the increased use of traction strongly suggests that a major amount of labor has been withdrawn from the agricultural sector over the past 20 years. I don't think the shift has just been to more disguised unemployment. There has been a conscious effort by a number of households to diversify income sources and a perception that, in spite of the increases in labor productivity in agriculture, nonagriculture remains a better bet.

I would love to see a study of what resource reallocations result when households adopt animal traction. We also should look at the difference between rich and poor households in this regard. One theory is that the rich are adopting animal traction but not releasing labor, while the poor are releasing labor (possibly to work for wages on the larger farms). The set of observations we have is consistent with some combination of both happening.

"If you're an AID officer and it costs somewhere between $150,000 and $250,000 to keep you in the field doing your job, you can't spend a lot of time doing a credit analysis of an enterprise to make a $300 loan, and you certainly can't go out and spend time trying

Maynard

I can give a perspective on contract farming. Our contract farming extends to seed multiplication, which is a bit specialized in that we want to maintain control over the quality of the inputs, the quality of the management, and the quality of the seed that we're trying to produce for further distribution. So it's important that we maintain that overall management. We're also able then to build in, to an extent, credit financing for the farmer, and we're able to manage the inputs, which generally have to be imported, whether that's fertilizer or pesticides. So in a small manner, we're able to reenact what I think we generally know is contract farming. But we don't pretend that we have the resources or the desire to do it on the scale of some of the large plantation owners. I suspect that some of the quantities that we work in are acceptable, whereas traditional vested interests that monopolize a fertilizer or pesticide transfers across borders are not worried by the impact that we would have. I'd say it would be a greater problem if somebody wanted to manage plantations.

Spangler

I want to move from some of the high-level economics to a problem that AID has and that's micro-enterprise loans. Under the earmark that Congress puts on AID, we're supposed to lend micro-enterprises $75 million a year in loans of under $300 each. That's an awful lot of loans. As I was listening to the conversation here, I heard little about capital limiting these small and micro-enterprises. Particularly if it's 1- and 2-person firms, the mother-and-daughter firm, and they jump from 1 to 2 to 5 to 10, it strikes me that the capital will come from the profit or, if it's that small an enterprise, I don't know how you differentiate between retained earnings or retained profits and savings. To me they're the same thing. So I would ask, should AID be interested in micro loans? Or taking off on your story about the Zimbabwe millers, if we could get Zimbabwe to change the policy of giving a 50 percent cut in prices to the big millers, that is, in effect doubling the price to the small millers or doubling their profit margin, that would provide more capital, and we wouldn't have to worry about doing a credit analysis or collecting the loan.

If you're an AID officer and it costs somewhere between $150,000 and $250,000 to keep you in the field doing your job, you can't spend a lot of time doing a credit analysis of an enterprise to make a $300 loan, and you certainly can't go out and spend time trying to collect it if it isn't paid back. So my question is should we not make a determined effort with the help of you thinkers in this field to try to convince Congress that this is a dead end?

Reardon

In the West African studies, we've basically been finding something similar to Pauline Peters' findings in Malawi: that the poorest households are doing the labor-intensive activities. The richer households are doing the capital-intensive activities, more remunerative activities, and it appears that there's definitely a capital constraint and a credit constraint so that the degree of income diversification is much higher for richer households than for poorer households, which is exactly the opposite of what you find in South Asia where there are more labor-intensive activities available to the landless farmers, so they can diversify. In Asia, one finds a U-shaped curve, high diversification for the poor, high diversification for the rich, and then in the middle, fairly low diversification. In semi-arid West Africa you have low diversification for the poor who are hit with the full brunt of fluctuations in crop output. The richer households are able to diversify and compensate for those kinds of fluctuations. It seems to be primarily a credit and capital issue.

Liedholm

When one does careful studies of the small and micro-enterprises, whether they be rural or urban, some entrepreneurs will say they have faced no constraints, but the vast majority will say they do face some constraints. If you take them at their word in terms of their perceived constraints, it turns out, first, they don't call it a capital constraint but a short-term cash constraint, and second, they will say it may be a lack of demand – a demand constraint. Things like managerial assistance, technical assistance, policy, and taxes come down further on the list.

The *Wall Street Journal*, of all places, did a review of poverty lending and called it the hottest topic in development since the green

You can ask whether entrepreneurs really know what their constraints are? Are they telling the truth? And there are so many other problems an enterprise or a farmer has, it may show itself as a capital constraint or a cash constraint, but it may be something else. But it is pretty consistent that short-term cash constraints do loom large for existing firms. And it's a cash constraint that may be last just for 1 or 2 months. You're a tailor. You get an offer for a job shop type of operation, you get an order for a dress. But you need funds to get the material. You need it quick and your family and friends may not have it. You can go to the informal market and maybe get it at 150 to 200 percent rate of interest, but it may be difficult.

So cash constraints seem for small firms to be important. And then the issue is whether AID can alleviate that constraint in a cost-effective manner, so it doesn't cost AID $1,000 to make a $50 loan, which in fact happened to the World Bank at one stage in their small lending schemes. There seems to be evidence, though, that the capital market is incomplete in most of Africa. It doesn't reach very far. There's a huge financial frontier that's unmet, and it doesn't get down to the small and micro firms. And so there is, you can argue, a legitimate role if you could figure out a way of letting small and micro-enterprises have access to funds, not at subsidized interest rates, but at interest rates that reflect the scarcity value of the capital, and if you can get the administrative cost down. A lot of what are called poverty-lending schemes have developed, allegedly, techniques to screen loans in a cost-effective way – character-based lending. They have started out in Asia and spread to Latin America making $50, $100, $300 loans on a short-term basis with astronomically high repayment rates, 95 percent. You don't have to spend a lot of money in administrative costs getting them back. And they have proven to be pretty successful. There is some evidence from several countries that it does seem to be working reasonably well. Transaction costs are reasonably low and the funds are coming back at a very high rate.

So it would seem that it's not something that you would necessarily want to discuss. Last summer the *Wall Street Journal*, of all places, did a review of poverty lending and called it the hottest topic in development since the green revolution. Now, that's way overstated, but it does seem to be working surprisingly well. It's one of the few things that seems to have some modicum of success. Because, remember, AID isn't making them. AID is the wholesaler. You're not going out and making those loans. Your trick is of course to find the intermediary who can do that. If you can find the intermediary to do that, it seems to be reasonably successful.

Just some quick responses to other questions: The definitions that we're using for manufacturing enterprises and trading enterprises are the same definitions that the United Nations uses. We're not talking about home production only, for example, in manufacturing. But it's manufacturing activity that's going on perhaps in the home, but maybe in a separate location. In textiles, somebody is making a dress, making pants. Metalworking. Somebody making hoes. They're done on a small scale, and they're not necessarily exactly the same products you see in a large firm, but they have many of the characteristics that are reasonably similar.

The vast majority of the markets of these small and micro-enterprises, particularly in rural areas, is the local community. There's a person making a product that's sold in the village, but at least 30 percent goes beyond, either to other villages or other larger towns. Some products are exported, but not a huge number. But at least 1 percent of the market is outside even the urban areas. And so the markets are potentially wide, although the key markets are local. They mainly come from the rural households.

Raw materials come from diverse sources. Some are local. Some come from other parts of the country. But if you do comparable studies of large and small in the same activity level, you find that the import content of the raw materials is much less in the small and micro-enterprise than it is in the large enterprise.

Timmer

There is a consistency check on what these products are and where they're going, and that's the consumption patterns of rural and urban households. The World Bank has been trying to figure out what's happening to standards of living over time. And David Sahn's group has been doing the same thing primarily with AID money. Neither of those groups have been seeing substantial increases in consumption of things purchased from markets. My sense is that it has been stagnation and erosion of real living standards that has been the problem through the 1980s and, if that's the case, then we do have a problem unless we are simply reallocating demand away from imported goods and formal-sector production to much more local indigenous small-scale rural production. It's a rejiggering of production, but it's not an increase in production. Does that seem to be the case?

Sahn

There is an inconsistency, no question about it. If you look at the composition of nonfood expenditures, not only are they very small, but there is very little change. And besides clothing, most of it goes for fuel and transport. Enterprises can play a role in providing those things, but there is certainly no evidence over the 1980s, or looking at the few longitudinal surveys, that we have any improvement in income or living standards. I still am perplexed where all these jobs and this increased productivity is going. It's not going into the official GDP figures because of limitations in how national accounts are done, but there is in fact little inconsistent about what one sees in terms of the living standards in household surveys relative to national accounts. Living standards in surveys are going in the same direction as national accounts. And what you're suggesting is going in an opposite direction from the both of them. Again, just based on limited experience in Guinea and Ghana, your findings are also a little contradictory to what we've seen.

Wolgin

Where do you have these longitudinal studies?

Sahn

I'm talking about where there are surveys that were done in the 1970s or early 1980s. For example, there were surveys done in Côte d'Ivoire in the 1970s. There were surveys done in Malawi in 1980. There were surveys done in Tanzania in 1975. There have been household budget surveys done in Africa before SPA existed. And the few comparative analyses that we've done show no improvement.

Based on the national accounts, I wouldn't have expected an improvement. But it would have seemed that per capita consumption in Tanzania had gone up by 20 percent since 1975. I would have been shocked. But again, there were four or five surveys in Tanzania in 1975 by Collier. We just redid it – same villages, same sampling frame – and we see no improvement.

Wolgin

I don't want to believe there's an inconsistency, but it's interesting and I don't exactly understand why. If you argue that some of this change is coming from import substitution, which would presumably come from structural adjustment, changes in the exchange rate, and opening up, one would expect to see different behavior in countries where adjustment is taking place and where it's not. And yet for instance, one of the fastest growing in terms of employment change is Sierra Leone. You don't see any pattern related to macroeconomic behavior if you look at these numbers. What are the dates? What's the time frame here? If the time frame here is 1990 to 1991, what I'm saying is irrelevant.

Liedholm

The figures here for all but Ghana and Sierra Leone are studies that were done in the last 2 or 3 years. But also remember that these figures on growth reflect the growth of the currently existing enterprises, at the time the studies were done, comparing what their employment and sales were now compared to where they were when they started. Now, some started 5 years ago. Some started a year ago. Some started 2 years ago, etc. The average age is about 3 years.

Cleaver

"In Côte d'Ivoire, where there has been an adjustment process but no real adjustment, the formal sector has actually collapsed, and we know that the informal sector has been expanding like crazy, simply replacing that formal sector."

In answer to Peter Timmer's question, unfortunately we don't have a lot of this social dimensions of adjustment data out yet. But, I'd like to speculate a bit. A lot of these micro-enterprise activities in rural areas have been around for a long time. They're traditional processing activities. After all, almost every agricultural product has been processed traditionally: bananas into beer, maize into maize meal. Similarly wood for fuel has of course been going on for decades if not hundreds of years. That's true for local clothing production, as well. So one would expect this to be increasing in rural areas at

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least at the rate of population growth, even if incomes aren't expanding. Population is growing at 3 percent per annum. Your figures for rural areas aren't that much higher than that.

Under structural adjustment, with import substitution there perhaps is some market being created. And with the collapse of some of the protected manufacturing industry, particularly in textiles and food production, there's a big market being opened. That may explain the increment over the population growth rate.

In Côte d'Ivoire, where there has been an adjustment process but no real adjustment, the formal sector has actually collapsed, and we know that the informal sector has been expanding like crazy, simply replacing that formal sector. So if you looked at the Côte d'Ivoire experience, you would see a combination of population growth in the rural areas motoring some of this stuff in a traditional way, plus substitution for the local production. And this is exactly Peter Timmer's explanation, and it's the one that my intuition tells me is probably correct in many African countries.

Reardon

First, beside the informalization and the population growth, there are two other factors that might explain the difference. One is that longitudinal surveys tend to follow a certain population, but not adjust their cohort to changing populations. So, for example, there has been rapid urbanization, let's say an increase in households that live in towns. When you're doing research or when you're doing a survey of rural consumption baskets, you won't be able to capture sales that are being made to small-town inhabitants from rural or farm industries. You're not capturing that because it's being made to a new group of people, a new cohort, that is not part of your original longitudinal survey. In other words, these are rural industries that are selling to secondary towns. The secondary town people are not in the sample or you're not changing the weighing to reflect the growth of those towns.

Second, while manufacturing is an important off-farm activity, I think that trading and services are also quite important. And longitudinal consumer surveys don't pick up trading and services so well, because those are often embodied in the final products that are being purchased. So you might find that they're still buying the same old millet, but maybe instead of processing it themselves, someone has started a small firm to process that cereal.

Sahn

One thing that concerns me about the import-substitution argument for increased manufacturing is that in fact most formal-sector enterprises collapsed long ago. They didn't collapse as a consequence of adjustment or they weren't done away as a consequence of adjustment, getting rid of inefficient enterprises. By the early 1980s, capacity utilization in Ghana and Tanzania and so forth was well below 30 percent. So formal-sector enterprises have been long dead and buried, by and large. In thinking through where this increased economic activity comes from – purely a hypothesis – but how about all the donor finance? Around Africa, with all the balance of payment support coming by the millions and hundreds of millions, all you've got to do is go and put in your bid, and you can import any raw materials you want.

Wolgin

But Botswana, Zimbabwe, South Africa, Lesotho, and Nigeria are not countries that are getting foreign aid. They're in fact countries, except for Botswana probably, where capital flows have been declining from external sources. Look at Ghana. Look at Niger. Kenya until recently wasn't on the downside. In Kenya up until recently, there were increased capital inflows. The South Africa thing is just a hypothesis and it's an element. But I think it's important to try to figure out where this growth is coming from. A lot of these countries have had a fair amount of foreign capital coming into them. So one could hypothesize that that's been an important element.

Maynard

A lot of conversation that I've been listening to is based on what the small business unit is doing. I'd like to put in Cargill's perspective.

The best example I can give is in Tanzania where quite recently we've looked into the cotton ginning business. We were offered the opportunity to bid on one cotton ginnery in the western cotton growing area out of a total of I think 21 or 22. Now, we didn't want to own 21 or 22. We didn't even want to own 18 or 19. We'd be happy with one. We'd be happy with two. But the real basis is it's the rules by which we're allowed to operate that one ginnery or those two ginneries, not that we want to own the whole lot. If we're told that we can only buy in a certain region because it belongs to a certain cooperative society, and we're not allowed to buy across borders or we're not allowed to pay the farmer the price that cotton is worth on the world market, then it doesn't matter whether we own one ginnery, half a ginnery, or 22 ginneries. We don't want to rule the world by buying it. We want to be able to compete with some parts of it as we're able.

How do you generate activities for people to get involved in? The privatization of the groundnut processing marketing board in Gambia is a good example. If we were to become involved in processing groundnuts, we would not necessarily want to run up-country stores. We would not necessarily want to run research stations. We would not necessarily want to run the Gambia River Transport Company. But for some reason at an institutional stage when people are discussing diversification, there seems to be a reluctance to set aside what should be available to the private sector and what should be the responsibility of government or parastatals or other nongovernment government-related organizations. And I would say, and this is a personal opinion, so don't shoot anyone else in Cargill for this, there is not a great enough degree of thought given at that stage.

There are plenty of opportunities in Gambia for the family unit, for the small company to become involved with a company like Cargill, taking over a major function, which in this particular case is the processing.

In addressing what is the role of the private-sector agriculture, I think the three points that the private sector can bring are a capital, technology, and world market knowledge. What Cargill can bring, and I'm not saying other companies can't bring, is a long-term view. Those of you who are aware of Cargill's structure know that there's not a shareholder or board of directors that reports to shareholders other than the family. So it doesn't have to make a profit in 3 months and double it in the next 3 months. We can take a longer term view. And the point I made earlier was, there is a reinvestment of profits policy in the country in which we generate.

One of the points that was brought up specifically was contract farming. Having said that we weren't in contract farming, I went on to give you my view of it. I only would add that there is not a genuine transfer of technology in contract farming. Contract farming is taking a situation in which you probably do not trust the local situation to manage itself so you put in management and provide all the inputs from the external. What you're bypassing is the existing infrastructure and the existing management.

I don't know whether we play on a level field, whether it's in Europe or the USA. The point is though that we probably understand the rules and know that they're not going to change between business close tonight at 5 o'clock and business opening tomorrow at 9 o'clock. We tend to believe that we have a lobby, that we have representation, that there's somebody getting screwed somewhere, but hopefully it's not us, and if it is we'll have a long time to think about it and we can adjust our policies to suit. In Africa we tend to feel that the rules may change tomorrow or the day after and that we're not part of that process of discussion and what is best for our general good although it might be you today and me tomorrow who suffer.

"A level playing field just means being part of a decision-making process."

On the general playing field, I think a good example is in Zimbabwe. I question whether Zimbabwe needs five official maize mills. A country of Zimbabwe's size probably needs one, but if you've got five friends and you don't want to upset four of them, then I suspect you support five of them and assume that you're not going to become friendly with number six or number seven. So a level playing field just means being part of a decision-making process. If we're committing ourselves to becoming involved in a business sector, an industry, a commodity, then our point of view should be as important as the other people involved. Not more so and not less so, but certainly equally so. And in lots of the societies, a lot of the countries in Africa, that just isn't the case.

Delgado

I am struck as I was last year by how there is a different set of preoccupations by the people who Scott has, very kindly and I think somewhat tongue in cheek, called the thinkers and doers. It seems to me the thinkers have all raised the question of diversification. Who, what, where is it going? And the doers have all said where is the handle? The commonalty of both groups is that this sort of diversification process is a good thing, but what do you do about it?

Now, coming to the thinkers, I'm struck by the fact that everywhere outside Africa where diversification is part of commercialization, diversification happens by household. That is, some people become blacksmiths and some people become tailors and so forth. What we're talking about in these longitudinal surveys in West Africa is households that are diversifying within the household, and that's a very different phenomenon. And even in Tom's studies and in Burkina Faso, it's interesting that in the north, one has diversification of the poverty-alleviation type, that is, survival – diversifying to taking in remittances. There are strategies that people employ in order to stay alive. They diversify out of a very risky agriculture. However, in the cotton zone in southern Burkina Faso,

"If we're dealing with an environment where local government's ability to set priorities and define what is needed to build capacity was destroyed during and right after the colonial process, we're certainly dealing with a dynamic environment where it's coming back again."

where nonagricultural income is directly linked to cotton income, it is cotton that is the motor of growth. Agriculture is not the motor of growth in northern Burkina, I can assure you. But agriculture is the motor of growth in southern Burkina in the high-potential area. And even though that diversification at the present is primarily within households, I would imagine that by 2025 you will have, as in the Punjab, the village watch repair store. You will have the X-ray store, and whatever. You will have diversification of that kind as the basis of economic growth.

On the doer side, where is the handle at present? It seems to me that it doesn't really matter whether capital is the constraint on micro-enterprises or whether micro-enterprises are a good thing or not. The point is that it's not appropriate probably for AID to be a banker for small loans, just because of the costs in doing that. Since AID can't do everything, I think that would involve stepping back and looking more broadly what can AID do? What has AID done effectively and more effectively than other groups? And if AID wants, and if Congress, I should say, wants these kinds of loans happening, how can AID work with others that might be better placed to provide those kinds of services? Certainly on the food-aid side, AID has worked quite effectively with NGOs and maybe this is an area where you might try to do that more, with African NGOs as opposed to expatriate ones.

Finally, what is the role for donors? It seems to me that the sense of the meeting has been building capacity for growth and the capacity is directly linked to political change. If we're dealing with an environment where local government's ability to set priorities and define what is needed to build capacity was destroyed during and right after the colonial process, we're certainly dealing with a dynamic environment where it's coming back again. AID should think about its relative priorities between the Senegals and the Malis, you might say, Mali being a case where local government is coming back and Senegal a case where it has been resisted and will continue to be resisted.

Notes

1. S. Haggblade, P. Hazell, and J. Brown, "Farm-Nonfarm Linkages in Rural Sub-Saharan Africa," *World Development* 17(1989): 1173-1201.
2. S. Haggblade, J. Hammer, and P. Hazell, "Modeling Agricultural Growth Multipliers," *American Journal of Agricultural Economics* 73(May 1991): 361-374.
3. B. Johnston and J. Mellor, "The Role of Agriculture in Economic Development," *American Economic Review* 51(Sept. 1961): 566-93.
4. Haggblade, Hazell, and Brown, "Farm-Nonfarm Linkages in Rural Sub-Saharan Africa," Haggblade, Hammer, and Hazell, "Modeling Agricultural Growth Multipliers."

Thursday afternoon, May 28, 1992

What is the Future of Agriculture in Africa And Its Interrelation with Other Sectors?

Panel: Kevin Cleaver, Tom Reardon, Chris Ackello-Ogutu, Hank Kaestner. Chair: Paul Guedet

Guedet

Our panel consists of Kevin Cleaver who will speak on the division of transformation in agriculture, Tom Reardon, on agricultural transformation, income distribution, and productive investments in West African tropical zones, Chris Ackello-Ogutu, on the subject of institutional transformation, and finally, Hank Kaestner, on the status of private business in Africa.

Cleaver

We were asked to give our vision of what agriculture in Africa might look like by the year 2025. Frankly, in the World Bank we're not able to predict commodity prices 5 years out with any accuracy, so it's a real task to do this. If you look at the data and try to make some projections based on current trends, the picture you get is terribly pessimistic. I don't think I have to do that for you. You can imagine it from what you've heard already, with agricultural growth moving at about 2 percent per annum, perhaps a little higher now but not much, and population growing at slightly over 3 percent per annum. Those two figures alone suggest what's coming down the road. Add to that the point that Pierre Antoine made about the degradation of the natural resource environment, to which I fully subscribe. Rates of deforestation are perhaps increasing. In the Sahel there may even be a structural shift in rainfall patterns. A lecture I attended at the National Science Foundation the other day provided some evidence that this may have occurred, probably related to vegetative destruction.

Questions posed to the panelists

1. What is the vision of a transformed Africa? What will the economy look like in 2025 and what will the role of the agricultural sector be? How commercial is agriculture? What proportion of employment will be related to agriculture?
2. In 2025, how urbanized is the economy? How much food is being imported? What is the stratification of land holdings? What is the tenure situation?
3. In 2025, what types of exports and what types of food are being produced? How large is the agribusiness sector of the economy?
4. In 2025, how much fertilizer is being used? Is there substantially greater irrigation?
5. In 2025, what is the role of private traders, cooperatives, and government in marketing?
6. In 2025, what will the status of the resource base be? Are production systems sustainable?

What I would like to do is set some objectives that would suggest some success at transforming agriculture and then look at what is required to achieve those objectives. The first objective relates to agricultural growth. After all, in most African countries, agriculture is still the largest part of GNP. It still provides the largest source of raw material for micro-enterprises and for industry. The largest industry is agro-industry. Agricultural growth is going to have to be one of the motors for increasing consumption because of increasing incomes of the majority of the population. In the near term at least, it's going to have to absorb a lot of that labor that is being added by population growth at 3 percent per annum. There's no doubt that an expansion of agricultural growth is going to be required. In the World Bank we've set a target, a very high arbitrary target, of 4 percent per annum, which is a doubling of growth. We can debate the arithmetic of that, but if you look at these figures it's hard to see an alternative that includes improvement to the food security situation, per capita income growth, some kind of employment absorption, and the rest of it.

The second objective is to turn that trend of deforestation around into one of afforestation and to arrest the rate of vegetative destruction with all of its climatic and negative effects on agriculture.

"There has been a decoupling, as a result of African government policy, between the hinterlands and the cities because of extraordinary urban bias in price, exchange-rate, and trade policy, as well as in public expenditure

The third objective is the linkage between agriculture and secondary towns and cities. I feel strongly that there has been a decoupling, as a result of African government policy, between the hinterlands and the cities because of extraordinary urban bias in price, exchange-rate, and trade policy, as well as in public expenditure programs that are oriented to the urban centers. That has to be changed. There has to be a neutral policy between rural and urban areas.

The fourth objective is trade. The opening of trade and regional and world markets is important. Free-trade regimes for small countries, characteristic of most of Africa, is absolutely vital. And I would expand it beyond the trade of goods. Mobility of capital, people, ideas, and technology is essential. So this fourth objective is more of a means than an end.

If we start to look at how these objectives might be met, it seems to me that there's a good chance that Africa will have a comparative advantage in the production of agricultural goods in the future, at least those kinds of goods that require labor. With population growth and the trends of real wages, Africa will be increasingly and relatively a low-wage continent. In a continent that has an advantage in applying labor to the production of things, the things for which it will, it seems to me, have an advantage in doing this for, are agricultural. I see this happening even more strongly as tariffs protecting agriculture and subsidies provided to agriculture in industrial countries are removed, and I think they will be removed by 2025, if not sooner. Second, as environmental issues become more important in the industrial countries, where application of chemical inputs becomes more and more restricted because of environmental regulations, I suspect the kind of low-input, labor-intensive agriculture that's likely to characterize Africa for many years to come will attain a comparative advantage. Now, this is all crystal-ball gazing. I'd be willing to change that argument, but at least it provides a vision of a possibility for achieving that doubling of agricultural growth. There is a possibility that things could fall into place that would permit Africa to do this.

A second condition that I think is likely to occur is the liberation of private activity in Africa. It's quite clear from research that almost systematically there has been a squelching of private activity by governments through direct means like posting gendarmes on the crossroads to stop maize traffic in Tanzania or through the establishment of monopoly trading enterprises and parastatal enterprises in Kenya. Those days are ending. I think that there will be an environment in Africa that's much more conducive to private-sector activity, and that gives us hope that agriculture stimulated by private investment can begin to grow.

The third condition is farmer participation in rural activities. Again, I think that farmer participation has been squelched in Africa. Few African governments have allowed cooperatives, for example, to function freely and autonomously. Most African cooperatives have essentially been government-run, -managed, and –controlled. Farmers groups, of course, exist in a traditional sense, but as soon as they have become formalized they have typically submitted to political influence, if not outright control. With democratization movements in Africa, this is going to change, too, and this bodes well for farmer participation. They are, and they will continue to be, I think, permitted to associate among themselves, permitted to sell their goods to whomever they please, instead of to the monopoly parastatal – permitted to act as economic and business agents. And this suggests again a potential for expanding agriculture growth.

On the environmental objectives, it's hard to paint an optimistic scenario because the trends are so powerful. If anything Pierre Antoine understated it, or at least understated the power of these trends. I think that it's going to require active government involvement. Peter Timmer's plea for the importance of government involvement is absolutely right, particularly when it comes to the environment. Natural resource management, environmental action plans, all of these are going to be important.

"Irrigation has been neglected. Compared with the Chinese and Indian experience, there is very little irrigation in Africa. Each time one does or reads a study, the potentially irrigatable area

Ironically enough, governments are going to have to get involved in bringing people into the process of natural resource management. It seems to me that can best be done through allocation of land or ownership of land, if you like, not necessarily private ownership of land, but, possibly, simple legal protection for traditional arrangements. As many of you know, traditional land tenure systems have been collapsing in Africa under the pressure of government nationalizations. Many of the projects that the World Bank has financed with industrial plantations in Africa have simply been the results of an expropriation of traditional lands from traditional people by government. And they're handling the land over to a parastatal enterprise or to one of these big private enterprises like Unilever that we all seem to like now.

This kind of thing has to stop. Local people are not going to conserve their environment when they have been expropriated. On the other hand, governments have a big role to play. They're going to have to provide that legal protection. They're going to have to involve people in natural resource management. This is one of the most difficult areas, but I do again see some possibility, a light.

In terms of investment, I would agree with those who have said that irrigation has been neglected. Compared with the Chinese and Indian experience, there is very little irrigation in Africa. Each time one does or reads a study, the potentially irrigatable area seems to go up. There's no doubt that irrigation has a substantial potential in some African countries, but obviously not all.

Finally, expanded investment in rural health education and family planning suggest areas for expansion of agriculture. After all, unhealthy, uneducated people expanding very rapidly with high incidence of infant mortality are unlikely to be innovators. It's no surprise that they're not innovators to a large extent. It seems to me therefore that investments that donors can assist in rural health, education, and family planning, as well as the infrastructure, can provide a good base for expanding agriculture.

The priorities for action to achieve a vision of a successful agriculture and successful economies in Africa are, first, a policy environment conducive to private investment and profit. This is going to require good government. It's going to require democratization or at least pluralism to permit people to participate. Farmers who are not allowed to participate, or even to sell their products to whomever they want, simply aren't going to invest.

Second is financial market reform. This may be exaggerating it, but it seems to me that institutions that facilitate savings mobilization and facilitate credit distribution are necessary for the kinds of investments that we're talking about because investments are going to have to be made, and they're going to have to be made by the private sector.

The third is improved technology creation and dissemination. It's research. It's extension. It's education. I say improved technology creation and dissemination not because I don't believe that there's technology on the shelf, but that technology isn't sufficient to motor agriculture for the next 35 years. The adaptation of technology to this vastly heterogeneous situation that you find in African countries is going to be necessary, and that's going to require better research and extension establishments.

I mentioned the full participation of farmers, which is the fourth priority for action. The fifth is improved natural resource management, land tenure. The sixth is rural infrastructure development and a sound urban policy. I mentioned earlier this morning that I thought that one of the neglected elements of agriculture policy is a sound urban policy. It seems to me that that's important.

And finally improved rural health, family planning, and education: If this combination of good government, governance, policy, and technology generation is put into place, it is conceivable that the apocalypse that one sees in looking at current trends in fact won't occur and that a scenario of rapid agricultural growth, reduction in the incidence of food insecurity, and arresting resource degradation becomes feasible.

Reardon

This is a welcome opportunity to think about what agricultural transformation might look like over the next couple decades in Africa. Given that that's risky and chancy, I thought that I would minimize the risk by focusing on semi-arid West Africa where I feel more familiar with the current situation. My talk will have three parts. The first is to use hypotheses about conditions that could occur, as well as extrapolations of current situations, to say how agriculture and the plight of the various populations might change over the next few decades. Second, I will try to hone in on the strategic and policy challenges to attaining sustainable growth within semi-arid West Africa. Third, I will suggest a few lines of a policy or development strategy approach to work toward sustainable growth.

In any country there are extremely different situations across agroclimatic zones. Some of the zones can be transforming quite rapidly, while others stagnate. And as a kind of a rough cut, I've split semi-arid West Africa into low-potential zones and high-potential zones. The low-potential zones can be thought of as the northern and intermediate bands of semi-arid West Africa, which are essentially the Sahelian and Sudanian zones, speaking agroclimatically, where there is fairly low potential for intensifying agriculture rapidly over the next few years, unless conditions changed radically. And then the high-potential zone, agroclimatically speaking the Guinean or southern strip, is thought of as a potential breadbasket for West Africa. I'll refer to those as the low-potential zone and the high-potential zone.

I'll start with a few stylized facts and predictions. The first is that agriculture, especially in the northern, low-potential zone, is extremely unstable and risky. Over the next couple decades there's little promise of that instability declining greatly. There seems to be good chance of extreme rainfall instability, with droughts interspersed with very good years for the next several decades and very bad prospects for large increases in either large-scale or small-scale irrigation. Moreover, for the next decade or maybe two, it's improbable that there will be sufficient fiscal resources in the coffers of any of the semi-arid West African countries to be able to stabilize prices in the way that's been described in Indonesia. Finally, the transaction costs are high for transport of goods between these countries, and that's unlikely to change quickly so that the potential for trade among the countries will be low for quite a time to come. That low potential for trade means high potential for unstable prices as supply and demand are bottled up in local institutions.

"That low potential for trade means high potential for unstable prices as supply and demand are bottled up in local

Second, again stylized facts and predictions, there are very different prospects for agricultural performance from one agroecological zone to another. For example, agriculture in the high-potential zone is much less risky. Instability is much less. And yet, for the moment, about four-fifths of the population, for example in Burkina Faso, lives bottled up in the Sahelian-Sudanian zone. That is, the population is bottled up in the low-potential zone while there is a large, undersettled high-potential zone in the Guinean area to the south.

Third, there is high population pressure and land constraints in the low-potential zones. Some work done by Hans Binswanger, for example, found Niger comparable to Bangladesh in terms of real population density and population per unit of land in carrying capacity terms. So there are real land constraints in some of these zones with the lowest agricultural potential and large overall populations. But I think that over the next few decades, there will be a movement of these people to the higher potential zones in the South, especially as disease problems and infrastructure problems are mitigated in the South. Hence, just because of the differential in the productivity between the low-potential zone and the high-potential zone, there will be a rapid ratcheting up of agricultural output by these new migrants from the low-potential zones. Even if there is no intensification, I think there will be a burst of growth in that area. But that means that if there's no change in technology, etc., the environmental problems that plague the low-

"In the low-potential zones where environmentalists and agricultural researchers have identified the strongest problems of degradation and need for increases in productivity, there is the least desire on the part of the households, or the least ability on the part of the households, to make those kinds of investment."

potential zones will also be exported down to the potential breadbaskets.

Fourth, the households in the low-potential zones and the high-potential zones now have very diversified incomes, as I've noted earlier. In the low-potential zones, their income diversification is tied as much as possible to coastal agriculture and to Sahel cities. The decline in employment opportunities in the cities due to severe recessions in the cities and cuts in the public work force, etc., means that a number of people from rural households will not be able to rely as much on the cities to stabilize and increment their incomes. They'll have to go home to their poor farms on degraded soils. Eventually they'll be fed up by that and push into the high-potential zones, at least until the high-potential zones also fill up.

Now, incomes in the high-potential zones are also very diversified into local growth linkage activities that are very much tied to local agriculture either upstream or downstream. The linkages, in fact, are stronger where population and road networks are denser. So as agriculture grows, government builds roads, and people move down from the North, the local growth linkage activities could very well intensify and grow. In this scenario, there would be a kind of a growth spiral, conditional on various kinds of policy and other sorts of private interventions.

Fifth, the problem in both zones is that unlike semi-arid Asia, the poor rural households in semi-arid West Africa diversify much less than the richer households, primarily because of poor credit markets and access to capital. If this constraint continues, there will be increasingly skewed incomes in both zones. If land markets are monetized in the next few decades, this skewing of income could well translate into skewing of land distribution. And as the high-potential zones fill up with people, a landless class could well be created, and, as in rural Asia, wages could be driven down and competitiveness of exports from the high-potential zones could well rise. If transport agreements are made by donors and governments at the same time, exports could go up and lead to a boom in this area. But, of course, as in Asia and Latin America, where similar transformations occurred in some areas, there will be the accompanying equity problems for the landless, with employment and labor absorption issues coming to the fore.

Finally, in terms of prognostication, severe land degradation in the low-potential zones that have high population pressures, combined with high rainfall instability, makes investments in both agricultural productivity, such as purchase of fertilizer, and in soil conservation, such as using labor and cash to build bunds and terraces, unattractive. In other words, in the low-potential zones where environmentalists and agricultural researchers have identified the strongest problems of degradation and need for increases in productivity, there is the least desire on the part of the households, or the least ability on the part of the households, to make those kinds of investment.

Something that really drove this home was an experience in a village in northern Burkina Faso, during my field work there. ICRISAT had built bunds on villagers' farms, the type of measure recommended by every environmentalist, to catch topsoil when there are strong rains in the area. These bunds were working. They looked like they were having spectacular effects. I asked the villagers whether they would want to use their cash and labor next year to build bunds. They said, what are you talking about? Is ICRISAT going to retreat from this area and stop building these bunds? And I said, no, I just want to know if you would use your own resources to build those things? And they said, are you kidding? Why would we want to use our cash and labor to invest in those sorts of things? What we want to do with our money is migrate, diversify into commerce activities, etc., that will allow us, come rain or come too much shine, to maintain our incomes. So in the low-potential areas environmentalists and agricultural researchers may be barking up the wrong tree.

I think that the disappointment of these groups in trying to get things started in those zones has spilled over as a general image of disappointment for the semi-arid tropics, when in fact one should be distinguishing between the justifiable disappointment in certain zones and what I think is justifiable optimism in the high-potential zones, specifically where agriculture is less risky.

Given this prediction of differential transformations in two different kinds of zones, what should be the objectives of development strategy and policy to help this transformation along? I think the first objective in the low-potential zone is to find alternative employment to assure household security and relieve the pressure on the land. Alternatives might include small enterprises of the type Carl Liedholm was talking about, manufacturing and commerce, etc., or extensive livestock husbandry using cheap grain as Chris Delgado has suggested a number of times, etc. Second, and this might be a less popular suggestion, governments should work to smooth private resettlement of people from the low-potential zones to the higher potential zones, not try to block that, not try to create artificial situations that keep four-fifths of the population in the low-potential zone, but try to smooth the transition. And third, there should be a focus in terms of both conservation and productivity spending and policies on the high-potential zones. To meet anywhere near the kind of growth targets that Kevin Cleaver was talking about, it's necessary to have this Guinean zone as a growth motor for semi-arid West Africa.

Now I'll talk about policies and strategies to encourage this transformation process. If agricultural profits are syphoned off to cities or migration or less productive activities, the growth spiral essentially can be stifled. I don't think there's anything automatic about this growth spiral. Hence, the policy and strategy decisions to spur these household and village-level investments in the next two decades are crucial to making sure that the transformation process occurs.

There are two sets of them. One is overall macroeconomic and sectoral policies. I agree that these policies can help to create a general incentive environment, but I think that they're necessary but not sufficient in the fact of underdeveloped credit markets, extreme price instability, rainfall instability, and underdeveloped infrastructure. Devaluation would help the long-term average incentives, correct the gross distortion in the price of foreign exchange, but wouldn't mitigate the short-term risk and instability that reduces the farm-level incentive for the kinds of investments or reinvestments that I just mentioned.

That brings us finally to a second group of policies that are the accompanying measures to the broad policies, essentially interventions to build local infrastructure, to improve local factor markets, and to develop product markets. Four examples: First, the key, learned from my field work in the Sahel, is to put emphasis on local complementary infrastructure. For example, in the peanut basin in Senegal, farmers told us that NGOs encouraged them to plant live windbreaks, one of the central environmental tools possible in that area with heavy wind erosion. But because there were no wells to water the live windbreaks during the dry season, the windbreaks died. So that's a simple case of a good movement met with poor infrastructure or no infrastructure and the falling apart of a good initiative. So there has to be a lot of thought, not just about general infrastructure, roads, etc., but about specific kinds of infrastructure that would complement household and village-level investments in conservation. Second, it's necessary to reduce the liquidity constraints to investment through, for example, credit facilities for processing activities by women's groups where there are large backward and forward growth linkages. Third, reduce the cost and increase the access to capital. For example, provide cheaper grain mills, cheaper animal traction equipment, more appropriate and cheaper transport equipment such as carts to be able to build bunds and transport manure to protect soil fertility in some of these damaged areas or areas that could eventually become damaged under the onslaught of new population. And finally, I agree that it's important to have an exploration of potential small-scale irrigation to stabilize rainy season water availability as well as to spur dry season cropping, as a source of liquidity to feed into a possible growth spiral process.

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Ackello-Ogutu

By now a number of issues have been touched on. So I think it's a question of getting down to the specific aspects. Thus I would like to talk about institutional transformations and external factors affecting the continent.

First, marketing institutions: We all know that in a number of African countries the major agricultural commodities have been controlled by parastatal organizations, which have a strong element of public funding. These institutions absorb a lot of public funds and hardly break even. We also know that they have been used as political dumping grounds and this has compromised the quality of management.

The trend is toward deregulation of marketing systems. Governments in Africa are aware that they should be getting out of businesses that can be efficiently run by private organizations. One hopes that this realization will be translated into action and that in the next 20 years we shall see more freely operating commodity markets. As governments get out of heavy involvement in the marketing of basic commodities such as maize, potatoes, beans, and meat, it is likely that more resources will be available for creation of an enabling environment, which will facilitate allocation of resources through market signals. Many governments do not believe that can take place without compromising the welfare of certain groups in society.

The other problem is what to do about the heavy investments made by the governments in parastatals. And, apart from their investment in equipment and facilities, parastatals also employ workers. The issue of divestiture therefore assumes both economic and social dimensions.

Another issue is the role of cooperatives in marketing of commodities, especially to assist small-scale producers who need collective power in order to avoid exploitation by middlemen. They serve farmers by marketing produce, as well as by offering inputs such as seeds, fertilizer, chemicals, and credit. But there seems to be a negative trend both in terms of popularity and effectiveness, and there needs to be rethinking of how the small-scale farmer is going to be served. Where cooperatives have failed, possibly the private sector can take over, if an enabling environment is created by the government.

"The continent is faced with constantly changing donor priorities. If this is not taken care of, there is a likelihood that continuity will be sacrificed, which is counterproductive to the broad objective of raising agricultural productivity."

The second aspect of institutional transformation I would like to talk about is training and using research institutions to generate technology appropriate for small-scale farmers. Although many African governments are spending large sums of money on education (and health), much more needs to be done to integrate national educational programs and institutions and to link educational goals to employment opportunities. In agriculture there is a need for specialized training. As we move toward the year 2025, more agricultural institutes and universities will have to be set up to improve expertise in agriculture. But expertise alone is not sufficient. Linkages must be forged between research stations and institutes of higher learning on one hand and mainstream extension services on the other. Expenditures on materials and equipment used by researchers will have to be stepped up.

There is a great deal of diversity in research and technology in Africa. In some countries there is a strong base of research and academic institutions, but in others there is a need to improve the capacity of processing and transformation of technology. In almost all countries, the problem of staff retention in research institutions and universities is common.

The brain drain is well documented, but it is worth reiterating here. Universities are unable to attract qualified personnel largely because of poor remuneration. The effect of this on the quality of teaching and research is long-lasting and permeates the economy as a whole.

I should mention something about the donor influence on research in Africa. The continent is faced with constantly changing donor priorities. If this is not taken care of, there is a likelihood that continuity will be sacrificed, which is counterproductive to the broad objective of raising agricultural productivity.

Related to research and technology is the issue of agricultural extension. It is important to get information from the research stations to the farmer. Although the role of the government is quite crucial, I do not think that the government alone should be responsible for supporting the extension work. In Kenya, for example, small-scale coffee and tea production have benefitted from extension services provided by nongovernmental organizations. This does not necessarily mean that the government had no input in the system. Coffee and tea are special cases, however, due to their exportability, but success in extension efforts aimed at their inputs and husbandry demonstrates what is feasible when there is collaboration between government and private organizations.

Finally let me talk briefly about external markets and trade, aspects in which our performance has been rather miserable. Vagaries in the international markets explain some of Africa's failures but not all. The successes of Southeast Asia during the same period when African economies declined, largely due to declining exports of primary commodities, low prices for commodities, and large oil-import bills, suggest that Africa has to look for solutions internally. Governments in Africa should get out and do something by providing trade information, by negotiating, by removing all taxation on agriculture, and letting business operate freely without overprotection, without patronizing the farmer, without the urban bias that we've talked about here today.

So, there are external factors, but it is up to the governments in Africa to do something and avoid the excessive donor dependency that they adopted in the past. Because they have traditionally overprotected their farmers, farmers have mistakenly formed the impression that this protection can be carried across the borders. I think the farmers, either as entrepreneurs individually or through their agents, have to be encouraged to travel and identify external markets for their products.

Another point related to external links concerns capital flight. The major aspect that concerns me is transfer of capital traceable back to the agricultural sector. There have been frequent reports of export-import transactions that are not beneficial to agriculture, apart from the much-talked about repressive policies and overvalued exchange rates. In Kenya, for example, farmers, and consequently the economy, lose large sums of money in the horticultural industry through unscrupulous deals between middlemen-exporters and foreign-based agents. The result is that agriculture and rural communities lose opportunities to gain investible income. Capital flight has become a hot topic in recent years, probably as a consequence of reductions in foreign aid to Africa, thanks to developments in Eastern Europe and the collapse of the Soviet Union. Here again, we have to look within Africa rather than blaming outsiders.

Kaestner

First I'm going to talk about what we've done in Egypt. Egypt is an important source of basil, marjoram, and fennel seed. When we went back into Egypt, an important source of raw material, we saw age-old techniques. We saw drying of the raw material in courtyards and areas where donkeys, chickens, and other farm animals could walk through. When it was time to thresh the basil and marjoram, it was done with a stick. It was taken into collection centers and stored in unsanitary conditions. It went into production centers where technology was unchanged in hundreds, maybe thousands of years. However, when McCormick's customers such as Campbell Soup, Kentucky Fried Chicken, Pillsbury, and General Foods, saw the state of the raw material coming from Africa, they said, we don't want African raw material; we'll continue to pay a premium in California.

So we decided we would go back to Egypt and make a change working through the private sector. First, we transferred technology that we'd developed in California to grow basil and other herbs to the individual farmer in the Nile Valley. We taught the farmer to harvest only the leaf of the plant. If you don't harvest the whole plant, you won't have to worry about the stem in it. Just pick the leaves and tree-dry it under simple but clean conditions to prevent the donkeys from walking through the product. Build some collection centers. As in other parts of Africa, there is a lack of infrastructure – warehouses – but the private sector put the warehouses in. We put in a plant outside Cairo to process these items for us. We transferred technology from McCormick in Baltimore back to Cairo to produce these items in the same way they're produced here.

We also set up a laboratory to control the raw materials coming out. And in a short time we took a 50-cent raw material coming out of Egypt, which nobody wanted, and we made such a good product for about $1.30 a pound that we replaced and shut down our own herb-growing operation in California that was producing basil for $3.50 a pound. So we have an item that's $2.20 a pound cheaper to McCormick. We're happy. The private sector in the U.S. is happy. The farmers in Egypt instead of getting 50 cents are getting $1.30 for the raw material with little extra cost. That shows what the private sector can do. It's my belief that the private sector is the key to development in Africa.

I also want to talk about a project in Uganda. Vanilla traditionally has been grown in Madagascar, although it's a native to Mexico. In the mid-1960s, McCormick set up a project in

Uganda including a processing facility to produce vanilla. In 1972 that operation was nationalized. We wrote it off. We forgot about Uganda.

I went back there 2 years ago. The city of Kampala is still there. The skyline has not changed in 25 years. Very little has changed in 25 years in Uganda. But you see a reawakening. There are private markets. People have an enthusiasm for the private sector in order to have some income and democracy. Those kinds of things are brand new concepts in most of Africa. But more important we found a father-and-son entrepreneur team, who had an idea of redeveloping the vanilla industry in Uganda. They went back into the growing areas. The vanilla vines were still there. They saw production of flowers. The flowers were pollinated by hand and vanilla beans were produced. The problem was there was no market.

So through a project funded by USAID, but involving the private sector, we are redeveloping the vanilla industry in Uganda. It's an exciting time. USAID money is going for extension services. We've hired a British agronomist who's taking information that McCormick had developed over 30 years in other parts of the world back to the villages. We're transferring technology on the growing and processing of the vanilla, and more important, offering a market for the vanilla beans that come out of those projects.

We have a lot of proud farmers now. There are about 600 private farmers in a very small area to the east of Kampala that have new hope today and they're making a nice profit with vanilla. It has given them a new lease on life. Part of the money that USAID has spent has gone to help the local company that is doing most of the work with this project. They have built these collection centers in the vanilla-growing area. Once a year they bring together all the farmers involved in vanilla and have a big fair. There's a soccer game, prizes are given, and speeches are made. I give a speech each year. This year the prize for the best vanilla-growing farmer was $100 in Uganda shillings. But I can tell you the kind of enthusiasm that you see from the 599 other farmers watching the best farmer get a $100 prize. It's this kind of enthusiasm and this kind of atmosphere that the private sector can bring to Africa.

Farmers in the area have quintupled their income. They were growing coffee. Coffee markets are depressed. It's a very good deal for the farmers. It's a very good deal for African entrepreneurs. I must add that it's a very good deal for McCormick. So that's my view of the future of Africa shown by those two projects. I'll just say two words that I think summarize the whole thing – private sector.

Cobb

I am worried that tomorrow we're going to start talking about the research agenda and USAID's role. We have moved from the setting to an acceptance of some targets and expectations here, and I want to make sure that that's not the case. If we accept Peter's assertion that we are in the Mosher stage of getting agriculture moving and if we look at the list of investments and targets that Kevin and Tom laid out, my answer is the cost is too high. We can't afford this. If you look at the political economy among donors, it seems to me that additional funds for the bill that you've laid out are not going to be available over the next 10 years unless the Japanese come through in a bigger way.

The time horizon also bothers me. I can't imagine 2025. It's too far off. We need to talk about what we're going to do by the end of this decade and maybe 10 years from now. It is important

> **"Within the past 2 years many countries in Africa have had some type of conflict that is going to have a real effect not only on agricultural production, but**

to have a long-term vision, but let's be realistic. That's just too long. It seems to me that we have to first agree that we accept the idea that investment in agriculture is the best payoff. We have to face this question ourselves, and certainly Tom Hobgood's point that health and family planning services are an important consideration in terms of how we use our money.

Do we accept that we have to contribute to restarting this engine? And if we accept that point, can we reduce the list that the first two speakers have given us, and can we be more realistic about targets? Four-percent expansion of agriculture seems way out of line unless I'm missing what you mean by agriculture. If you're including the rather dynamic off-farm, multisectoral enterprises in the rural areas, that's one thing. But if you're talking just about agricultural production, I can't believe that a 4-percent target is achievable.

It seems to me that we're going to have to tone down on the policies that over the next few years we want the state to get interested in, and we have to talk about specific actions that have to be taken to stimulate this creative dynamic, rural enterprise that we've been hearing about. And what is it going to take to get McCormick to put their own money and not USAID's money into Uganda. If it's such a big deal and such a high pay-off, why does USAID have to be involved in the first place?

Bonner

There are two other variables I'd like to pick up on before we get to more realistic expectations of what it's going to take. I don't think we have addressed the problem that within the past 2 years many countries in Africa have had some type of conflict that is going to have a real effect not only on agricultural production, but any kind of growth. The other thing is the climatic instability. In Southeast Asia you did have a fairly stable climatic situation. You don't have that in Africa. The team that just came back from southern Africa indicates that they expect it to take 10 to 15 years for Zimbabwe to be able to recuperate from the effects of the drought so far.

I have Dick's same concerns, but I think, one step further back, if we had these two kinds of outside variables that we have little control over, can we really be looking at agriculture as the step that has to be gone through before growth can take place? I'm not saying that it's not, but I think these are two areas that we haven't taken a close look at.

Guedet

Before we take other questions, let's answer these. First of all, Dick poses a question that the agenda may be too ambitious, coupled with the fact that the horizon is too protracted. And finally, why can't the private sector play more of a substantial role? Marge's question is about the diverse climatic conditions, which are dissimilar to Asia, and this great variance is causing problems.

Cleaver

I agree that the horizon is too far off. That's why I thought it was better to discuss objectives and then move to intermediate action to achieve those objectives. I agree also that a 4-percent agricultural growth rate is almost inconceivable. There's no apparent empirical basis for such a projection except the fact, as Peter Timmer mentioned, that there are a few countries that have achieved it in the 1980s, and he is quite right that Tanzania is one of them. He only had data through 1988, but I can tell you that through 1990 they maintained it. And in fact there were another 10 that are performing in the three's. So the fact that there are some countries that did it suggest that it's possible. There will be many countries that don't even come close, but I think that there are a few that can be saved, and they're going to have to save themselves.

As to the cost, the easy answer is to say that a lot of the action program that I suggested, which is policy change to get the private sector to invest, improvement of financial intermediation to provide capital for it, democratization, and farmer participation, isn't very expensive. That's the cop-out. You're right that the investment in rural infrastructure, in research and extension, and in irrigation is going to be very heavy. And your prognosis seemed pretty reasonable to me with the aid community less and less interested in Africa. And even the private investors are not being nearly as forthcoming as we had expected with adjustment. It is pretty hard to envisage the kind of capital necessary.

But I don't want to be too pessimistic. In fact some countries seem to be doing it, and not always the best endowed countries. That Burkina Faso, for example, is achieving these targets now suggests to me that it is conceivable, but a lot of the elements simply have to come together. I don't see any alternative, except the apocalypse. I think that we have to set targets that would suggest that there will be per capita income growth and that food security will actually improve and that infant mortality will decline. If we don't have those kinds of target, then we should walk away from this business. I know that's not a very satisfactory answer, but it's the best one I have.

Kaestner

Regarding investment in Africa, McCormick over the last dozen or so years, has invested in Madagascar, Uganda, Egypt, and West Africa. So we are putting our money where our interest is. I would suggest that the use of AID money for vanilla farmers has been one of the more successful stories in Uganda. It's important that the private sector is considered for AID money because these are the people with the profit potential. These are the ones that are going to work hard. Certainly I think the success stories in Africa agriculture are going to be built on the private sector.

The key thing is the profit potential. If you can make money, if you can get a better raw material, that's what's going to bring business to invest in Africa. There is obviously political instability and other risks that you have to look at. And sometimes the reward may have to be greater than it is in other parts of the world because the risk is greater. But it's going to boil down to whether a foreign company can go into Africa and make a profit. Can the local entrepreneur make a profit. The funding for our partner in Uganda that's coming through Grindley's bank is private financing. They have to look at that as a profit potential. They need that loan repaid, and they need to have a successful business.

I don't mean to generalize or simplify. It's not that simply if there's private sector and freedom and democracy that Africa is going to come out of the enormous problems that they have, but it's certainly a starter, and I think without that there is really no future for Africa.

Carter

You said the vanilla facility was originally on someone's plantation. Now it's being supplied by a group of 600 farmers. Do you think the USAID money was kind of crucial to having the form of production turn out that way?

Kaestner

First of all, the USAID money was responsible for getting McCormick interested in Uganda. Without the USAID money funding that market survey, McCormick wouldn't have been drawn back into Uganda. So it played an important role in that respect. It is providing extension funds now. We're making money on Uganda vanilla. The farmers there are too. There was a profit potential that would have allowed us to have gone back and done that ourselves. I don't mean that McCormick would have walked away from that opportunity or responsibility. But the USAID money was there. The people in the USAID mission in Uganda, and I met with them on many occasions, were desperately looking for projects that had some potential, some viability. I mean, there are a lot of holes in Africa and elsewhere in the world. You can all appreciate that. I think this is one that they knew was going to bring a quick reward to a large number of farmers in Uganda, a country that's been devastated by revolution and genocide. As a matter of fact, the USAID magazine recently had a big article on this Uganda project. So they apparently feel good enough about it to publicize it and feel proud that they've been a party to this successful project in Uganda.

> **"If you don't put your money in, if you don't try to make a return, you're never going to get anywhere and neither is**

Spangler

Things do look brighter in Uganda, but the truth is Museveni has never been elected. He came out of the bush via force of the gun. He looks good. He talks good. But there's still a risk there. You talk about the fact that in the early 1970s you had to write off your original investment. What did you do differently? What did you do in the structure of this deal this time that you feel makes you more protected than you were last time? What could you transfer from that to other private companies?

Kaestner

Obviously, it's not a democracy in Uganda. You have to look at the relative risk. Here's a guy that's been in power for a while. His reputation in the country is very good. We looked at the potential risk and the size of the investment from McCormick, which was relatively small. This project is just getting off the ground. We didn't have to invest tens of millions of dollars. If we had, we would have looked more carefully at that risk. It's an unstable part of the world, and you have to have a project that's going to give a very nice reward if it's successful because there are going to be individual countries where you're going to have to write off your investment. There isn't any doubt about that.

McCormick is involved in four countries. I would expect that, with political instability, one or more of those projects will end up having to be written off again. But if you don't try, if you don't put your money in, if you try to make a return, you're never going to get anywhere and neither is Africa. So I think it's just a matter of relative risk and relative return.

Spangler

"Even with declining secular prices over time, it's pretty clear that, at least in the first round, the problems of competitiveness with cocoa, coffee, cotton, and so on are really on the marketing side

Was there some thinking on your part that you were protecting yourself? Madagascar had been your primary source of vanilla. Were you basically getting a second source?

Kaestner

Good point. Almost all of our vanilla had come from Madagascar over the last 25 years. The original reason for this project in the mid-1960s was to get an alternative source of vanilla. So now we're involved in two politically unstable parts of Africa, Madagascar, and Uganda. I would guess that one or the other or maybe both of them will remain stable for a period of time, enough time to allow us to make the profit that we're looking for.

Brown

I know these are high-risk situations, but with high risk you get high return. I served in the Philippines where you have a high-risk situation, but the returns are equally as high. The Taiwanese Chinese are cognizant of the risks of investing in the Philippines and are taking the plunge because they see the potential for very high returns, investing heavily without donor resources. But we could not get U.S. investors to invest there without U.S. government support. So the question is, why should the U.S. government treat U.S. investors any differently overseas than we would a U.S. investor in the U.S. in terms of dealing with risks?

Kaestner

I would say it very simply. AID money was available. By using the AID money for this project, it took away a little of what was a fairly high risk for McCormick. After all, how many other American companies are in Uganda? One of the reasons we were excited about the prospects in Uganda was that the risk would be shared by USAID. It was a simple business decision.

Gilbert

I think we can give you a 4-percent growth rate, at least for a period of time. We have historical precedence for this in Zimbabwe in the early 1980s. Also, you can go all the way back to the 1914 period in Nigeria following peace and the arrival of the railroad, when a tremendous growth in exports occurred. A number of things become possible if peace returns to sub-Saharan Africa, and I don't think that a large amount of resources necessarily have to be invested in Africa to make this happen. In fact, there might be a repetition of a lot of the mistakes that we have made in the past. Rather, it's creating capacity for Africa to do things for itself.

In this regard, I have a problem with Tom's suggestion of encouraging migration from the low-potential to the high-potential areas. I can see the logic in it, but it potentially creates conflict. In The Gambia, the settlement situation is very mixed up ethnically as a result of migration. Migration has also been a major factor in dissemination of technologies, but at the same time there was ample land. What happens when land runs out and different ethnic groups start bumping into each other? This is happening now in the Casamance area of Senegal. How will we divide up at that time? How will we resolve right to land?

The main question is, what is sub-Saharan Africa going to export, whether it is agriculture or nonagriculture? There's a limit to how much vanilla can be consumed. What will the product markets look like in next 10 to 15 years, and how does Africa fit into that? What must happen in Africa in terms of productivity increases for it to be able to compete successfully?

Wolgin

When we start talking about 4-percent growth of agriculture, we're going to have to disaggregate. It's not only the high-potential and low-potential zones within one country, but it's also those countries that have high potential and those that have less potential.

What are we going to export? We did a little study on existing cash crops. Even with declining secular prices over time, it's pretty clear that, at least in the first round, the problems of competitiveness with cocoa, coffee, cotton, and so on are really on the marketing side rather than on the farm-level productivity side. There's a lot of gain to be made from improving marketing in terms of transport infrastructure, but mostly in terms of institutional changes. If those improvements take place, there's every reason to believe that Africa could begin to seize some of the market shares that it has lost in traditional exports because, after all, it still is a much lower wage economy than some of these other places.

"You don't have to worry about exports for a long time if you start growing more food for domestic consumption. You have a hell of an import substitution that you can play with. You have a c.i.f. price to

I've made a list of things that are changing. Some of them are very positive, some of them are negative, and some of them I don't know which way they're going to go. Population density is increasing. Soil fertility is decreasing. I think everything that Pierre said is pretty daunting. It's probably true that real agricultural prices are declining, as Peter said. On the other hand, there are a lot of positive signs in terms of improved macroeconomic policy, probably an improved urban economy, and increasing production in the urban sector, and therefore, more demand. Improved marketing, macroeconomic stability, and decline in rural-urban bias, a lot of the policy things that we think are necessary are occurring and should lead to substantial increases. There's a whole set of technologies on the shelf that haven't been used yet. Agriculture is yet to be mechanized in Africa. Animal traction, although it may be spreading in some places, is still not widely used.

The issue really is that you need improved governance. Is that going to happen? A lot of us are concerned that with the political process that's taking place most countries will lose another 20 years before political stability returns and you get increased farmer participation and reasonable economic policy. I think that's the key issue, and I have no idea how it's going to turn out.

Shaikh

I hate to see us reach conclusions based primarily on agreement. So let me toss in a few points that might run counter. Unless you can solve the domestic real wage problem with cheap imports that you pay for with something, you're going to solve it by modernizing your food economy. You don't have to worry about exports for a long time if you start growing more food for domestic consumption. You have a hell of an import substitution that you can play with. You have a c.i.f. price to deal with. You don't have to be export competitive. You might be import competitive. And in these semi-import economies, import competitive is a whole lot easier than being export competitive. There are no transportation costs. Last year there was some agreement that, as difficult as agriculture is, it is the only game in town in terms of starting the growth process. There isn't going to be any alternative. What might be difficult to figure out is whether the comparative advantage is really in agriculture and if you can get the wage rates low enough to meet East and Southeast Asian competition in the world for virtually everything that Africa might be able to produce, agriculturally or otherwise. But we got those real wages down. I hear now that real wages are low enough that you can begin to think about labor-intensive activities coming out of the African economy. I have one concern though. You have to have a comparative advantage in something, but you don't have to have a comparative advantage in something at an income level that equals survival. You may well have an income level that is lower than that, in which case you have serious resource and poverty problems, which is the down side of what we're talking about.

Maynard

There was a point made that by the strictest definition of creating wealth, McCormick is creating wealth or adding to the creation of wealth in Uganda. If you disregard import substitution and if you accept that world prices of basic commodities are decreasing and will continue to decrease and we will never ever see those high prices again, then that company is making a genuine contribution.

I would say that there is a role for public-sector money. I'm going to go back to some of the Asian models. In Thailand the support of the tapioca industry by the European Community comes in for scant criticism. And Cargill over the years was able to trade tapioca to the EC on the basis that it was a substitute for local feedstuffs in the EC and the Thai farmer was paid well in excess of what he was able to get on the free market. That was a case of public-sector donor money supporting one-half of Thailand, while the other half drives around in Mercedes Benz.

"There are resource-poor environments such that the productivity of agriculture is so limited and requires such high investments that it makes sense to try to think about other ways of producing goods."

That is also possible because the irrigated crops are only able to be irrigated because of the public money that goes into keeping those irrigation schemes up and running even to this day. So I think that we get a full sense of how well the Asian economies have developed on their own. And I think that we have some sort of misunderstanding. We're being too harsh on McCormick and what they're able to do in Uganda. We should be looking at what's gone right in that particular circumstance and maybe try to reproduce it because the wealth that's being created in the parts of Uganda where it can be created can then go toward supporting other parts of that country. It is wealth created within Uganda and not necessarily supplied from outside.

Wolgin

I want to ask Peter a question. Last year we examined the strategy for Senegal and reviewed some studies by Michigan State and others who have looked at the agriculture potential of Senegal and found it fairly limited. There weren't any clearly known productive packages that could increase production substantially in an environment where it doesn't rain much and irrigation is very expensive. So if we tried to make investments in agriculture, it didn't look like we're going to have a high payoff. On the other hand, on the nonagricultural side there was reasonable infrastructure, reasonable human capacity, but an awful policy environment and no expectation for change. So we threw up our hands and decided to mess around with the policy environment over the next 15 to 20 years and hope that something will change at some point.

But it seemed to me that it was probably easier to expect that the policy environment would change than that it would rain or that we would find ways of producing stuff without water. There are resource-poor environments such that the productivity of agriculture is so limited and requires such high investments that it makes sense to try to think about other ways of producing goods. Senegal was importing Thai broken rice at a price much lower than they could grow it domestically, so that the wage-goods argument wasn't necessarily an issue. It might not be for 10 to 15 years.

Timmer

How are they paying for the rice?

Wolgin

They were paying for the rice with groundnuts, phosphates, fish, and tourism. When you look 10 years down, there's no reason, given their location, that they couldn't be producing textiles and electronics and other kinds of stuff. They have the human capital. They have more or less the infrastructure. They have pretty good location. It's just that the policy environment was such that no one would want to do that.

Timmer

This sounds like the debate in Indonesia over how to develop the eastern islands. They are very poor and isolated from the main center of economic activity on Java. Why would anyone invest in eastern Indonesia when they would have to compete with the industrial plants in Surabaya, Jakarta, and Bandung? It's a resource-poor area. It's the Highlands of Scotland. It's West Virginia. Development isn't going to take place unless there's a tourist potential and people want to go see it because it's beautiful or because it's poor or whatever. Tourist dollars are just as good as groundnuts or any other source of foreign exchange. Investing in that potential in certain locales, especially in low agricultural productivity locales, may make lots of sense. I am dubious of manufacture-led exports as a strategy where you haven't built the capacity, haven't gone up the learning curve on your domestic market before you really try to break into the world economy in a serious way, and for me that means income in the rural areas, basically. Maybe I just don't know enough about Africa. Maybe all those people are already sitting there in the cities and if you could find some way of employing them in the cities, then they could buy all those off-quality learning-by-doing type of products before you become competitive.

I spend most of my time working with governments in Asia. To be quite honest, in neither agriculture nor in industry are those governments worried about Africa. They're worried about China. China worries about India, Indonesia, and Vietnam. Vietnam worries about Thailand. They're looking at each other as competitors. When I made that comment here a year ago, Vernon Ruttan said, yes, but remember Asia's going to get rich, and then Africa's going to have its chance. That to me is a profoundly discouraging prospect that says Africa has another 20 or 30 years to wait before it really has a shot at getting on this escalator of competitiveness in international markets. Only with that competitiveness can Africa grow at 8 or 10 percent a year. They have a long way to go.

And that's why I believe Africa is at the early Mosher stage of that whole process. And that does mean that Africa's 20 or 30 years away from getting onto the rapid export growth that means you have graduated to East Asian standards of growth, that is, a growth rate in the 6- to 10-percent per year range. But relative to what we've seen in the last two decades, maybe that's not such a discouraging prospect.

You're right, if there aren't any agriculture resources, you aren't going to make them out of thin air.

Cleaver

I of course believe that there is little alternative in most African countries to an agriculture-led growth. I think the distinctions between agro-industrial micro-enterprises and agriculture are very thin. Producing maize meal and the maize is not much different. You can't produce the maize meal unless you have the maize.

Now, look at what happened to Africa's market share and, with the exception of tea, interestingly enough, and sugar, it has declined sometimes spectacularly. The conclusion that I come to is that the decline in real wages probably isn't going to be enough. This is why I emphasized costly investment in research and extension, infrastructure to reduce transport costs and private-sector costs to try to get some efficiency in marketing. It seems to me that the package is going to be complex. I'm arguing the other side now. I don't want to argue that it's going to be simple, that a better policy environment, democratization, good governance are going to be enough. It's going to be tough to reach these 4-percent growth rates.

"Regulatory constraints to movement of goods between African countries were so overwhelming that simply removing those constraints would double trade almost

I'd like to mention a report colleagues of mine did on African interregional trade. They found that regulatory constraints to movement of goods between African countries were so overwhelming that simply removing those constraints would double trade almost immediately. I cite that simply as another area of potential. A lot of that trade is agricultural trade, of course, or agro-industrial trade. I agree with Peter Timmer that, even if the competitiveness for tropical commodities like rubber and palm oil and cocoa and coffee isn't increased, in the next 10 years there will be ample room for expansion in the substitution of imports. This is what Tanzania did and they didn't invest in the research and extension in the 1980s, nor in the rural infrastructure. They simply got the policies right, substituted for a lot of food imports, and got a 4-percent growth rate.

So it seems to me that there are a lot of elements of hope, but that we can't exaggerate the ease of doing this. We can't suggest that it's simply getting the prices right that's going to do it. It's going to have to be a pretty substantial package.

Finally, the only point Chris Delgado made today with which I disagree is that everyone has known about the strategy all along anyway, at least for the high-potential zones. I would say that most African policy makers would not agree with what we are saying here today. Few among them are looking to agriculture-led growth, and that's proven by the urban bias in policy. It's proven by the fact that we all have to pay enormous bribes, in the sense of structural adjustment loans, to get these policies changed. And the unpleasant truth is that very often, once the money is dispersed for these loans, the old policies creep back in. So there's a lot of convincing to be done in the world about the rightness of this strategy.

Ackello-Ogutu

Within agriculture there are a number of options that should be looked into in terms of creating policies to encourage inflow of capital resources into sectors. The export sector should be one of them, but not necessarily the export of maize or export of potatoes and beans. The latter are already traded across borders, depending on supply and demand conditions. The real question is how we break into the international markets with less traditional commodities such as horticultural goods and processed agricultural produce. That is an area where we need robust policies and strong participation by the government to create an environment that encourages the farmers in Africa to acquire markets and develop some working linkages with foreign visitors.

Friday morning, May 29, 1992

What Are the Analytical and Research Issues for the Future?

Panel: David Sahn, Pauline Peters, David Seckler.
Chair: Jim Govan

Govan

The topic for this discussion, analytical and research issues for the future, is a significant topic for the Africa Bureau. Under the Development Fund for Africa, we've developed a lot of rhetoric about managing for results and our intent to try to achieve more impact with the assistance programs that we manage. As part of that effort we've committed ourselves to gaining a better understanding of the kinds of issues that we must deal with. We also have initiated the analytical agenda, which is an effort to help ourselves to align the various research and analytical efforts that we ought to undertake, to sort out priorities, and to try to assure ourselves that the things that we do are the most germane that we can undertake with the limited resources we have. So we're going to listen with a great interest to the comments of the panelists.

Sahn

I think the payoff for research is perhaps nowhere higher than in Africa. That reflects the fact that if one looks at both the quality and the quantity of research in Africa relative to other regions of the developing world, Africa lags far behind. The knowledge and the information available to academics, to donors, to policy makers is decades behind what is available in Asia and Latin America. That certainly constrains and limits the quality of the advice that donors can provide and the way in which donor financing is used. We see that quite clearly from yesterday's discussion: the lack of information, the inconsistency in the data, and the inconsistency in perceptions of people who are extremely well informed relative to the rest of the world. There isn't a lot of consensus in this room as to what's going on, or why it's going on, or what should be going on.

Questions posed to the panelists

1. What data is needed and how can it be improved?
2. What special studies are needed?
3. How can we capitalize on lessons learned from other countries in Africa, Asia, and Latin America?

One of the problems about research in Africa is the cost. Doing research in Africa, I would guess, costs three or four times more than doing comparable research in Latin America and Asia. That presents a real problem in terms of the quantity and the quality of the work that can be done. Nonetheless, it's important that we move forward, and AID has a particularly important role and a comparative advantage in generating information that can be used by, not only AID and its programming, but by other donor agencies as well.

"Despite years of bad policies, agriculture has persisted. Agriculture didn't fall apart in most African countries. Parallel markets, alternative marketing channels, and creative coping mechanisms

I come up with three major questions that deserve more attention. The first is, does agriculture need to be the leading sector for development in Africa? I'm not totally convinced that that's the fact. A second question that I see emerging out of our discussions is, how far will we get in promoting development in Africa, particularly in agriculture, by getting prices right? There are, to date, few countries in Africa that have really gotten their macroeconomic and sectoral policies in sufficient order so that we can make good judgments about how far we will get through just getting prices in order. The third and related question is, at what stage of the agricultural transformation is Africa today? Despite years of bad policies, agriculture has persisted. Agriculture didn't fall apart in most African countries. Parallel markets, alternative marketing channels, and creative coping mechanisms suggest that agriculture is dynamic. Farmers are creative. And it's not altogether clear whether we really are at the Mosher stage or rather at a stage from which, by making available more inputs, by getting prices right, by enhancing the availability of seeds, and so forth, a rapid transformation of agriculture could be realized in the next 10 years. So I'm not convinced that we're at the beginning of the process of transformation in agriculture.

In order to address these three questions, we need to develop a systematic and comprehensive research strategy. I think we have to undertake that strategy in order to help redefine and understand the roles of institutions, government, and private-sector institutions and to restructure the incentives facing African farmers. We have not discussed indigenous institutions and informal and nongovernmental institutions very much at this meeting. We've been talking primarily about the role of the state and how the state should respond in post-adjustment Africa. I think we should give more careful thought in our research and in our practical work to indigenous institutions and institutions alternative to central governments. There's little question that this strategy and the agenda should be geared toward three things: accelerating growth, reducing poverty, and doing these two things while maintaining macroeconomic stability. I want to stress the latter because there have been hard battles over the last few years in many African countries to restore macroeconomic stability. And underlying our approach to research should be trying to maintain and continue a process of reform that will ensure that the macroeconomic environment is solid and sustainable. It's easy to come up with a research agenda and consequently prescriptions from one's research for spending money, but we cannot continue to do the partial equilibrium work that doesn't account for the macroeconomic dimensions and the fiscal dimensions, in terms of looking at the implications of our work.

For example, a decade ago in working on food subsidies at IFPRI, we came up with some great ideas in terms of the value of food subsidies, how food subsidies should be implemented, who should receive what, and how to target them, and so forth. But nobody talked much about the fiscal implications of these programs. We have to perform our research, not only doing the necessary detailed microeconomic analysis, but we also have to take into account the general equilibrium effects of all the policies and all the issues that we're looking at. This is very important in Africa where the macroeconomic policies again are just starting, and we really are on the verge of a transformation in many countries – of achieving this stability. Again, unless we approach our research in this context, our prescriptions will not be sustainable.

In essence then what we really need to do is to focus on exploring and modeling the links between macroeconomic and sectoral policies. And in particular in the short term, we need to take a closer look at markets in Africa. In recent research, this whole question of state disengagement and state contraction clearly has been the driving force behind policy. That's probably been the right approach, but we all recognize that the withdrawal of the state from the harmful role it assumed previously will not be sufficient or will not ensure perfectly functioning markets. We need to focus on identifying the impediments to market development in Africa over the next few years.

For example, while growth depends partly on increased investment, and we look at markets for credit and at the process of financial intermediation, there certainly are major constraints in terms of savings and investment. State disengagement, in and of itself, will not address those problems. Likewise, when we talk about consumer and producer welfare and the losses from instability in food markets, state disengagement will not solve those problems. Similarly, when we talk about the high transaction cost and high marketing cost of bringing commodities from the rural areas into the cities, state disengagement will not solve those problems. The question becomes where should the state get involved and how should the state get involved? And how should that be done especially in the context of the limited financial resources and human resources in African countries? The challenge to researchers is to try to identify the most propitious form of intervention and how those interventions should be organized and compared with one another.

It strikes me that there are five basic areas that we have to do a lot more research on. The first is how to formulate or how to use public investment goods to encourage private-sector investment and sustainable growth and poverty alleviation. What I'm talking about are private investment needs and how they are going to be the engine of economic growth in Africa and in agriculture or in nonagriculture. And what are the enabling investments?

It's not clear where the state needs to be involved to encourage private investment. At this point Africa's investment-to-GDP ratios lag far behind those of Asia. In most rapidly growing Asian economies, one will find that the investment-to-GDP ratios are probably about 25 percent, while there are very few examples from Africa where they are above 10 percent. We need to think about how to foster private investment and the role of the state in that process. On this investment issue, we particularly want to pay attention to small-scale investors, particularly in agriculture as well as the small enterprises that Carl was talking about. We not only want to characterize these investors, but we want to understand the constraints that impede them from investing. Again, I'm trying to identify the limited role the state can play in addressing the constraints.

The second issue is how to promote domestic savings. What we know about domestic savings in Africa is not encouraging. Most savings, especially in the rural sector, seem to be in the form of food stored on farm and in kind, but the types of savings used by most poor farm households do not provide the basis for capital accumulation and investment in general. And related to that is the lumpy nature of agricultural incomes, particularly for export-crop producers.

The third area that we need to spend more research attention on is how to encourage the emergence of efficient commodity markets and the proper role of the state in market development.

> **There are probably years of unrest to come in some countries and sporadic outbreaks in others, but these are struggles to recreate the legitimate structures of authority, canons of**

The fourth issue is how to enhance the efficiency of private-sector labor markets and doing more work like the work on the potential for small-scale enterprises. We know little about labor markets in Africa. We know little about wage formation. We know little about the determinants of labor supply. We know a little about the links between the urban and the rural labor markets. These questions are fundamental to promoting development and to understanding what it's going to take to get agriculture moving.

And the fifth broad area that we need to spend more attention on has to do with natural resource constraints to growth and poverty alleviation. But we also have to look at the converse of this question: What are the consequences of population pressures and alternative development strategies on resources use and resource degradation? In other words, it's not sufficient to look at how resource constraints effect development, we also have to pay close attention to how the types of development strategies that we try to encourage will affect resource use and degradation in the future.

Peters

I want to stress the strengths, the wisdom, and the skills that we have seen in Africa. Think about the rapid response to new crop opportunities in the 1940s, 1950s, and earlier. Cocoa is the classic case in West Africa and cotton, tobacco, and maize in Central Africa. These were successes to the point that the colonial governments put in several protective policies against African production. Research in the past decade has also shown how indigenous practices of resource use, lands, forest, water, and so forth, were far more effective than those changes introduced by the colonial government.

So critical to the years of economic decline that have been described is, in my view, political organization. It includes policies, but it's much broader than that. We're talking about structures of power, of government, and of administration. There was the honeymoon period in the 1950s and 1960s after independence; political problems emerging in the late 1960s and 1970s; dictatorial, oppressive, and corrupt governments combined with the economic problems of the oil price hike and the economic and political collapse of the 1970s and 1980s. So we now have the current democracy troubles. Those are problematic, but I want to suggest that they're also genuine political responses that have been squashed or driven underground up to now. Therefore, social conflict varies in its nature and cause. Civil wars are no more to be desired in Somalia, Liberia, or Mozambique than in Yugoslavia, but some of that conflict also has had positive dimensions. Zambia, Kenya, Malawi, and Côte d'Ivoire are examples. There are probably years of unrest to come in some countries and sporadic outbreaks in others, but these are struggles to recreate the legitimate structures of authority, canons of accountability, and channels for real participation.

Another preliminary comment on the research. Ask any researcher what are the analytical research issues and you'll get a list of burning issues. Research is all about how to turn big questions into smaller researchable questions. For example, the process and dynamics of commercialization are key to research in Africa and have been for some decades. But the specification of that question changes according to situation and time. In Botswana, for example, it has concerned the way permanent power-driven wells affect herd management and how these changes intersect with political-economic changes to effect transformation in land rights and in people's ideas and practices about group organization and business organization. In Malawi, on the other hand, commercialization in my research is translated into the relation between food-crop and nonfood-crop exports, tobacco in my case, and the effects of food security, income, and welfare, including nutritional status.

So the specification varies. The research I'm talking about is closely linked to policy. And because policy is linked to political changes, one must always be responsive to change. Presumably some of the policy research issues of today will not be relevant 5 or 10 years hence, but some will, like the commercialization issue. Having said that, I want to come to the particular issues I think are important. It may already have become obvious that I start from the point of use, that is, the research at the levels of individual, household, family, and village. And the research is based on agriculture, but the activities are integrally tied into nonagricultural activities. I want to talk about, first, conceptual refinements that have emerged from research and that should guide research in the coming year; second, substantive topics that warrant attention; and third, methodological issues.

The first conceptual issue is the link between production and consumption. We now know from our research that production decisions and patterns of production cannot be understood without reference to the consumption goals of those producers. Let me give an example. For cultivators, food supply is central, that is, both their own production of food and ensuring adequate income or purchasing power to acquire food.

The production-consumption link also often produces what one might call a U-shaped curve of commercialization. For example, the smallest or the poorest sell maize despite the fact that they are food deficit because there's no other source of income or they're indebted from the previous season. The richest sell maize because there's a true surplus to needs, whereas the middle 50 percent retain maize because the other sources of income kick in. So commercialization is not a straight upward slope in many places in Africa.

The second issue on production-consumption linkage is diversification. Diversification in crops to protect against risk of failure in any one. And that's for food and for sale. Most food crops are also cash crops in Africa. Diversification is also response to playing the market because of rapid changes in nonstaple food markets and the demand for various forms of products. And it's also a positive response to trying to ensure a flexibility in income sources. There's also diversification from agriculture into nonagriculture.

For cattle keepers, there has been a profound misunderstanding of pastoral and agropastoral systems in Africa, which partly accounts for the disastrous livestock-sector development policies in Africa. This is certainly an area of gloom and doom. Central to that new understanding is the production-consumption link. For example, Dyson-Hudson[1] has referred to East African pastoral systems less as livestock production systems but as livelihood support systems or "human population strategies managing resources in a competitive and risky environment."

The corollary of this understanding is that there are very different herd structures, herd compositions, the herd-use patterns from that of the ranch, which has been the model for livestock projects. The pastoral system is a way of maximizing the persistence of a regional population. It's a population strategy, whereas the ranch and livestock projects are strategies for maximizing disposable livestock. Research in Zimbabwe, South

"The idea that farmers are subsistence producers and therefore are not responsive to prices is not upheld in the research that comes out of Africa."

Africa, Somalia, and Botswana all show that cattle are not only productive assets but consumption goods, and if you account not only for sales of stock through official marketing channels, which always show a very low uptake, but also look at the uses for milk, for traction, for transfers of bride wealth, for ritual slaughter, and for various social exchanges, then herd management becomes fully rational but in a very different way from the ranch model.

The second nexus is the link between subsistence and commercial production. These are false opposites and have in many cases led to misconceived research and misconceived policy. In fact both are parts of strategy. The issue is not that of mutually exclusive alternatives, a subsistence farmer or a commercial farmer, but rather one of relative weight or emphasis. The idea that farmers are subsistence producers and therefore are not responsive to prices is not upheld in the research that comes out of Africa. Part of the issue in the subsistence-commercial balance is the links between production and consumption. Therefore, the apparent failure to sell cattle is often interpreted as noncommercial, but has to be rethought once the multiple uses of stock and the relation of sale to herd composition and various other technical issues are considered. For cultivators, we find, for example, in Malawi, but also elsewhere, that there is a positive relationship between subsistence and commercialization in that the biggest, richest farmers, whose income is 20 and more times higher than that of the poorest, have the highest level of marketed production and the highest proportion of food produced by themselves.

The third conceptual nexus is rural, urban, and farm. Conceptually we need to think of agrarian transformation rather than agricultural transformation because like the histories of Europe and parts of Asia, we see in fact many links, many flows, between rural villages, towns, and cities.

Kevin Cleaver talked about urban bias. In many ways I agree with what he said, but I think he overdrew the hyper-city in Africa. What we have is the whole hierarchy of centers from the village to small market centers to bigger towns to cities. You can’t understand the level of production, distribution, and sale in the rural villages where I work in southern Malawi without understanding it as a regional economy in which these market centers are hubs of growth that are tied through prices; the prices increase up through the size of center.

Among the substantive issues that I think are important, the first is property rights and land and resource tenure. We now know customary or nonstatus tenure is not a necessary obstacle to economic change, but in fact is adaptive. Cocoa in the 1940s and 1950s is the classic example of that, and today you can see a similar situation for other products. However, colonial prejudice against communal tenure, as they misnamed it, is far from dead and has led to all forms of nationalization by states. Sometimes also there are other rationales like socialism. What one then has then in Africa are parallel systems. In some cases they don’t conflict. The Cragga coffee producers in Tanzania, for example, managed to play off both the customary and the state system with good effect. But in other cases, the two systems do conflict and lead to insecurity and therefore a failure to invest.

Property rights and land and resource tenure are central to the further commercialization of agriculture. This includes not only smallholder agriculture, which I’ve been talking about so far, but also larger scale operations, co-management types or contract farming.

There are certain forms of contract farming that seem to be extremely inequitable, and there are those that don’t. For example, we have mixed information coming out of Africa. In northern

Ghana, there were riots and sabotage of large rice farms, largely because the local farmers saw their rights being eroded. On the other hand, research by the Institute for Development Anthropology documents much more equitable and effective production systems in certain forms of contract farming. Central to all these questions and to the efficient and equitable management of such commercial agriculture is tenure.

The second topic is the social system of organizing factors of production. It's a mistake to assume that markets are absent in Africa just because they often take forms that are not easily recognizable to western modelers. The systems of mobilizing labor, allocating temporary or longer term rights to land or other productive assets are not well understood. The interesting thing is that many of these are linked transfers. The economists refer to these as interlocked or interlinked factor markets. If anything is a mark of agrarian transformation in Africa, this is it. We need more research on interlinked and interlocked factor markets and how these are separating out. Many of these situations are based on older forms. One can see a clear historical trajectory here, but they're also transforming practices and concepts about land and labor that are adapting to changing economic demands. There is a growing literature on this issue.

The third area is the role of associational life or forms of social groupings in political and economic transformation. In the past, African socio-political systems were far less stratified and far more open than the Asian or European type. The caste or class systems of Asia and Europe were not present in Africa. African political systems stressed the accumulation of people as followers and supporters rather than the accumulation of land or goods. The traditional leaders in Africa were highly accountable and they were the suppliers of food, archetypically the bringers of rain. All the elders interceded with the ancestral spirits to bring rain. They were accountable. The difference is not a lack of accountability in African political systems, but what we are seeing in Eastern Europe – the scale of the nation has expanded beyond these areas of accountability.

However, in this century, one has seen profound social transformations in this social and political structure. We have new divisions of wealth, of education, of skill, and of political influence. And what we are therefore seeing are new forms of association that cut across, but coexist to an extent with, older and still-present forms of groupings based on kinship, on residence, on region, on ethnicity. Research in the 1950s and 1960s in Central Africa, for example, showed that certain Christian sects were very important among progressive farmers. They were part of the dynamic of economic innovation. I hypothesize that the current proliferation of religious groups, both Christian and Islamic, is also associated with economic innovation. Some are clearly connected to economic activity like the Mourides in West Africa and the diaspora that reaches all the way to New York. But also it's significant that this proliferation of religious groups occurs where overtly political action has been impossible. These religious groups then provide channels for voices and actions. In addition to the religious groups, youth groups, farmers groups, women's groups, and urban cultures are flourishing. All these are new forms of grouping and association that are the necessary organization for economic, social, and political transformation.

"We have competing hypotheses now in Africa: that resource overuse and stress results from survival strategies by the poor, but also that exploitative use of resources is by the powerful with short-term ends and gains, much

The final substantive point is environmental dimensions. The patterns of use of natural resources must be more clearly linked in research to questions of economic activity, production, and consumption. We have competing hypotheses now in Africa: that resource overuse and stress results from survival strategies by the poor, but also that exploitative use of resources is by the powerful with short-term ends and gains, much like the Amazonian model. How do these fit?

Finally, three comments on methodologies: I think we need more longitudinal studies. We cannot perceive and understand the dynamics of transformation without having the data for them. And it seems to me that much of our research has to be guided toward incorporating longitudinal studies. Second, we need longitudinal monitoring. Most governments in Africa, collect data through random sample surveys. Much of that research has to continue, but in addition there should be longitudinal monitoring cells so that one has data not only on a random sample survey basis but particular categories of households that are selected for particular reasons are tracked over decades. Some research in Indonesia is a perfect example of the tremendous payoff of this. I'm trying to push this in Malawi with limited success. Finally, time scales are a real problem for research and also for policy makers – the short, medium, and long term. One of the great challenges is to formulate research and policy such that you are operating at different time scales at the same time.

Seckler

In our last session, entitled Africa to 2025, no one wanted to talk about what Africa would look like out that far. The reason, partly, is that every time you try to get a glimpse of Africa 20 years or so from now, there's the next doubling of population, and it looks so appalling that people don't want to think about it. They'd rather think about something more optimistic. But there's no question that we do need to have a kind of 20-year view to set some scenarios and focus on the kinds of problems we have to address.

I'm impressed with the Asian kind of planning model. Let's not call it a planning model, but a thinking model. Asians try to have a vision of the future and try to structure their major government policies and investments according to that vision. It's typically a 20-year vision broken down into 5-year planning horizons, and those 5-year horizons pretty well determine their budgetary allocations. They're reviewed at the end of 5 years for the next 5-year period, and they make adjustments and adjust their 20-year vision out another 5 years to keep a control on things. This has been a very profitable exercise for Asia. Since they take these 5-year visions seriously and they try to keep their budgetary targets, it gives the private sector some sense of where things are heading. They can adapt their investment programs against a rather stable scenario insofar as it is determined by government expenditures.

I think that one of the research topics should be to do some simple models. They have to be absolutely transparent so everybody can understand what these models are – Lotus spreadsheet models for the various African countries and how things are going to look 20 years from now under different assumptions. Then we can start arguing whether this assumption or that assumption is going to be right and how we change those assumptions. What policies and investments do we implement to make these bad scenarios turn into better scenarios? I used to be very skeptical of strategic planning and projections, and all that. Now I believe it's essential. I was skeptical because it was so hard and you were sticking your neck out. I didn't want to do it, but now I think we should do it.

Second, retrospectively, let's go back to the good years in Africa in the 1970s and see what was going on. They were growing well. They had comparatively high levels of income. What was happening back then? Was this export-led growth? Why were those good years in Africa?

In that connection we have to understand that the 1980s were not only bad for Africa, they were bad for the entire world. The growth rate in GNP of the world as a whole was cut in half during the 1980s. If we took the Asian growth rates out of this, it would be even more dismal. One of the fundamental questions I have is, why did the entire world fall into a low-growth scenario in the 1980s? Whey did they do that just exactly during the era of structural adjustment? Is there some cause and effect that when we all started doing structural adjustment in the early 1980s, following our policies, the whole world went down in terms of GNP growth? Maybe it should have. Maybe we needed to do that to control inflation, etc. I don't know.

Basic to both of those exercises, prospective and retrospective, is the data problem. The macroeconomic data in Africa look grim. Yet there are signs of activity and enthusiasm at the microeconomic level. And as Peter pointed out, this is an old story in mirror image for Indonesia because we went through the same thing – the macroeconomic data looked good but the microeconomic people were telling us everything's falling apart. And as a matter of fact, I think now everybody agrees that the macroeconomic data were right. For example, in the past 10 years, the proportion of people under the poverty line in Indonesia has fallen from over 30 percent to 14 percent. The village studies were telling us that everybody was getting poorer and poorer.

Africa is the only place in my experience that you really do have to worry about accurate data. Is this data reasonably accurate, working accurate? Or is it just faked data? I did some work on agricultural aggregate data in Africa a few years ago. I finally quit the whole research project because I just couldn't believe the macroeconomic data I was getting out of these official publications. I think that AID and the World Bank should launch a project to check into this and see if we can believe this kind of data, and if not, what can we do to get it up to some kind of standard like Indonesia, where you can basically believe the data. Otherwise, we're flying blind.

"Had economics had a major influence on investment in irrigation in India, there would have never been a green revolution because there never was an irrigation project in

Third, we need, as part of this prospective business looking out 20 years, to give a lot of thought to what the world is going to look like with or without GATT-type adjustments. Are developing countries really going to withdraw their subsidies from agriculture? If that's true, and they also insist that the Asian countries withdraw their subsidies from agriculture, the price changes are going to be so phenomenal in world markets that we can't even image what it's going to look like. It could be a tremendous opportunity for Africa. Of all the questions about the future of agriculture, that one is probably the most complicated and mysterious to me. I have never seen any really good analysis of the effects of that.

Fourth, another area of total mystery in economics is the economics of infrastructure investment. I said in print, and I'll defend it, that had economics had a major influence on investment in irrigation in India, there would have never been a green revolution because there never was an irrigation project in India that would satisfy benefit-cost criteria. And you can't have a green revolution without irrigation. Probably the population of India would be 300 million people less than what it is today due to starvation and infant mortality. We simply don't know how to evaluate all of the tremendous secondary, tertiary, psychological, sociological, learning-by-doing benefits of things like roads and irrigation systems, and the effect these have on stability, for example.

> **"Colin Clark said you can never go wrong with a reasonable road."**

Robert Wade, in the book that we published on last year's conference,[2] predicted that Africa will never be able to develop a light manufacturing export industry unless it gets better investment in human capital in terms of basic education. In other words, we have a general class of economic problems that sometimes is referred to as nonmarginal events – events that aren't just on the margin, but that change the entire economic environment in which you're working. Our economics of nonmarginal events is counterproductive because we try to treat it in our models as though they were marginal events, and we hit exactly the wrong conclusions. I think these nonmarginal events, particularly in infrastructure, are the secret of development. Colin Clark said you can never go wrong with a reasonable road. I think that that's a much truer statement, particularly for Africa, than any economic analysis of a road because we don't know how to do one. You just say, build reasonable roads to the extent you can.

Further, I believe that investment in infrastructure, including human capital, roads, irrigation, etc., is probably the best single way AID and other donors can help the private sector. The lesson from Asia that is somewhat forgotten even by Asians is that most of the development in Asia was by the private sector, particularly in agriculture. It was millions of small farmers. But what made them work and really reform and increase their productivity were these massive government investments in infrastructure that then they could piggyback on, primarily irrigation and roads.

So I'm asking AID to think about going back to the good old days when you did what you can do very well and that was build infrastructure and help human capital development and not get too worried about mucking around in the private sector. They can take care of themselves. But if you take the money out of the infrastructure, the private sector is going to be helpless because they can't handle those reforms.

> **"We have to try to figure out an alternative to irrigation because a lot of places in Africa don't have any sizeable irrigation potential."**

As I intimated before, I would like now after 10 years of structural investment to see a thorough study of the results of structural adjustment programs. I know people have been doing that. There has been some good work, but now is the time to take a good self-critical look at structural adjustment. Let's go back, country by country, structural adjustment policy by policy, and see which ones worked and which ones didn't work and why. I think there's too much technology in this business and not enough empirical review of the consequences. Peter said last year, and this year he said again, what we need to do in Africa is get wage rates lower. Now, if that's true, then there's something really wrong with what we're trying to do in life because, to me, getting wage rates higher is probably the single most important objective in development policy. Peter points out the Indonesian trinity is growth, equity, and sustainability. And I interpret that, and I think Indonesians do, to mean equity is necessary for sustainable growth. You have to get the bottom half of your population continuously profiting from this experience. So how can we have an objective of lowering wage rates?

Sixth and last, and in many ways, I'm what Wally Falcon would call a fundamentalist – I'm an irrigation fundamentalist – I think we need to increase the rate of investment in irrigation in Africa, because of its direct effects in supplying food, but perhaps more important because of the stability it gives to the economy as a whole. If you look at the Sahelian countries in Africa, their variability in GNP is greater than any other area of the world because they depend on agriculture for a good part of their GNP. And their agriculture depends 100 percent on variable rainfall. I can't imagine how the private sector can work in a country where GNP could drop 20 percent this year and the next year go up 20 percent and then fall again. Look at the chaos in this country when GNP goes down two points. The private sector goes into shock. So, we need irrigation for stability, for food production, for intensification of agriculture. We have to prevent this tendency to meet food needs through extensive agriculture because that's going to destroy the wildlife areas. When you do that, you're going to destroy tourism, the biggest source of foreign exchange.

But at the same time we have to try to figure out an alternative to irrigation because a lot of places in Africa don't have any sizeable irrigation potential. I have never been optimistic about alternatives to irrigation in semi-arid regions. But it would be worthwhile to have the Africa Bureau do a study of what people in the western United States and Canada and Australia do in terms of fallow agriculture. Fallow agriculture means you take half your land and you set it aside and you keep all the weeds and things off it. So the rain falls on the land, stays there, and carries over to the next year when it rains again and you basically double the amount of water availability for your crop. And you're carrying water from one year to the next. So you're smoothing out the variability of your production process. The Australians have done some new work in this field. That could be a very good stabilization program for Africa. One problem is it's going to take mechanization. You cannot keep that fallow land clear of weeds by hand or animal power. Maybe you need small-scale or custom tractor services or something like that.

Reardon

I want to look at the issue from a slightly different direction – the strategy of research as opposed to the specific themes of research. We understand, for example, how households invest in off-farm enterprises, how well those function, how those off-farm enterprises then feed back into increasing productivity at the farm level, etc. So there's a need to combine the micro- and small-enterprise research and the on-farm, let's say, income-diversification research to fruitfully look for ways of promoting self-sustaining growth spirals of investment in rural areas.

I also think that it's important to sweep together some of the findings of various studies and aim future studies in such a way that one can pinpoint growth motors in the various rural areas – different growth motors by different rural areas – and look at them in terms of developing them in subsectors from production all the way to final consumption. It will take some reorganizing of knowledge and an understanding of where the key constraints are along that subsector and then an action plan to develop specific subsectors like maize, for example, in West Africa, and an action plan to remove the constraints along the marketing channel to promote the growth motor.

"The inefficiencies associated with doing research in Africa are criminal, and all of us have been involved in this

I agree that it's important to focus on the key complementary investments that the state or donor can make to relieve constraints to rural household investment in productivity and conservation. For

"We are talking about the private sector principally because there is no other way to get the kinds of massive resource transfers needed to rural areas unless you involve the private sector at all levels, especially including smallholder farmers as representing the vast

example, is the problem wells for off-season production? Is it information on marketing and prices? Is the key point reduction of instability for crops that could be real growth motors via, let's say, small-scale irrigation? A focused infrastructure research program would be quite useful.

Second, there is a need to leverage empirical work via strategic combinations to have a tighter set of policy recommendations. Large studies at the household or village level have provided lots of information, but it hasn't been fully integrated into the research work of the African university or research institute, so the link back to national policy circles is still incomplete. And third, the aggregate data is often inadequate. It's not possible, however, to continue doing massive microeconomic studies all over Africa, because they're so expensive. The strategic combination in the 1990s would be to take some of the knowledge generated by those household-level surveys, work with divisions of statistics all over Africa to do what I've seen done in Latin America by UNDP and FAO, etc., in trying to get the medium-range statistical services in place, using the knowledge generated from the more in-depth household surveys and not rely as much on the aggregate guesswork approach that some of the statistical services have taken in the past.

Timmer

I would have liked to have heard more from the panelists about what they see to further enhance African research capacity to carry out at least a portion of this agenda because progress in this front has been not terribly strong in the last decade. We should address why a lot of the research institutions that we have supported have not functioned or their capacities have not increased. We have a lot of problems reaching agreement on how we measure the performance of research institutions, but I think there is a general feeling that they have not lived up to expectations and that their capacities and performance levels are way short of what is needed. Is there a role for the private sector here? There have been a lot of failures of consultancy firms in Africa in major cities, etc. But at the same time there are certain levels of tasks here that are cottage industries, if you will, that are tasks that can complement some of the major studies to significantly reduce the cost of this type of research.

The inefficiencies associated with doing research in Africa are criminal, and all of us have been involved in this crime. I think a lot more research has been done, but a lot of it has been lost. It is shocking. We are not making good use of the tremendous amount of information that does exist – the considerable studies that were done during the 1970s and 1980s to the present. A lot of this stuff is lost almost as fast as it is produced. I think we should look closely at our ability to retain information and retain knowledge as we initiate all these new studies.

I would have liked to have heard more from the panelists who are our clients in this research. What have they found most useful in the types of research that have been carried out? I like the emphasis on using research to reach decisions beyond simply trying to address the broad issues of understanding Africa. We'll do that forever. But what are the decisions? What are the key decisions? And what specific research can help in guiding and influencing those decisions? I see a lot of research ongoing. I'm involved in some of it. Sometimes I'm uncomfortable about the utility of this research to you people, who I regard as my principal clients. And I think you have to take us by the scruff of the neck more often and say, this is really what we need your help in doing.

Delgado

The topic again is strategic research, but we have not really defined it. I want to suggest a quick operational definition. Strategic research is getting at the handles to get growth moving and foreseeing major pitfalls that can prevent achieving some kind of success. It seems to me that on the analytical agenda for getting growth moving, the key question is, what really underlies the process of capital accumulation? We are talking about the private sector principally because there is no other way to get the kinds of massive resource transfers needed to rural areas unless you involve the private sector at all levels, especially including smallholder farmers as representing the vast majority of private-sector resources in this area.

Analytically there are three issues. The first concerns the determinants of comparative advantage because in the long term you cannot stay on growth path without accumulating capital in areas of comparative advantage. Two of the important policy issues are the extent to which that is automatic and how you can speed it along. The determinants of comparative advantage include the opportunity costs of resources involved in agriculture (principally labor costs in Africa), transport costs, technology, world prices, and the value of foreign exchange. Research needs to focus on the potential in each of these areas, but especially on technology and marketing costs. The latter tend to be very high relative to elsewhere in the world. Costs for inland transit can be 150 percent of the world price of commodities landed at West African ports.

We mentioned regional trade. Nontraditional exports offer potential, but what is your niche? How do you go out and get a market? At what cost?
A sub-set of analytical priorities stems from the concern with competitiveness, both regional and external: the determinants of labor costs. This, along with transport, is central to taking advantage of potential comparative advantage in agricultural exports. The cost of labor in Africa is very much linked to food availability, either through imports or through production in a semi-open economy. Policy can directly lower export production costs by finding ways on the production or transport side to lower food supply costs.

A second overall set of analytical issues for promoting agriculture-led growth in Africa concerns the question: how do you get Africa to maintain market share within itself? Take oilseed production. We all say there is not much future in peanut oil, given present price trends. Senegal used to produce a third of the world's peanut oil. It now produces 5 percent. But demand for vegetable oil, per se, in Africa is growing 2-1/2 times faster than anywhere else in the world. And, of course, a lot of that is palm oil from Malaysia. Yet peanut oil is preferred in most of Africa. There are all sorts of opportunities that need looking at. It is a question of competitiveness, getting labor costs in producing countries down relative to the cost of tradeable oil. In addition to improving peanut production, the principal instruments for this are devaluation of the real exchange rate and improvement of foodgrain supply.

"When people are so close to the poverty level, and where outside interventions have so much impact on people, we really do have to worry about the distributional consequences

The third area that needs looking at concerns the multipliers from public-goods provision. We know generally that capital investment in Africa has high incremental capital-output ratios relative to elsewhere in the world. I hope that future assessments of structural adjustment will focus less on the price aspects of it and more on the relationship between public-goods creation and the implementation of adjustments at the macroeconomic level, specifically, to what extent has adjustment at the macroeconomic level prevented public-goods provision from playing its historical role in speeding private capital accumulation?

The final point concerns the desirability of household-level research. We used to ask, who needs these expensive large surveys? We do them because there are no good data. But it is not just the lack of good secondary data. It is that a lot of what is happening in the transformation is just not captured by official data. It is in the informal sector. Factor and product markets are also linked in Africa. By definition, prices do not proxy true opportunity costs; they never can under these conditions. Yet the theories of aggregation that underlie macroeconomic models have to rely on markets clearing. If they do not clear, or they clear in funny ways, you have to capture the turning points. You have to go more toward the microeconomic side. In any economic research, one either spends more time disaggregating and looking at the nitty gritty, and more hand-waving at the macroeconomic conclusions, or one spends more time on the macroeconomic conclusions and worrying less about the nitty gritty. Particularly in the semi-arid areas of Africa, we have to worry a little more on the nitty gritty side and do a little more hand waving as to the macroeconomic conclusions. The importance of distributional issues adds extra weight to this view – when people are so close to the poverty level, and where outside interventions have so much impact on people, we really do have to worry about the distributional consequences of what is done.

Timmer

I want to reinforce David Seckler's emphasis on doing some fairly simple and transparent longer run growth strategy planning, modeling, whatever you want to call it, as in the Asian context. But each country really ought to be thinking through some 20- or 25-year pictures of the dynamics by which they get from here to there. Around the table, I think there really have been four key components that need to be put in there in assumption form so that we can change them around and ask whether we have consistent results. We need to enforce macroeconomic consistency in this. We can't do it sector by sector, piece by piece.

My four components to this strategic plan, if you will, would be, first of all, what's happening in agriculture? And what would the growth rates would be, where would the inputs come from, and what would the public infrastructure have to be to get that? But let's ask whether it's possible for some of these countries to grow with agriculture growing at only 2 percent instead of 4 percent. Where does that take you in terms of a dynamic growth path that enforces macroeconomic consistency. If 2 percent doesn't get you where you need to get to, which I think is what Kevin Cleaver was arguing, then we really have to figure out a way to get it to 3 or 3.5 or maybe even 4 percent. But we don't know the answer to that until we put this in the context of a model.

The second is, what happens to real wages? Africa has to get its real wages down. The reason is the competitiveness question. I remember the last 10, 15 years sitting in the planning agency in Indonesia looking at their investments in palm oil or in coffee or in other commodities that were head-on competitive with Africa and asking, does it really make sense for Indonesia to start investing in a strategic way in coffee, to go after the robusta market that Africa locked up 20 years ago? And the answer was, yes, our wage rates are so much lower than the African wage rates that we think we can put them out of business, which is what is happening.

Now, how does Africa compete with that? The same way the United States competes in automobiles or steel. Either you raise the productivity of labor through investment or you get the real wage rate down so you can compete. And my sense is that Africa had wage levels that were simply too high for the real productivity level of those economies. They had overvalued exchange rates. They had protected real wage markets. We're not talking about the wage rates out in the rural areas. We're talking about the wage rates in labor markets in the protected sector, either the plantation or the urban sector. Those wage rates were too high. They had to be brought down if Africa was going to be competitive. Now it's happened through the structural adjustment process. You get most of that through exchange-rate movements. You don't have to bring down nominal wages in the local currency. You bring real wages down by restructuring your relationship to the foreign sector.

I was struck by the comment and, I think, reality that we can't grow food domestically in Africa in competition with Thai rice. Thai rice is always cheaper. There's no way that we're going to be able to compete with the world market for our foodstuffs. And my immediate question is, where's the foreign exchange coming from to pay for that? If you're telling me it's food aid and the donors putting the money in, I don't see that as viable and sustainable. If you're saying it's tourists and groundnut exports or phosphate exports, fine. Export those things and import the food if that's what makes sense. But if you're telling me that you're feeding the urban populations of Africa, not with African productivity, but with donor dollars and food aid, then I don't think that's the right answer. The third part of my strategic model, then, is thinking about Africa not as a closed economy, but as a semi-open economy becoming a much more open economy, and worrying about where the foreign exchange comes from then. Part of sustainability is going to be earning the foreign exchange it takes to do all of the investment and bringing the technology in.

And my fourth component is, what does all this do to the natural resource base and to the environmental concerns that are a legitimate long-run sustainability question? Any time you start talking about more than 5 years, especially 20 or 25 years, you start talking about population pressure, population growth, land area, and degradation. All of those environmental questions come to the fore when you start thinking longer term. This is just a plea to take up David's observation that it's really helpful and important to take that longer view and to do it in this consistency framework so we can see how the sectors interact.

Carter

I want to go back to Pauline's underlying question. What is the nature of the transformation going to be? Who's going to do it? Who's going to win? Who's going to lose? What's the whole nature of that process? I think it's quite important, and David Seckler's call for the concrete, I think, needs to be kept in that context as well. Certainly, there was lots of concrete poured – let's keep the metaphor going here – in Central America in the 1950s. And there was lots of growth. That indeed alleviated some key constraints. And there were some remarkable export expansions in the agriculture of Central America in the 1950s and the 1960s. And yet, the form taken by that export expansion was quite destabilizing socially.

"It's not at all clear to me that the easy things, let's say building rural roads or pouring concrete, are going to have much of a payoff, particularly in the short term."

So if you look at the way cotton or beef expansion occurred in Central America after the roads were put in, they were things that led to labor displacement. They led to highly seasonal labor absorption patterns and lots of things that made lots of people quite unhappy, and I think led to very unstable situations. That for me ratifies Pauline's point that it is important that we think about finding those handles and the niches in the export possibilities. But it's also important that as researchers we try to recompose those decomposed research questions into an understanding of the factors that ultimately will shape how growth does occur. I don't think it's at all automatic that it will take a socially sustainable form.

Sahn

I would be very cautious about assuming that we know what type of infrastructure needs to be done at this point, and where government is best suited to do it. For example, it's not at all clear to me that the easy things, let's say building rural roads or pouring concrete, are going to have much of a payoff, particularly in the short term. In studies that we've done of traders and food markets, particularly in Tanzania and Ghana, the food markets are working quite well. The traders never suggest that the quality of the roads is among the major constraints they face. The pattern of seasonal prices, the integration spatially, it all looks pretty good. Those are countries where the infrastructure is terrible. The roads are terrible. What we hear from traders are things like lack of trucks, lack of spare parts, lack of information, shortage of fuel, all sorts of things that aren't unrelated to roads. Now, there are all sorts of things where a government has an enabling role to resolve those problems. But we don't have clarity on where those enabling investments are best made. All I'm suggesting is caution, not that certain types of rural roads or feeder roads or trunk roads are unimportant. Malawi has great roads, but Malawi's food markets don't work very well. They work fine in local communities and local areas, but not nationally.

I also wanted to address clients and research capacity. In reflecting on our experience in working with African institutions, the biggest problem is not an institutional problem directly in terms of not supporting institutions, but a human-resource constraint in working with our African counterparts. One simple way of looking at it is that there are too many donor resources chasing too few good people. When I look at the wage rates we have to pay to African researchers and I look at the time that we get from them in terms of real work and real productivity, it's very low. And that's a reflection of a shortage of trained people who stay in Africa working in African institutions. I have no simple solution to that problem. But that certainly has large implications for the cost of doing research in Africa, both because good quality local personnel cost more than a Cornell faculty member and because they're often not to be found. So you have to send somebody out there to do things that in Asia or Latin America we could hire a little consulting firm to do. There are exceptions. There has been enough migration back to Ghana by professionals that there are consulting firms. There are private groups that we've been able to work with effectively. A major role for the donors is enhancing and increasing the numbers of professional people and providing mechanisms or incentives to encourage people to stay in their country.

"A major role for the donors is enhancing and increasing the numbers of professional people and providing mechanisms or incentives to encourage people to stay in their country."

Regarding the clients of the research, I have found to my surprise a great deal of interest and technical capability among the few mid-level technocrats that are in government for utilizing and understanding, especially in the context of our work, what could be characterized as academic or relatively rigorous research. I see out in Africa a thirst for the types of things that David Seckler was talking about, simple models that run on Lotus spreadsheets, simple input-output tables, simple CGE models, simple multi-market models. People are grasping for some understanding of the linkages and how their economies work. It's remarkable to me, as we go around Africa, to see that these things don't exist anywhere. Other than Côte d'Ivoire and Kenya, as of 5 years ago there wasn't a CGE model or a working multi-market model up and running that I know of. Not that the models are good for planning in the short term. Even the models that we're doing have gross deficiencies. What they're good for is strategic thinking, understanding linkages in the economy, understanding indirect effects of policies, secondary effects, tertiary effects. And as one goes through the process of trying to put together these simple and relevant types of models, you start to identify major deficiencies. But getting into the minds of policy makers and consequently into the dialogue of the donors, particularly the World Bank, through strategic long-term thinking and long-term planning based on some analytical foundations, as weak as they may be, is very important.

Peters

I agree that it's hard to work closely with national institutions. The brain drain is a major problem. One of the outcomes of structural adjustments and the earlier decline is a massive brain drain. It affects some areas more than others. Health research is extremely difficult to do in Africa because of this. But even social sciences have been affected. The other issue is that much research is done on a very short-term basis. So that at national research centers a particular problem comes down the pike and one has money for 1 or 2 years. One mobilizes to do that research. And an overall research agenda, a conceptual agenda, or strategic planning is not possible because the researchers are running around trying to find money. I think that the answer to that is much longer term programmatic monies that are given to centers. And that doesn't have to come only from AID, by any means. I think foundations could be involved in this.

One brief comment on roads. It's not that I'm not a material person. In fact, material production is an important part of what I'm interested in, the dynamics of transformation. But my comments earlier focused on some of the conceptual research issues. I disagree with David Sahn. The tarmac roads in Malawi are excellent, but the rural roads are a pain. In the villages where I work, for example, we spend much of the rainy season getting our vehicles out of the maize fields that are right up close to the rural roads. There are two issues here. One is that rural road formation probably shouldn't involve concrete or tarmac. It should involve labor-intensive activities for the following reasons. One, not only do roads enable trade, the kind of liberalization that's being pushed in Malawi now depends very much on transportation. A major constraint to all traders that I talk to is transportation movement. Roads also affect households. Women have to take a whole day to go to a clinic to receive two tablets of aspirin. They are very unlikely to do this. And in the peak period of cultivation, they don't do it. This plays into a high infant mortality rate. The second reason whey they're very useful if they're not concrete is that they generate income. It's income generated into the rural areas that is not targeted for particular categories. It's not food for work. It is work. It is income, which is then used to buy maize when the price is at its lowest post-harvest level. There are all kinds of multiplier effects that I think are important. A counter example is the famous Amazonian road disaster. So again roads are not necessarily good, but they should certainly be part of the strategies.

"If you're living in a benign environment, people tend to move toward the road. If you're living in a malignant environment, they move away. And it just shows the importance of a road in connecting an economy."

Seckler

The most important evidence I've heard about roads and their importance is from Chris when he said people are moving away from the roads in places where the government is predatory. I think that you vote with your feet. If you're living in a benign environment, people tend to move toward the road. If you're living in a malignant environment, they move away. And it just shows the importance of a road in connecting an economy.

I'm also a road fundamentalist. That's one place where we really miss out in economic analysis of infrastructure. It's not just the conventional multipliers. It's the whole socialization, politicization, learning by doing, getting exposed to new ideas. There have been some interesting studies of attitude changes of people who live at various distances from roads. It's a modernization process as well as simple multipliers, which are themselves important.

I wanted to say, secondly, I'm glad I asked Peter that question. I tended to dismiss it because first I didn't think I understood you correctly and then I thought you were wrong. And now I can see your point. But I think it's a very deep question. And the question is, if the price of being competitive is to lower the living standards of the poorest half or so of your population....

Timmer

It's not the poorest half. It's the other half. It's the formal wage market that you're lowering. Poverty is out in the countryside.

Seckler

Okay of your middle group. But are you throwing the baby out with the bath water? If the laboring people, even the higher income ones, have to lower their real income to attain this competitive status, is that really a good basis on which to develop your economy, both from a value point of view and also from a sustainability or feasibility point of view? Are people going to stand for reductions in their real income? It's a very interesting question. I'm going to have to think about it a lot more than I ever did before.

Notes

1. N. Dyson-Hudson and R. Duson-Hudson. "The Structure of East African Herds and the Future of East African Herders (Ethnic Groups, Pastoral Systems)," *Development and Change* 13(1982): 213-238.
2. *African Development: Lessons from Asia* (Arlington, Virginia: Winrock International, 1991). 260 p.

Friday morning, May 29, 1992

How Does Africa Get There and How Does AID Help?

Panel: Michael Carter, Asif Shaikh, Chris Delgado.
Chair: Myron Golden

Golden

We'd like to use this session to harvest some of the interesting seeds that have been sown by prior participants. I'm looking forward to some concrete recommendations for how AID can assist in the agrarian transformation process for Africa.

Carter

If one looks back at a lot of the classical growth theories, particularly the Stalinist agriculture-doesn't-have-to-grow growth theory, agriculture served an important implicit function, which was as a holding pen for surplus labor. You hung out there as surplus labor until your number came up in the urban sector and you have to go and be productive. But now we're saying that's bad economics. We have to get that agricultural sector growing. That's positive. It means agriculture's not going to be a sleepy sector. Things are going to happen. And if they happen in the wrong way microeconomically, then that means people lose their place to sort of hang out and wait to be absorbed.

When we talk about microeconomics and how growth occurs, there are basically two levels of analysis that are important. One is how growth occurs between production units. We might call this the class structure of growth, if you will, or stratification between households or production units. The second level is within production units. That is, how does growth occur and impact people differentially inside of a household living unit? That obviously gets us into the broad set of concerns of intra-household or gender-based analysis.

Questions posed to the panelists

1. Are assistance agencies doing anything that is counterproductive and should be stopped?
2. What should AID do more of? What should AID do less of?
3. What is the appropriate role for government in pricing policy and price stabilization?
4. What can AID do to relax institutional and other constraints to private investment?
5. What sustainability issues and resources-environmental policy questions should AID address in its programs?

I want to talk about the systematic tilts that exist, or can exist, within agrarian market systems, and then how those feed back into how agricultural growth actually occurs. One big tilt is risk exposure that differentially affects households: who can participate, who will benefit, who will sort of bear the cost of an agrarian transformation. Just leaving it to the market will not necessarily make it work well. We do need then to think about doing policy at this microeconomic level.

Now we come to the basic policy advice, "do good, avoid evil." We need to look inside households because there are actually people in there and they have separate interests, etc. There are a couple of main points. One is that endowments matter. That is, within a household, who owns what and how they own it can influence things, can matter. And second, the distribution of realized income increases can matter. Distribution within the household, whether it's in my pocket or someone else's pocket within the household, may in fact matter.

When economists say that things matter, they usually mean that it matters for resource allocation. That is, in fact, one aspect of intra-household perspective where these things do matter. Pauline already mentioned an example where certain kinds of labor allocations weren't forthcoming because of the perceived skewness of the way the income was going to be distributed from the project. So we need to be thinking about that.

Similarly, intra-household distribution matters not only in terms of whether a technology gets adopted, but also whether the anticipated effects of its adoption occur. We might think that in an undernourished population commercialization projects would show very high, let's call them, nutrient elasticities. That is, there should be a buoyant response of food consumption to commercialization and its attendant income increases. But in fact sometimes that response doesn't seem to happen. I think an intra-household perspective can in that instance explain why food consumption and improved nutrition are not happening.

"Female-controlled income has much greater impact on child nutrition than male-controlled income."

So with that as background, what does it mean to "avoid evil" when we talk about the intra-household perspective on the way agrarian transformation is realized? I've heard some amazing examples of development projects that fail to avoid evil by engaging in intra-household expropriation. That is, endowments that belong to one member of the household were taken away, in effect, and given to another member of the household. If you think of the household as a unified entity, whey would such expropriation matter? But if in fact the way endowments are distributed does affect both whether labor is forthcoming and how the income is actually spent and approved, then that is a form of evil that requires consciousness raising.

In terms of doing good, it means recognizing that there's research that makes a strong case that, for example, female-controlled income has much greater impact on child nutrition than male-controlled income. And that says from a do-good perspective, we need to be thinking about the issues of gender control of income. To give a quick example: In Guatemala there was a famous agricultural export experience where most of the income and the participation, even among smallholders, was done through a product that endowed males as members of coops and shifted income control to their hands. Could it have been done differently? I think doing good in this instance means being attuned to possibilities within the household of bringing everyone along even at the level of which production programs are designed.

The second level of "do good, avoid evil" refers then to the question of differences between households. Doing good and avoiding evil here means trying to structure policy to compensate as much as is possible and as is economic to offset the tilts that exist within the system.

One clear example of avoiding evil has to do with tenure systems. Because economists perhaps have too much sway in these things, there's sometimes an incentivism madness that goes through policy makers. They see what they perceive as communal tenure systems, and they perceive that there are perhaps weak incentives for long-term investments in these systems. Then they begin to promote the destruction of these kinds of tenure systems. I want to point out the risk faced by a household if it were fully individualized and cut off from the attributes of a traditional tenure or social system. These systems include some forms of communal risk management as well as forms of land allocation, which insure that the household can exploit its possibilities for self insurance. So in a sense, destroying traditional communal tenure systems under the guise of improving incentives, if we're doing that in an imperfect market environment, may mean radically increasing the risk faced even by a representative household unit. That's a change we need to be careful about. We need to see the various dimensions of tenure systems and not totally get preoccupied with short-term incentives. In imperfect market environments, with missing capital and insurance markets, tenure systems and social systems can substitute for these missing markets to some extent. So avoiding evil means taking a broader view of the role of market-substituting institutions like communal tenure.

Finally, doing good means doing the best that we can to resolve some of the issues of tilt or differential opportunity. A tilt that I see as being particularly important comes from capital markets and, relatedly, insurance markets. So the issue of assuring smallholders access to the working capital that's necessary to capitalize the activities of agrarian transformation is very important.

Capitalizing people to escape failed opportunities without losing their land is equally important. In Chile there was a church project that gave people access to what I would call ex-ante working capital. It got these smallholders growing raspberries, but it turned out the raspberry market was really bad that year. By the time the thing was over, the Catholic Church had helped these people become landless. They had such montrous debts from this fairly expensive crop that they had to sell their land in order to pay their debts.

"The population scenarios for the next 30 years are in effect already written."

Again there is a critical linkage there that needs to be thought of simultaneously. You can't just capitalize people into something in a risky agricultural environment, particularly when risk is worse for smallholders than it is for larger holders. So part of the package of doing good is thinking not only how to help people to do things that are good, but how do you help them survive when the good things don't always turn out so good.

Shaikh

I'd like to divide my comments into two parts, one on the sustainability and environmental issues to consider and the second on what the public sector can do. We have used the term agrarian transformation and I would like to bring it back to the context of what I see this meeting being about, which is economic development on the premise that the agrarian transformation is essential to successful development. We are not talking about creating an agrarian transformation for its own sake. I think that's an important distinction because there are complementary things that are needed and the end point is not just the agrarian transformation, but the overall process of economic development.

Part one of the comments are some preliminary findings. We have talked about the need to do 20-year modeling, the projections for sort of the strategic planning approach. We are doing that more or less right now with the Club du Sahel. The study is called SEED (Sahel Economy, Ecology, and Demography study), ironically, and so I'd like to throw out a few sprouts that have emerged from this thing. And this is about Sahelian West Africa. First, the population scenarios for the next 30 years are in effect already written. There has been a lot of discussion about what we can do about population and how we can influence population to reduce the stress on the environment, but it turns out that over the next 30 years the Sahelian population is going to pass from its current level of 45 million to between 95 and 115 million, whatever we do. If we're successful on population control, it will be down to 95. If we're not, it will be up to 115. But the basic agricultural and rural production systems for transformations that must take place to respond to massive increases of population will have to take place whatever happens. Our ability to influence population levels gets greater over time, but that's the 30-year limit.

The second point is that even now there is a structural deficit in what can be called the ecological carrying capacity in much of the Sahel, but particularly in the lower potential zones, which have the majority of the population. That is, present consumption exceeds what can be produced without external inputs in many parts of the region. This is going to grow worse because population is growing and resources are degrading. So external inputs are going to be essential in the long run. There is an ongoing debate about whether we should be focusing on improved natural-resources management versus bringing in external inputs. That's not really the relevant debate. The relevant debate is about the proper mix in local situations between external inputs and improving natural resources management, both of which have a strong role to play.

The third point, which is really an implication that comes out of the second, is that we are talking about large numbers of farmers buying external inputs. In order to buy external inputs you have to become part of the cash economy. You have to be able to generate the cash to pay for them. This implies fundamental and rapid structural change in the organization of production systems. As we have seen, that change is already taking place. It's taking place in ways that we have inadequately captured in the past. It has existed more than we thought, but it is also growing in the zones of low-production potential as well in zones of high production potential, and most particularly in zones that have access to roads and access to markets.

This raises certain questions about whether the cash generated will be reinvested in agriculture. I'd like to raise one dimension that hasn't been discussed much. And that is that it's not just a matter of adequacy of investment funds, but willingness to take cash and put it in agricultural investments, particularly among the young in Sahelian Africa. There is a rapidly growing desire for nonfood consumption goods, and this has implications for how resources are going to be allocated.

"In the long term there is little trade-off between environment and growth because without growth, we will be environmentally worse off."

A fourth point is that as a result of the basic juxtaposition between population and resource degradation issues, growth becomes the essential element in a successful development strategy because the structural deficit in ecological carrying capacity implies that subsistence production (which, as we have seen, is a slightly overstated idealized form of something that no longer exists) is no longer sustainable because it cannot assure the external inputs needed to maintain production levels. Subsistence production is no longer sustainable and must over time degrade natural resources in order to survive. We have to start moving large numbers of people into commercial and cash-oriented production.

"The state does not have the resources to make development happen without the donors, and often, to be frank, the state is preoccupied with the pursuit of power and not with the longer term

It turns out there is a strong link between poverty and the contributors to resource degradation and what could be considered bad or degrading land management. However, we're now talking about a situation in which an improved policy framework and more liberalized economic system will be necessary in order to spur growth. But it doesn't necessarily follow that the greater choice implied by greater liberalization will lead to maximized environmental benefits. And this is one of the fundamental policy choices that we face, as there is increased pressure from Congress, from domestic groups, and from our own philosophical approaches to development to try to have environmentally sustainable development. We run into some muddy definitions of what environmentally sustainable development is, given the possible trade-offs in the medium term, at least between environment and growth. I would argue that in the long term there is little trade-off between environment and growth because without growth, we will be environmentally worse off.

Part one of my comments was on some of the environmental and resource issues in the context of the study. Part two is about what the public sector can do. Who is the public sector? When we ask what the public sector can do, we're talking about donors and government. But it's important to talk about who the public sector is and in fact who the government is. Again, I am speaking about Sahelian West Africa, but I think many of these things can be generalized to other parts of semi-arid Africa and possibly to the more humid regions.

In much of Africa there is overwhelming dependence on donor money. In Niger, to take an example, 96.5 percent of public investment budgets comes from donors. Sara Berry points out that to a considerable degree the state and the bureaucracy are an economic class and not simply representative of the rest of society, and they are actively in competition for dwindling resources, natural and national. In practical terms, the state does not have the resources to make development happen without the donors, and often, to be frank, the state is preoccupied with the pursuit of power and not with the longer term development process. There is weakened ability in many Sahelian states to take on longer term development choices.

The corollary of this is that, in practical terms, donors have the preponderant influence on financing, on ideas, on technical expertise, and on the setting of priorities. It is not by coincidence that as environment has become a priority for donors, it has become a priority for countries; that when forestry is a priority for donors, it is for countries; that when child nutrition is a priority for donors, it is for countries. We're all familiar with the process through which ideas pass from here to there via financing and money mechanisms and the technical expertise of people who have been designing studies that we as a community feel capture our concepts.

We have been talking about how you get there from here. I'd like to set four preconditions that we ought to consider. These preconditions are necessary if we are to have a chance, and I would stress that all we are talking about in Sahelian West Africa is a chance. We can make it a better chance, but it is at best a chance. And so if we don't get the preconditions right, we're really not even going to be able to begin.

First, we badly need a macroeconomic strategy. I spend most of my time with colleagues that I very much support on rural development activities railing about the fact that we're not focusing on a macroeconomic strategy. The bulk of development resources going into Sahelian West Africa are projectized and they are centralized. This is the major problem. Unless we can come to grips with it, we will not be able to talk about a macroeconomic solution. Even if the sum of the central projects were successful, that would not add up to a successful development strategy.

Second, we need a transparent, enabling, and stable set of policy signals and long-term public investment priorities. I stress stable and transparent because in addition to the inadequacies of many of the public-sector policies, the instability and the opaqueness – the contradiction and confusion – of many of the policies, the ambiguity from land tenure, from pricing policies, from administrative systems, is a major obstacle.

Third, there must be a vastly better system of identifying priorities and focusing resources across donors and sticking to it over long periods, including stable long-term finance. I was recently in Niger looking at the list of donor and NGO projects in one subsector of a province, and there were over 200 projects. Each of these projects had a different time frame. Each had different procurement, different specifications. Each had different implicit development strategies. Each had different field approaches. Each had people who speak different languages. Each had different accounting systems, different reporting requirements. The sum of these things is a disaster. And the fact that these are 200 different things, vastly reduces the ability to coordinate them. When I analyzed how the distribution of resources occurred, I found 88 percent of the money was going for programs with national coverage, 4 percent for regional coverage, and 8 percent for local coverage. It's a pyramid facing in the wrong direction, if you will.

And to some extent we think we are working more at the local level than we are, but all of us are also duplicating efforts to an enormous degree. I could name countries all over Sahelian West Africa where AID, the World Bank, the French, the Dutch, have spent half a million each, simply trying to find out what the other donors are doing. Given that we are spending in Niger close to $100 million a year in agriculture and environment, we in fact come close to having the amount of resources necessary to carry out the scale of strategy we're talking about. Not enough, but close. But nobody is actually programming $100 million. Everyone is programming their own little program. This is a strategic problem.

Finally, in terms of preconditions, there must be a viable link between macroeconomic and microeconomic strategies. Neither government nor donors can make the millions of individual decisions that result in macroeconomic change. The options that we promote in our macroeconomic strategies must be in the self interest of the individual decision makers. But they must therefore also compete successfully with the real opportunity costs that those decision makers face, whether they mean migration, whether they mean speculation, whether they mean consumption goals, or whatever else.

The emphasis on making sure that things are financially attractive is something that I've been working on for many years, but I think we have to go broader than simply financial attractiveness to looking at the overall systems including social and other noneconomic considerations that motivate people to do what they do. One of the key ones is, of course, risk management, which is often underemphasized in our strategic thinking.

> **"We have heard consistently from representatives of various private-sector groups that the key issue is not so much to stabilize risks, but to be able to know them so that you can plan accordingly."**

We need to break out of the static analysis rut in projects and in programs. In 30 years there will be a mix of catastrophe and successful transformations in Sahelian agriculture, but agriculture must intensify and diversify simply because you're going to have 100 million people, and you can't fit them all on the available land doing the kinds of things that are now being done. That diversification is already taking place. In 30 years, 50 percent of the population will be urban. There is probably little or no productive urban employment taking place now. We know little about how to make that sector generate productive employment opportunity. In 30 years, pastoral societies will have come under enormous stress. There will have been intensive and probably bloody conflicts over resource access and resource rights. Many of the tenure issues that we are discussing, by default or by design, will have been resolved. And on an optimistic note, there will be enormous new opportunities to trade and generate regional integration. I think the highest priority for donors and for government is to do a better job of anticipating where the societies must go for structural reasons, where people must go for individual reasons and to try to influence future choices rather than to solve the problems of yesterday, which are probably not solvable, and certainly no longer within our control.

Delgado

I want to address the specific points involving AID, but first I hope we can agree on some points that came out of these 2 days, as sort of a "Baltimore consensus" on needs for the 1990s for AID. The first is to provide leadership in development assistance. This is critical. There is considerable debate at the present time over which direction to go – the constituencies supporting foreign assistance generally are in disarray – and there is a shift away from the idea of capacity-building and facilitating the development process, clearly the desirable long-term objective. The second point is the consensus for a clear growth objective following comparative advantage. Of course, the comparative advantage will be different in different situations. Third, attention to the role of food prices in economic growth in specific situations is required. We always look at food prices in their relation to equity, but in the last 2 days a lot of attention has also been given to the role of food prices in providing incentives for the production of items other than food because food prices have a big impact on production costs for nonfoods through the labor market. Fourth, the relative roles of policy and technology in bringing food prices down, which will be different in different places, is clearly something that a donor such as AID needs to worry about. Fifth, there is a need for predictability of strategic variables affecting profitability of investments. If we are talking about resource mobilization for growth, we have to include the private sector, both foreign and domestic, and farmers. We have heard consistently from representatives of various private-sector groups that the key issue is not so much to stabilize risks, but to be able to know them so that you can plan accordingly. And sixth, there is a need for identification of key public goods that facilitate private capital accumulation. The issue is time. If the time is right to invest in dairy in the semi-arid tropics, the private sector is going to respond first where there are roads and veterinary services, and so forth. And despite the fact that one cannot always foresee all the coming options, it does not hurt to pick the winners a bit in advance. We have to look ahead and see where gaps are emerging and where some good prospects are going to be.

Now, to come to the specific questions facing AID, are assistance agencies doing anything that is counterproductive and should be stopped? One answer is that the nature of institutional development is the battleground of the 1990s among donors in Africa. You cannot have resource mobilization without privatization, but you cannot have privatization without institutional development. You have to be able to enforce contracts for privatization. To have a credit system, you have to have a form of collateral and so forth. The problem is that the direction that institutions go, and that institutional creation goes, is going to be heavily influenced by donor behavior, and it is important that this not be a competition for spheres of influence. There is danger in West Africa that the way certain donors are going will hinder regionalism by having the effect of excluding Nigeria and Ghana from the francophone areas, rather than trying to include them. I think that we are all looking to AID as a major player at the table to stick up for the right thing.

Second, on what assistance agencies probably should not be doing: In recent years, AID has switched its support for research and capacity building among so many institutions that the idea of centers of excellence has come into disrepair. It is important that AID meet its distributional objectives with respect to its contractors in a way that does not destroy talent. A lot of talent has been lost in the past because of the decline in AID's commitment to support centers of excellence in a manner that permits making longer term commitments to U.S. staff and to collaborating institutions in the third world.

The third point is the hijacking of the priority-setting process. Surely if one was pinned to the corkboard as to what development is, one could say that it is the capacity to set your own priorities and to implement a program to address them. And with growing legitimacy of governments, that process is well launched. One of the more interesting aspects is how it is beginning to get launched regionally (across countries). The old-time expatriates who deal with African affairs tend to smile when you talk about regionalism because there have been so many poor starts or non-starts. Nevertheless, major donor activities such as SPAAR, to which AID is a subscriber, are necessary, and donors need to be careful not to try to set regional priorities on their own.

The fourth area where agencies have been counterproductive is in flag-flying in donor assistance, some of which is clearly inevitable. It seems to me the international system itself is so rudderless at present that if the United States starts behaving the way some smaller donor countries are behaving, we might as well all pack up and go home.

Turning to what AID particularly can do more of, I would urge consideration of three areas. First, there is capacity building. Not primary education, which national governments are quite capable of, but training at the Ph.D. level, training of the elite. Decisions and leadership come from elites; if we really want to have a long-term role in the construction of the developing world, AID needs to continue to be heavily invested in the training of the elites. Institution building in some places, including creation and support of universities in some, is also needed. Even bringing people on sabbatical to the U.S. could have high returns. In general, the objective should be to help increase the intellectual quality of policy advice in the third world.

And here there are three functions that continually get mixed in with each other: policy analysis; policy research, which is a more independent long-term function; and policy data. When mixing happens, none of them works. You need three different kinds of people to be involved in those three things. Typically that is the way it is funded, three different kinds of projects. Then the projects do not communicate with each other. So one needs to find a mechanism in specific places to strengthen the host-country capacity for all three functions to be carried out by three different groups of people, yet still to talk to each other. I think that AID is well placed to get into that.

> **"Decisions and leadership come from elites; if we really want to have a long-term role in the construction of the developing world, AID needs to continue to be heavily invested in the training of the elites.**

Still with respect to capacity, there is the question of farm household-level work and its relation to policy analysis. That kind of work has always been so expensive that it is hard to defend. But particularly when we are dealing with the semi-arid tropics, where development strategies and specific priorities have typically not been clearly established, one has to go the extra mile in discovering how markets are linked and what motivates behavior. We simply do not know what to do in the semi-arid tropics. Capacity for farm household-level work guided by a clear sense of policy purpose is central to informing emerging strategies in this area. This is particularly true for environmental work, which is so dependent on the assessment of human behavior.

And finally, this type of gathering is an important exhibition of leadership because it brings people together in a way that does not happen very often. I wonder if it also could not be done in a way to broaden it to include other groups and to participate generally in a consensus-building and educational process within this country to support a strategic vision and commitment for development.

Now, moving on from capacity building, the second area AID should give priority to is transport improvement or at least scoping out some of the issues in transport improvement. A clear target is to get food prices down in the best possible way. In many cases that will be production. In others it will be trade. To the extent that we have identified cereals movement as an issue, we have to look back at the railways and water transport because truck transport over long distances is prohibitively expensive. I would think that a handle for U.S. political consensus building on that will be that it is good for U.S. exports in many cases, and fortunately it is also good for the countries and should not be neglected by a development-oriented organization.

The third set of points: AID should do more of what it's been doing for a long time and well, that is, sectoral support for getting food production up or other kinds of agriculture production up. In some cases, it is going to make sense for the handle to be getting cotton production up, and food will follow. Or it may be getting groundnut production up. In some cases, AID may not be able to get too involved, but there are others who can and who will. Perhaps you should then put your resources somewhere else that permits drawing maximum development benefit from the cashcrop-induced growth.

What can AID do less of? I heard the example of programs that make use of scarce and expensive manpower for benefits affecting only a few small farmers. Clearly, AID does not want to be a banker to the poor, at least not in a direct retail sense. On the other hand, wholesaling has tremendous moral hazard problems. The debate has to be brought out in the public so that people focus on the idea of AID's comparative advantage. To do that, AID has to show where its mission should lie. You cannot simply say that your mission is not here, unless you are showing strongly and conclusively that the mission is somewhere else. A way to proceed would be to develop a growth mandate: show how things relate to growth, and then how growth relates to the various other important objectives that the supporters of AID might have.

What can AID do to relax constraints in private-sector investments? What we really need for private investment of any kind is institutional development, contract enforcement, infrastructural overhead – the things that make private investment profitable, but whose benefits cannot be captured by a single investor.

"I don't sense that development is a major interest on the part of universities, particularly the Title XII universities. And I don't sense that Africa in particular is an area of interest."

Finally, sustainability issues – I have not heard much about the issue of the semi-arid tropics, where the sustainability problems are the most severe. I am glad to see AID is getting back to a focus on cattle in the semi-arid tropics. The focus on this was very strong in the 1960s. It was strong through a good part of the 1970s, and was dropped like a hot potato in the late 1970s. Now I notice, at least in West Africa, AID is coming back to that. Cattle is a key part of the sustainability issue, although it is one that can go either way. We know a lot from the earlier literature. Many constraints on African cattle – constraints from non-African dumping, constraints from low income growth in the consuming centers, and so forth – are being overcome. This is one of the areas that urgently needs looking at by operationally oriented people.

Golden

I'd like to use this session for recommendations, comments on recommendations, or questions to the panelists on recommendations.

Cobb

I wonder if there is the capacity within AID to assume the mantle of leadership in agriculture that Chris's suggestion implies. We don't have the incentive structure in the organization to encourage people to get themselves deeply involved in the substantive technical issues of AID. The incentive structure is to move people into management. Many of our more senior technical people are leaving the agency and we're not replacing them. The World Bank does not have much depth either, I would maintain, in the agriculture area. So the question is where is the leadership going to come from?

On the issue of capacity building, which is partially related, I want to address the question of capacity in the United States. I don't sense that development is a major interest on the part of universities, particularly the Title XII universities. And I don't sense that Africa in particular is an area of interest. We don't do the kind of policy analysis, research, and data gathering that Chris is describing. We have to look to outside expertise. We have to rely on a stream of Ph.D. candidates who stay with the subject through their careers. And what we're looking for, it seems to me, is what we had in Asia and that is senior analysts from universities and through consulting firms who can translate policy analysis and research into options for decision makers who are sitting at the ministerial level in these countries. It's one thing to produce the information at the microeconomic level. It's quite a gap between that and being able to sit down with the minister of finance and say, if you take these steps, these are the implications of where you're going, and then to be invited back next year to talk about the results of those decisions. We don't have that kind of expertise. Are we going to be able to turn to the universities in the United States to get the kind of help that we need to carry on this 20-year objective that you've laid on us?

Smuckler

I believe that there is in the American university system a large and untapped reservoir of people who would rise to the kind of 10-, 15-, or 20-year commitment that you're referring to. I think in the last few years there has been a backing away by some of the institutions, including Title XII institutions, because of what they sense to be a short-term situation, a kind of 3 years here, 2 years there. That has not helped develop the institutional base that would be very useful.

Timmer

We had this conversation last year, and I don't think we've moved very far in terms of what we think the situation is or what the institutional response is going to be. At Harvard I teach a course called "Structural Transformation in Historical Perspective" with Dwight Perkins and Jeff Williamson. It's the introductory Ph.D. course in development economics. It also counts as a course in economic history, and we do not do Africa. We do the historical experience in Europe. Dwight does East Asia. Jeff Williamson does Latin America. But we don't do Africa. We don't have anybody on our staff, anybody in the economics department, who could teach the economic history of Africa in a development context. So I don't see the ready capacity, at least at Harvard, to jump in and train lots and lots of students. But the reason we don't have that capacity is that there is zero demand for those students. Once in a while a student will say, don't you think we should be talking about Africa in this course? And we say, yes, we probably should, but we don't have the resources to do that. But that's not where these students think their future is. Even for the ones who are interested in development, they don't see their future working in Africa. We have lots of Latin American Ph.D. students. We have enormous numbers of Asian Ph.D. students. I believe it is fair to say the economics department does not have a single African Ph.D. student at the moment. Now, that's criminal, but it's not unusual.

"There aren't any jobs out there teaching economic development. There were 20 years ago, but there aren't now."

Spangler

That's remarkable. If you're looking at a career of 20 or 30 years, you're going to have more of a career in Africa than you would have elsewhere, and I'm not talking just for African students as Ph.D. candidates, but for American students.

Timmer

But we have maybe two each year in the economics Ph.D. program who think they're going to do development as a career. There has not been an academic opening in development at one of the major universities for a long time. There's no point in training somebody in an academic career, which is what Harvard thinks it's doing in its economic program, if they are not going to have a job in the career they're training for. I tell my students, the ones interested in what I'm doing, do trade. Do international finance. Do industrial organization. Do economic

"Nobody goes to the economics department at Cornell to study development, I can guarantee you that. But more than half the agricultural economics students want to do development."

history, for heavens sake. There are lots of jobs out there teaching economic history. There aren't any jobs out there teaching economic development. There were 20 years ago, but there aren't now. And our students are very responsive to incentives. They know what kinds of markets there are out there.

I'm pessimistic about institutional capacity. Sure we can gear up to do it, but we aren't going to gear up to do it until we can see that there is a career track for the people who are being trained. You're not going to hire them in AID. If it's Americans, they're not going to get hired in the World Bank. They're going to end up, maybe one, at Winrock. Conceivably every other year we will hire somebody at HIID, but that's not steady state because we're not really in a hiring environment. We want all this expertise, but what are you going to do with it?

Wolgin

We've had this discussion before. This is an area where any comparative advantage is growing enormously because we do what the World Bank can't do. The bank doesn't provide fellowships and scholarships. And because we're connected to the American university community, I think that in the end the demand for development specialists follows the market test. If in fact there were substantial amounts of money flowing from AID to support institutions and development centers or African studies programs or whatever, some of the demand would become perceived and the supply rule would follow.

There was a chart somewhere that looked at graduate students coming to the United States from overseas. Only the Asian graduate students sort of exploded in the 1980s. African graduate students declined relative to what they were a decade before, at least partly related to economic decline and partly related to a decline of their funding. We ought to take note and fund this stuff if we are interested in capacity building and if we're particularly interested in the connections and market-driven neoclassical economics. It's up to AID to do that. That's an area where other donors probably have the same point of view.

Sahn

I fully agree on the incentives to study development, especially if somebody's interested in Africa and a career. I think Harvard's economics department is in a different situation than Title XII universities where there are big agricultural economics departments and where the demand of students to do development is overwhelming. The problem is that universities do not have the faculty and the faculty slots to fill the demand because people who go to agricultural economics departments and more applied economics departments want to do development. They're not interested in studying domestic agriculture, by and large. So there is a different situation. Nobody goes to the economics department at Cornell to study development, I can guarantee you that. But more than half the agricultural economics students want to do development. Unfortunately there are only 3 faculty slots out of some 40 for development. That's a different problem. Of the three guys in it, only one has ever set foot in Africa and that was for a brief time. And he's a Latin American specialist.

Smuckler

Getting back to the discussion about who should be training Africans or Americans to do development in Africa, I think we have to do both because over the next 20 years, it's going to be a partnership, and that partnership has to operate at various dimensions and various levels. It has to be universities in the U.S. working with universities in Africa, faculty exchanges, sabbaticals back and forth. Also a lot of the universities in Africa are polarized relative to the state. In other words, the people in the university and the people in the government don't get along well. So there has to be university-to-government interaction.

You want this back and forth. You want Africans coming here, but we also still have to train Americans or develop country people to go out to Africa who are willing to do their dissertations, who are going to be the next generation of people to train Africans. The requirements to train Africans are going to increase over the next 20 to 30 years, not decline. And we don't want Africans in U.S. universities primarily doing that training. They should be back at home doing their training. So we need a pool of U.S. Africa experts. The bottom line is that the money is not going to come from the state government any more and it's not going to come from USDA. It has to come from AID because it's also not going to come from the World Bank.

Gilbert

There is a role for U.S. universities in developing technical and analytical skills in economics and various agriculture disciplines, focusing on areas in which they have traditionally excelled. But in terms of African development, more of an effort should be made to get African institutions to function and not, in effect, write them off by trying to develop that capacity in U.S. institutions and supporting advanced degree training overwhelmingly in these institutions. I know that's not what people are arguing, but I think there has been a tendency to say that African universities are not going to be able to operate effectively for some time to come.

Finally, there has been overemphasis on Ph.D. training as the primary means of improving performance in Africa. The theme for the 1990s should be on improving the utilization of the capacity that already exists. The numbers of trained staff are not the major problem. There is considerable scope for improving the contributions of people already trained and reducing attrition rates through better conditions of service.

Lundberg

I agree that the university community produced a great deal through the involvement of Illinois, Stanford, Cornell, and others with Edgerton University. But that involvement is very much a partnership between the U.S. university and the African institution. One of the problems is that a lot of U.S. universities are not ready to go into a full partnership. There's a feeling that we have something, we want a market, we know better. It's what I would call a bit of an attitude problem. It's not throughout the university community. There are some that have overcome that are doing a tremendous job, but there are still others that need to learn from the ones that have succeeded in Africa.

"There's a lot of concern among researchers in Africa, especially faculty in universities, that funds allocated for research in Africa tend to end up in the U.S. Or projects are initiated with targets in Africa, but miraculously the funds ending up again in the U.S."

If I could move away from the capacity building, it seems we're looking at how does Africa get there. Certainly within AID we have to admit that we can't achieve this transformation across Africa. Four-percent growth probably is not realistic across Africa, but it is realistic in selected countries. We have to target the countries that we can work in where there are some of the preconditions that Asif and others talked about. There are places where we can really make minor changes in the agriculture sector and should. There are others where we can't.

There has been considerable discussion about the private sector. Everyone is seeing that there's a role for the private sector. But we have to push a lot harder than I think we have been over the last couple of days in terms of the private sector and the role the private sector should be playing in this transformation. I heard Kevin Cleaver, for example, talking about government research and government extension and a lot of that type of thing. Where you have a commercial crop, you should start thinking about the private sector doing the research and getting the government out of a lot of the research that we now tend to think they should be doing. Anything they can make money on, I think Cargill and others are ready to fund the research for.

The same with extension: Any time there's something to market, the private firm will extend the technology to market that commodity. At least that's the way it works in the U.S. The big agricultural counties have two, three, four extension agents. When I was with Agway, Inc., I had more people doing extension work and also marketing our products in Berkshire County, Massachusetts, than there were extension agents. We were very effective at that.

When I worked in Kenya, the real technology, the real increases in farm-level income, were coming when you had a private firm pushing a commodity and providing the technology and the extension.

"We hardly know what the priorities are or when they have changed. There is a need for AID to look into this and to operate more directly with the targeted clientele."

Ackello-Ogutu

I raise just four points. There's a lot of concern among researchers in Africa, especially faculty in universities, that funds allocated for research in Africa tend to end up in the U.S. Or projects are initiated with targets in Africa, but miraculously the funds ending up again in the U.S. I'll give you an example. We had a $250,000 bilateral agreement and only $30,000 ended up getting to the faculty. I'm talking about what was referred to as a pyramid facing the wrong way, where either the administrative costs are overwhelming or the design of the project is such that the targeted clientele does not get the benefits. It is alienating a lot of researchers in the research stations and in the universities. I think that AID ought to look at this very critically.

The second point is bureaucratization of operations. In the 1970s, AID had more direct links with universities. This has been deemphasized and AID is now providing scholarships through the government. I'm giving examples that apply specifically to Kenya, but this is probably happening elsewhere. I would appeal to AID to try to use less bureaucratic channels for supporting scholarships in Africa.

Third, AID ought to get more into supporting linkages between African research institutions and institutions in the U.S. I think this is being neglected.

The last point concerns discussions that lead to prioritization of projects. These have become highly top heavy. There is loss of transparency in the whole thing. We hardly know what the priorities are or when

"The next part of the research may be taking a lot of what's out there, pulling it together, and putting it in a form that those of us who have to start making decisions find

they have changed. There is a need for AID to look into this and to operate more directly with the targeted clientele.

Bonner

In the past day and a half, I believe people tried to take a positive outlook. They tried to say there's going to be some chance for success in Africa. When we couldn't find it in the macroeconomic data, we scraped down to the microeconomic data. Then we scraped down to mutual experiences. I think we have a feeling for what we do know, what we don't know. What I didn't get a feeling for is, how does what we do know fit together? And then, what do we do with that information? Someone mentioned that the next part of the research may be taking a lot of what's out there, pulling it together, and putting it in a form that those of us who have to start making decisions find useable. I agree with this.

We laid out a good set of topics to look at in the future. And the one that I found most exciting is what this session was about. I'm still not convinced that having to get agricultural productivity moving is the way to go for all of Africa. There may be other things that are out there. It may work for a lot of Africa where there is potential, where you do have the environment, both climatic and political, within which to work, but there's a lot of Africa where that is not the case. We have to start looking at what can happen in those other instances. One alternative that's been discussed today is, don't worry about this; just worry about your high-potential areas and go with those. That's one alternative. I don't know that it's one that we want to take.

If we agree that progress does have to be led by some type of agricultural growth, then we have to start looking at the conditions for making that work: not only what are the policy conditions, what has to happen with wages, what has to happen with technology, but what happens in these countries where there is a lot of turmoil? I heard a few answers today that make me feel more comfortable in terms of that being a short-lived problem and one that will lead to further stabilization within the countries. But how do we get involved in that? What role does AID have to play to get better participation by people in their own lives and better participation by the groups that we've heard talked about today in making the decisions that are going to help them move forward?

What can we do in the agricultural field? David Seckler threw out a couple of examples. Does irrigation make sense? Does fallowing make sense? I think if we're going to say that agricultural productivity has to be a part of what's going on, we have to look at a number of these other questions that go along with it in order to say it makes sense or it doesn't.

We've held meetings for 2 years, and maybe there is a need for a third session. I'll throw out an idea as to what might be. We might look at the role of AID, the role of the private sector, and the role of government in trying to promote growth in Africa, whether it's oriented toward the agricultural sector, whether it's oriented toward spinoffs from the agricultural sector, whatever it is.

We are making decisions within AID that are starting to move us away from what one would call the strict agricultural sector, moving away from research, moving away from extension. When we look at strategies that our field missions are proposing, almost all talk about dealing with the private sector. Yet, today we're saying we have to worry about agricultural productivity. Are these contradictory? Maybe not. Maybe what we've heard today, that a lot of that has to be led by the private sector, is the truth. But we need to know how to do that and what programmatic choices that's going to offer as a result.

As we start planning for a third go-round, I think it's necessary that we put some discipline into the discussions. When you're taking people's time and asking them to come and give a presentation, how do you get them to focus on the questions that you really want? Maybe you start planning now for where we want to be a year from now, and we try to lay out the questions that we want answers to. We solicit the people that we want to do that research and we provide funding that allows them to do it, then when you're able to pull everybody together, we can have a focused discussion on the topics that are going to help us learn, and focused in a manner that those of us you're trying to convince can understand. We have some trust in terms of why you are coming up with those recommendations. What I'm looking for is, how do you make those recommendations usable and applicable? What kind of information can you give to us that will start allowing us to make some choices? Resources are small, and we're not going to be able to do it all. If we're going to make the most effective use of those resources, we need to have good and understandable guidance.

> **"It seems to me that we ought to elevate our sights in the agricultural sector to make sure that we're not just focusing on targets of opportunity, but that we're taking a**

Cobb

We started with a question: Is there a transformation taking place in Africa? And I think the consensus is yes, but we need to understand it better. We need to understand at the microeconomic level, the participants, and how it reflects in our macroeconomic information.

Second question, do we care? I think that there is a sentiment that we do care. How much we care is going to be reflected in how we look at specific country strategies. I don't think we care enough about the subject of transformation and agriculture to apply a template across the continent. The suggestion that we have to focus more on priority areas and specific implications for countries is right.

One thing that is clear to me is that we need to stick with the DFA action plan. The Development Fund for Africa emphasizes growth. We shouldn't be distracted from it. What is happening with our support to agriculture, I fear, in the context of DFA is that we have become a bit niche oriented. We are looking for very specific areas that we can support. For example, we're looking at nontraditional exports in four countries. Whether that is the appropriate production priority and income strategy and how our work in that area is going to relate to a broader macroeconomic change objective is something that we have to look at. It seems to me that we ought to elevate our sights in the agricultural sector to make sure that we're not just focusing on targets of opportunity, but that we're taking a broad look in those countries where the agricultural potential seems to be clear. On the natural resource side, we are also niche oriented and this is partly in response to pressures from outside groups. Instead of looking at environmental degradation, we picked up biodiversity, but its relationship to broader sectoral and macroeconomic change may not be part of our formula to the extent that it should be. So the point is that there is, it seems to me, a significant role for agriculture as part of our Development

Fund for Africa strategy, which we should stick with. And we have to reaffirm the focus on agriculture as it fits into that growth strategy in specific instances.

On the question of leadership by AID, I'm also concerned about technical leadership across the agency and whether in fact we have lost it in the major areas such as health, family planning, and agriculture. That's something that we're going to have to reassess through our recruitment strategies – to be able to retain good people and promote them and provide incentives through the system. Clearly our leadership posture with other donors and with the Africans is something that we have to be mindful of.

I'm a strong believer, despite our friendly dialogue with the McCormick people, that the private sector is the answer on the commercialization side of agriculture. With regard to the agricultural extension, there is clearly a role that the private sector can assume. I don't know what we should do in agricultural extension in the public sector. There is so much debate about the training and visit system and its unsustainability and high cost. And we don't have a good model after 20 years in Africa from the U.S. public sector. We have a good model in the poultry sector and in the seed industry, but we don't have a good one in the public sector. So agricultural extension, it seems to me, is something that we need to stay away from or at least think about before we do anything.

With regard to agricultural research, there are three areas in which we can evoke some leadership. One is looking at the agenda and the resource allocation in the CGIAR system. About 40 percent of the money in the CGIAR is going into Africa, and the question is, are they focusing on the right research issues? Pierre's presentation raises a question in that regard because the system is still run by the breeders. And whether or not they're looking at cropping systems, fertility, and water problems, the systemic problem is a question that at least needs to be reaffirmed. And also the question of whether the donors should reallocate the resources for the international systems and the local systems needs to be put on the agenda. Second, we can provide some leadership in the SPAAR, and this is not a financial contribution but a conceptual approach where countries set their own priorities and donors contribute or support those priorities without coming in with their own. And then third, the role of the private sector in agricultural research is something that is part of that particular trilogy.

I was interested in what Carl Liedholm had to say about the rural enterprise and its multisector approach. We ought to spend more time talking about that as part of the analytical agenda. Whether we need to do more comparative work on Asia, I'm not sure. Maybe we've gone as far as we can there. And also the question of connections between agriculture and the rest of the economy in the urban areas, is something that needs to be pursued.

This was a more difficult session than the one we had last year because we're trying to get down to the specific strategies and programs, and that isn't easy in a complicated sector like this. The final part of this session on what AID does was less satisfactory than the earlier stage-setting discussion. But after all, it is AID's responsibility to try to sort that out. It's difficult to ask outside experts to answer the question.

And finally, I do think that we have to mobilize the resources of the U.S. universities, international centers, places like IFPRI, if we're going to move forward in support of agriculture and any other sector. And what we need is a lot more dialogue in terms of how we view the problem and how we view the response. Maybe we can talk about specific ways to do that with the universities because it is an untapped resource in the sense that we don't spend enough time communicating with one another.

Spangler

I want to thank the Africa Bureau for inviting me back. It is almost like a holiday to be thinking about specific issues on how to help somebody in the Third World. You've asked me about how I like this new job I have. One of the pains is I have almost no time to think about those issues. Let me share with you the kinds of issues I am thinking about, though, because they're going to have an impact on what you've been deliberating here.

"What we're saying is that we're adding 20 to 30 countries, we have fewer people to manage it, and we have fewer dollars to spend in travel and other ways of

There's an enormous amount of competition for AID dollars in the world and within AID. Since 1989 AID has opened up new missions or placed new AID representatives in eight countries in Eastern Europe and, if the Yugosalvs don't quit what they're doing, there may be three or four more. We are opening up in 12 countries in the former Soviet Union. In Africa, we hope to open up in Angola and to dramatically expand in Ethiopia, maybe Eritrea. We are supposed to double our program in South Africa. We are going into Mongolia, Afghanistan, Cambodia, maybe Laos, maybe Vietnam. The Latin American Bureau is even proposing that we open up a new mission in Guyana. If you add it up, there are between 20 and 30 countries that we may be adding to the AID portfolio, and so far nobody's come to me and volunteered to drop any countries.

If you go back 7 years and look at the number of people employed by AID and compare that with how many we have today, it's actually down slightly. My memory is it's down about 4 percent. If you look at the operating expense, that's the dollars that Congress appropriates to AID to pay our salaries, our fringe benefits, our rent, telephone, cost of the missions overseas, as opposed to and separate from the program dollars, and discount it for inflation, we actually have fewer real dollars now than we had 7 years ago. So what we're saying is that we're adding 20 to 30 countries, we have fewer people to manage it, and we have fewer dollars to spend in travel and other ways of making our presence felt either in Washington or abroad. You don't have to be a mathematician to realize that that has to come to an end. We cannot endlessly add countries and keep the same number of people and the same operating expenses.

"Rural roads and irrigation systems, as important as they are, I think this time are going to have to be built with indigenous capital."

Let me give you an example of decisions that I'm having to make. Two days ago, I signed approval for our new task force in the former Soviet Union to open up with 81 people. I think it's 27 in the former Soviet Union itself and the balance here in the United States. Just put that into perspective, 2 years after Eastern Europe opened up they had 167. So 81 is probably not where we're going to stop. In addition by September 1993 I have to manage AID down so that we have 140 less full-time-equivalent positions. What that means is there are 221 spots that are coming out of the existing parts of AID.

Africa has been relatively protected on the program side because of the blessing of the Development Fund for Africa, but next year we are hearing rumors that even that will be cut. So the Africa Bureau is threatened on head count, on operating expenses, and on program.

I don't pretend to be able to read Congress, but the people I talk to who think they can, none of them say they think this picture's going to change next year. So we're looking at dramatically reduced resources and we have to manage our way around that. That is why you're going to be hearing more and more about focus and concentration. I use those two words, it's the way that the Africa Bureau defined them. It isn't defined exactly the same way in the Latin America bureau and the other bureaus. But let me use the Africa Bureau definition. Focus means that within a country we're going to reduce the number of programs, the number of management units so that we can run them with fewer people or do a better job of running them with the same number of people. Concentration means how many out of the 47 countries in Africa should we really work with? It isn't just going to be the regional bureaus, however, that suffer, if you will, from focus and concentration. My next big project is to try to bring focus to bear in the R&D bureau and in the private enterprise bureau, our two biggest central bureaus.

What really is relevant to your discussion here is, how are we going to focus and concentrate within our research program? Nobody argues that research is unnecessary. It's necessary to avoid the white elephant projects that are strewn around the landscape of the Third World and to avoid the inappropriate policies that I, among the rest of you, tried in the past that probably set some of the countries in Africa back more than they helped. Research is also necessary to help improve on the good projects that we have and on the good policies that we're implementing. But we can no longer afford in AID to finance research to gain knowledge for knowledge's sake. And we no longer can afford what I would call analysis paralysis. Some people say it's a strategy of doing battle with the development problem in the Third World by doing, ready, aim, aim, aim, aim, and you never actually fire. We do have to, at some point, stop doing research and put some programs in place so that some of the dollars flow into Africa, so they don't all stop in think tanks.

To summarize, these restraints and problems really gave me a particular and unusual perspective on the discussions that I heard. My thoughts on how we can create this agrarian transformation in Africa are in fact colored by that perspective. I think there are four broad things that you ought to concentrate on. One, America's economic competitiveness is going to be the number one issue for taxpayers and voters. During the Cold War you could convince a voter in Amarillo, Texas, that it is urgent to give foreign aid because it somehow protected him and his family against domination by the bad guys. That's gone. Now the only way you're going to reach into his heart or his mind as he's voting is to convince him that what we're doing is more likely to give him a well-paid job or continue to give him job security. So it becomes paramount for all of you to help us understand the worldwide agricultural system and how Africa and America fit into that system. We're not going to grow cotton everywhere in the world in 25 years. We're not going to grow maize everywhere in the world. We don't want to waste time and money growing it in places where it's inappropriate.

The second thing: Research must find ways to generate domestic private savings or set up systems that generate foreign private savings to finance the transformation. I don't think there's going to be sufficient aid coming out of either the United States or the other donors. Rural roads and irrigation systems, as important as they are, I think this time are going to have to be built with indigenous capital."

The third issue is food security versus reality. Are we in fact barking up a wrong tree by putting food security very high among our goals? As we look at the map of Africa, this huge land mass, I often have thought if we took land that doesn't have any water within 2 miles and the land that is laterite, which can only support agriculture for 1 or 2 years without chemicals, and painted all those areas blue, most of Africa would look like Hong Kong, and maybe we should be reorienting our priorities on development.

"Food security versus reality. Are we in fact barking up a wrong tree by putting food security very high among our goals?"

And then last, we must learn how Africans can develop their own capacity from the village level to the ministries and all the way to the state house. We have to wake Africa up to the realization that the events of 1988, 1989, 1990, 1992, the end of the Cold War, have changed their world just as dramatically, I believe, as the decolonialization period of the early 1960s.

Wolgin

I want to thank all of you for coming and those of you who survived to the bitter end especially. I expect to be in Baltimore again next year.