Foreign Assistance and Agricultural Development: Implications of the Past 25 Years for Policy Conditionality, Capacity Building and Sustainability

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Why should we be interested in understanding the interactions of foreign assistance with the agricultural development of developing countries? First, because foreign assistance plays a major role in the expenditures of low-income developing countries. In Africa currently, from 30 percent to 60 percent of government expenditures in many countries come from foreign aid, and the share of government expenditures in the Gross Domestic Product (GDP) of African countries ranges from 25 percent to 35 percent. Even in a large country such as India, at its peak foreign assistance constituted close to a quarter of the gross domestic investment.

Second, development of the agricultural sector plays an important role in the overall economic development of countries at early stages of development, and governments need to play an important role in developing agriculture due to the "public goods" nature of many investments such as agricultural research, extension and physical infrastructure. These investments require lumpy capital and skills for their development. Small farmers with low incomes cannot mobilize resources on their own on a scale needed to establish such infrastructure, especially as the benefits derived from such investments have long gestation lags. Besides, they are not easily captured and recovered through direct cost recovery, hence the important role for government at early stages of development.

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Third, the contribution of foreign assistance to government activity consists not simply of financial transfers, but also of the transfer of ideas in the form of policy advice, skills provided through technical assistance which accompanies investment decisions, and institutional development through such means as the transfer of western "models," as for instance the U.S.-type land-grant colleges for agricultural research and extension. These various nonfinancial transfers can have a profound effect on the efficiency with which financial resources are utilized by the recipient countries and thus on the pace of growth of production and productivity. The level, stability and content of foreign assistance are strongly influenced by the international economic and political environment. It is important to explore the important dimensions of this environment to see its impact on the nature of foreign assistance as well as on its effectiveness.

The process of agricultural development is, however, in large measure determined by the resource endowments, policies, institutions and technological possibilities in the recipient countries. The extent to which an environment conducive to agricultural development exists depends largely on the way policymakers in developing countries perceive the role of the agricultural sector, and the extent to which they put in place the means to foster development.

The African situation offers a good example of the interaction between domestic and international factors. The problems of African countries' agricultural sectors have been at the center of international attention since the late 1970s because of the broadly shared international view that domestic policy failures largely explain their slow pace of development. Much "aid weariness" has developed because of the perceived failure of foreign aid to solve the problems of agricultural development in Africa. In the 1950s and 1960s, countries in Asia went through similar periods of balance-of-payments crises resulting from the failures of their agricultural exports and increased food (and industrial) imports. They too were seen to be increasing their dependence on food aid and financial aid from developed countries and there did not seem to be any hope of their ever being able to reach the stage of food self-sufficiency and sustained agricultural growth. Many of them, such
as India, Pakistan, Indonesia and even Bangladesh, have now reached a position of food self-sufficiency, and some (e.g., India, Pakistan and Indonesia) have become modest exporters of food. Important insights can be derived from the experience of Asia regarding the content of foreign aid, and especially the way it affected domestic policies, resource endowments and institutions, which in turn enabled Asian countries to develop agriculture. It is interesting to consider whether parallel possibilities exist in Africa.

There has been reluctance to indulge in such comparative analysis on grounds that few useful lessons can be learned from Asian countries which had far superior initial endowments in the form of trained manpower and institutional capacity. These may not be reproducible in the African countries. A great deal of foreign aid to Africa, on the other hand, has already involved a relatively simplistic application of far more advanced western technologies, institutions and changing conceptions of development. The effects of aid from OECD countries to African agriculture over the last quarter-century constitute the subject of a major research project under my direction. Also, in providing such aid, frequently the wrong lessons have been learned from the Asian experience and applied to the African continent. For instance, the Indian type of complex, centralized, multisectoral planning models were trendy in the 1960s and were applied in Nigeria’s early plans by western advisors. Concern about increased inequalities following the Green Revolution in Asia resulted in donors in the 1970s placing an excessive emphasis in Africa on integrated agricultural development of the regions and populations with few resources and growth possibilities in the short run. Such investment in agricultural and rural development resulted in a large number of failed projects leading neither to growth nor equity. Similarly, the concerns about the growing ranks of the educated unemployed derived from the Asian experience in the 1970s lead the international development community to underrate the fundamental importance of investment in education and training in African countries in the advice and investments they offered.

Since the technological, institutional, skilled manpower and physical resource endowments of many Asian countries are closer to those of
Africa in some respects than the solutions derived directly either from the West or from these various western perceptions of the relevance of the Asian experience to Africa, it might be fruitful to make direct comparisons between the two continents to determine more precisely where lessons are transferable and where they are not. For instance, semi-aridness is a major reason for Africa's poor agricultural performance. India has two-thirds of the world's cultivable area that is classified as semi-arid and Africa has one-third. It is instructive, therefore, to examine where growth in agricultural production occurred in India and why, and to examine the implications for Africa's prospects in semi-arid agriculture. Similarly, small-scale irrigation and low-level agricultural technology used extensively in Asia can benefit Africa in place of the tractorized schemes and large-scale irrigation dams financed by foreign aid to date. As a prototype of the Asian case, I will explore the sources of growth in India's agriculture, the causes of that growth, and the role that foreign aid has played in that process to derive insights for the development of African agriculture. To do so, I first review the international economic environment which currently determines the level, size and sources of foreign aid to Africa and which influenced these levels in India. I then outline briefly the motivations of aid as they determine the type and certainty of aid. This in turn influences the extent to which recipient country policymakers feel that they can rely on external financing as a source of government expenditures. I then examine the role of agriculture in economic development. Afterwards, by reviewing India's agricultural development experience and the role of foreign assistance in the process, I identify the sources of India's agricultural growth and the causes of that growth. I then examine the similarities and differences in the domestic policy environments and aid between the African countries and India to draw implications from the comparative experience for future agricultural development in Africa.

**The International Environment for Aid**

The rapid growth in agricultural production in North America, Europe and Japan since the mid-1970s has greatly increased the world surplus
stocks of grain in the 1980s. This situation is radically different from
the period in the 1960s when India was the major beneficiary of con-
cessional aid. Then the United States was the only major source of
surplus food and foreign aid and thus the dominant source of advice,
institutional innovations and new technological possibilities introduc-
ed in the agricultural sector in India. The sources of aid to the develop-
ing world have greatly diversified since then, as has the prosperity among
western nations. For instance, a large number of Western European
countries and Japan as well as Eastern Bloc countries are giving con-
cessional assistance to Africa. Consequently, ideas in the form of policy
advice, investments, and institutional and technological possibilities and
skills introduced through foreign aid into African agriculture are highly
diverse, frequently creating much confusion on the African scene. This
is especially the case as the ability of African governments to distinguish
between the quality of advice and assistance is greatly limited due to
their own limited capacity in terms of trained manpower and institutions.

While the sources and levels of food and financial aid have increased
steadily until the early 1980s, they also contain the danger of providing
a false sense of security to the recipients, reducing the urgency of deal-
ing with domestic policies which often inhibit the development of
agriculture. Concessional aid levels to Africa have declined from 1984
levels as a result of concern about aid effectiveness and also the reces-
sionary trends in OECD countries. Willingness of the African govern-
ments to adjust their domestic policies has in turn been influenced by
their concern about the decline in aid level and also by the need for
increased national self-reliance. The differing views of the diverse donors
adds to the confusion on policy adjustments in Africa.

While the broad general directions of policy reforms are clear enough,
there is much disagreement as to the speed with which such reforms
can be implemented, the size of benefits that will ensue from the reforms
and the speed with which the benefits will accrue. The large agricultural
surpluses of the OECD countries have changed the international markets
and prices by causing a downward pressure on world agricultural prices;
this has been reinforced by the countries in Asia becoming exporters,
a situation which did not exist in the 1960s. Developing countries of
Africa on the one hand face lower real prices for their agricultural exports due to these surpluses of commodities such as sugar, edible oil, etc., and on the other hand suffer from the competition of low-cost imported cereals. Meanwhile, their own domestic food production constitutes the major source of employment and income for a great majority of their populations, with over 60 percent of their cultivated area under cereal production. Cheap food imports can increase the real incomes of urban populations, but by depressing internal terms of trade they can reduce the incomes of agricultural producers in developing countries, especially if there is no growth in the productivity of their agriculture to compensate for these price declines. If African countries, in addition, face large deficits in their balance of payments resulting from a combination of their own failed import-substituting industrialization policies of the 1970s and also the recessionary world market forces referred to above which have reduced the prices of their exports, this explains the need for macroeconomic reform in their countries to adjust to the changing world market. An increase in the domestic agricultural factor productivity which will reduce the cost of African production and make it more competitive with cheap agricultural imports or exports of competitors is thus the most important way to avert further decline in the real incomes of African countries.

Motivations of Aid

Aid is prompted by many reasons. Recipients have preferred to think of aid much in the way that Senator Fulbright considered it, namely, as a form of progressive international taxation in which a small share of the income of high-income countries is mobilized and transferred to their low-income counterparts for the latter’s development. Since developing countries are dependent on primary commodity exports, the prices of which fluctuate more than those of manufactured goods and services exported by developed countries, these countries have argued for aid so as to stabilize their export income. The concept of aid as a form of income transfer, however, has not had a broad appeal in the
United States, although a large majority tends to be in favour of emergency aid on humanitarian grounds. Public opinion surveys show, for instance, that while 79 percent of those interviewed in the U.S. approved of emergency aid only 49 percent supported long-term development assistance.

Aid, of course, also given by developed countries to meet their strategic, military or foreign policy concerns. In the case of aid programs of the United States, this has often resulted in assistance being highly concentrated on a few countries of the world, regardless of their developmental needs. U.S. aid levels to specific countries have also been quite unstable, depending on changes in those foreign policy or strategic considerations. Aid given to create long-term markets for the goods and services produced in the developed countries has more recently simply resulted in the disposal of surpluses existing in the OECD countries in the form of commodities, trained manpower or underutilized industrial capacity. Such desire for surplus disposal frequently results in tying of financial aid to the supply of equipment or trained manpower of the donor country, which may not be the most desirable for the development of recipient countries.

Motivations for aid may thus greatly affect the size, as well as the form and stability, of aid. Aid-giving countries may also refuse to share the secrets of their success so as to avoid future competition from recipients. Aid may thus increase dependence of recipients in the short run without the possibility of its leading to self-reliance in the long run. This is, of course, a greater problem with bilateral than multilateral aid such as that of the World Bank, which is not tied to a particular source and is not related to strategic and military interests of individual countries.

Interaction of Foreign Aid with Domestic Policies

We now move on to consider the interaction of the level, form and stability of aid with the motivations for aid and its effects on the domestic policies of recipient countries by taking the example of India. Nearly 60 percent of the $10 billion of U.S. aid received by India between 1949
and 1982 was given in the form of food aid, another 20 percent in the form of nonproject aid, and only 17 percent in the form of project loans. Bilateral assistance by the U.S. to India was relatively low until about 1958, accelerated sharply to a peak in about 1968, and then declined sharply, especially from about 1972, to the point of becoming insignificant. Given its large size (750 million population), aid levels to India, on a per capita basis, have been very low—at their peak in 1965-66 being $2.6 compared to $20 to $50 per capita in many African countries currently. Only about 12 percent of these expenditures was on agricultural projects, most of a small-scale nature.\footnote{This situation is in contrast to that of many African countries in several ways. First, in Africa not only is the overall level of aid much higher, but the dependence on food aid is very small in comparison with India’s. Food aid constitutes only about 10 percent of total aid to Africa, compared to over 50 percent of U.S. assistance to India. Much of the aid is in the form of financial aid and also in the form of projects. In contrast, much of the U.S. assistance to India was in the form of commodity or program aid and only a small amount in project aid. Project aid in Africa has tended to tax the limited planning and implementation capacity of the countries, as the resources devoted to developing such capacity further have been relatively limited, unlike in India. Also, quite a significant amount of technical assistance has been provided to help in the implementation of projects. It is estimated that close to $4 billion were committed by OECD countries in the form of technical assistance to Africa during the 1970s.

Relatively little of this technical assistance has been allocated to improving domestic policy, planning and implementation capacity. Indeed, much of the “learning by doing” has involved the technical assistance staff and, due to their short tenures, there has been much loss of learning by doing. This is an especially serious problem given that African countries start from a poorer initial base of trained manpower and institutional development that did India. In India, only about 1,400 U.S. agricultural advisors are estimated to have resided on a long-term basis from 1952 to 1973, and never more than 150 advisors at any given point in time. Only about 3,200 Indians were trained in agricultural and natural
resource issues during this period. These numbers do not seem large in relation to India’s size and needs. Yet there is a general belief that the U.S. made an important contribution to India’s agricultural development.

I argue in this paper that it is the quality and the form of assistance which was the basis of this contribution and it is the nature of the interaction of aid with domestic agricultural and overall policy which explains the success. The contributions appear to be in the form of: (1) developing of indigenous human and institutional capacity for agricultural research, policy, planning and evaluation, and (2) input into the formation and implementation of an overall agricultural policy which would be conducive to growth. We will stress that the initiative for improved policy and planning ultimately came from India. The successive droughts, increased dependence on foreign aid and external interference in domestic policy affairs from about 1958, when foreign aid accelerated, until about 1965 when it reached a crescendo for India to reform its agricultural policies and to put in place a package of internally consistent reforms which would increase production led to this initiative. Good luck also played a part. Apart from India’s obviously better institutional and trained manpower base, the existence of technologies it could import as well as the institutional models for technology generation it could borrow and install at home made a difference to its prospects. Finally and of considerable importance, India had been experimenting with different policies since the early 1950s and there was much accumulated learning through this process; when the crisis arose in the mid-1960s, India was able to utilize this valuable learning experience. We will show that these preconditions are not enjoyed by Africa to the same extent.

Until about 1963, India pursued a growth strategy which stressed an import-substituting industrialization policy in which agriculture had a relatively small role. During the first three plan periods the proportion of investments going to the agricultural sector ranged between 6 percent to 10 percent. India has been broadly criticized for keeping its agricultural prices low prior to 1967.² Our analysis indicates that Indian prices were well above world market prices for wheat between 1957 to 1972, however, even when measured in real effective exchange
rates (see Figure 3). Only in the case of rice were prices below international prices prior to 1967.

Programs for the development of agriculture, however, tended to focus on community development and extension programs aimed at convincing farmers to adopt modern technology. But the most important factor to be emphasized is that the physical response of production to fertilizers was relatively low for the traditional varieties of wheat and rice (Desai had estimated fertilizer response coefficients of 12kg per 1kg of nutrient for irrigated wheat under local conditions, the equivalent coefficients being 10kgs for rice). It is noteworthy that despite the impressive annual growth rate of nutrient use of 19.8 percent annually, the average annual rate of growth for foodgrain output was about 3 percent per year during this period and there were substantial year-to-year fluctuations in overall production that tended to be influenced largely by weather. Dependence on imports had increased to meet domestic food requirements. Figure 1 shows the domestic availability of food grains including the rising imports in the mid-1960s. Figures 2 and 3 show the relationship of domestic to international prices of rice and wheat in India and illustrate the less favorable treatment of rice in terms of international prices as well as relative to wheat. Figure 4 shows the growth of fertilizer use in India. While India's dependence on financial assistance had increased by 1958 as a result of a foreign exchange gap created by an ambitious second plan and aggravated by the persistent need for commercial food imports, by 1966 net food imports had grown to over 10 million tons.

The role of price policy reform vis-a-vis other agricultural policies is worth considering in the context of India's agricultural growth since 1967. President Johnson believed that India was not serious about an agricultural policy reform. Further support for India's development by the U.S. and the World Bank, which had begun to emerge as a major donor, was contingent on India's devaluing its currency as well as a package of policies for the agricultural sector including increased producer prices for rice and wheat, increased imports of fertilizers and promotion of their role for the private sector and concentration among the progressive farmers in high potential areas, and support of prices for
Figure 1
Availability of Foodgrains in India

Million metric tons (thousands)

Gross Production
Total Availability

Figure 2
Domestic and International Price of Rice

$/mt

Dom /real-eff rate
Dom price, off rate
International Price

Year
the agricultural sector by a newly established food corporation of India
becoming the buyer and seller of last resort. Many of these policies
are similar to those now being advocated in African countries. It has
generally been the U.S. belief that the imposition of these conditions
on India in the mid-1960s as a prerequisite for receiving financial
assistance from the U.S. and the World Bank, codified in the “Treaty
of Rome” between the Indian minister of agriculture and the U.S.
secretary of agriculture, had a profound impact on India’s food situation.

Indeed, frequently the 1965 episode in India is cited in the context
of the current discussion on policy reform in Africa, suggesting that
achievement of the same policy reform in Africa, if necessary through
the same type of conditionality, might solve Africa’s problems.

There are, however, several important differences between the In-
dian and African cases which are worth highlighting. First, much of
the productivity growth in India occurred under irrigated conditions.
In contrast, only 6 percent of the area under cultivation in Africa is
irrigated. Not only was India’s initial base of irrigated agriculture larger
(18 percent of the area under cultivation being irrigated), but the new
high-yielding technologies induced further investment in irrigation.
Second, the high-yielding rice and wheat varieties used in India were
the result of major technological breakthroughs which had occurred in the
international agricultural research institutes. In the case of wheat, this
resulted in a Nobel Peace prize for its discoverer. Estimated response
coefficients of high-yielding wheat under irrigated conditions are 20kgs
per kg of nutrient, or 66 percent larger than under traditional varieties
and of rice 15kgs, or 50 percent higher than traditional varieties.

Even then, the political decision to concentrate the use of fertilizer
in limited areas of high potential was a difficult decision for the Indian
government. I have documented elsewhere that there was internal op-
position to this approach from almost every important Indian lobby,
including the intellectuals, the communists, the state governments, who
would not gain from such concentration, the planning commission,
because it would require increased foreign exchange, etc. Nevertheless,
subsequent fertilizer use in India was highly concentrated in high potential
areas.
Figure 3
Domestic and International Price of Wheat

Figure 4
Growth of Fertilizer Use in India
Most important, with the assistance of the Rockefeller and Ford Foundations and the U.S. government, India had been attempting to build up its agricultural research system starting as early as the late 1940s. The food crisis, however, provided the basis for pushing through difficult policy decisions with regard to the research system's reorganization that had been stalled for nearly 20 years due to the internal resistance to reform. Therefore with the advent of the food crisis, India was able to put into operation an effective research system. This made the subsequent adjustments to continue to maintain its productivity gains possible. Such an adaptive research capability is particularly important in the case of crops which encounter highly diverse growing conditions and which therefore require a high degree of local adaptation. This was the case with regard to rice. The Indian research system was ultimately able to issue 221 varieties of rice to address the many diverse adoption problems faced in the promotion of new rice varieties.

Table 1 shows that irrigated wheat alone accounted for an astonishing 99 percent of the increase in productivity during the 1968-69 to 1981-82 period. Rice contributed another 15 percent. During the earlier 1956-57 to 1968-69 period, wheat and rice had contributed 89 and 79 percent respectively to increased productivity. Because the contribution of other rainfed crops to the overall growth in production such as millet, sorghum, maize, etc., which are the dominant crops in Africa as well, was nil or negative (meaning the area under cultivation of these crops declined due to competition of higher productivity crops), the combined contribution of wheat and rice accounted for over 100 percent of aggregate productivity growth. There was a complex input substitution with the new technology. In the rainfed areas, the new technology increased productivity from irrigation more and the spread of minor irrigation, particularly from tubewells, was very rapid. Whereas tubewells accounted for only about 6 percent of irrigated area in 1960-61, they accounted for about 14 percent by 1970-71 and 20 percent in the mid-1970s. In the irrigated areas, use of fertilizer accelerated as the marginal productivity of fertilizer curve shifted upwards and flattened out at a much greater input level. But because use of fertilizer on rainfed areas grew slowly, total fertilizer use increased at an annual rate of about 12 percent, slower than before. It is noteworthy that the foodgrain produc-
Table 1
Crop-Wise Contributions of Individual Effects to the Change in Aggregate Productivity by Period (Rupees per hectare)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Pure yield effect</th>
<th>Pure location effect</th>
<th>Location interaction effect</th>
<th>Pure cropping pattern effect</th>
<th>Cropping pattern interaction effect</th>
<th>Sum of effects</th>
</tr>
</thead>
<tbody>
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<td>Bajra</td>
<td>3.53</td>
<td>-0.23</td>
<td>-0.03</td>
<td>-2.09</td>
<td>0.14</td>
<td>1.37</td>
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<td>Barley</td>
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<td>-10.03</td>
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<td>0.18</td>
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<td>10.89</td>
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<td>0.18</td>
<td>0.01</td>
<td>-4.15</td>
<td>-0.17</td>
<td>-4.29</td>
</tr>
<tr>
<td>Maize</td>
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<td>0.19</td>
<td>19.39</td>
<td>2.29</td>
<td>23.14</td>
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<td>-15.87</td>
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<td>-12.83</td>
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<td>0.00</td>
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<td>50.09</td>
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<td>0.00</td>
<td>-1.03</td>
<td>0.15</td>
<td>0.25</td>
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<td>Small millets</td>
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<td>-0.01</td>
<td>0.02</td>
<td>-6.49</td>
<td>0.09</td>
<td>-6.48</td>
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<td>Wheat</td>
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<td>1.42</td>
<td>95.12</td>
<td>38.00</td>
<td>155.82</td>
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<td>Total</td>
<td>55.86</td>
<td>4.04</td>
<td>1.12</td>
<td>68.45</td>
<td>45.52</td>
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<td>(0.64)</td>
<td>(39.12)</td>
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<td>(100.00)</td>
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<td>Pure location effect</td>
<td>Location interaction effect</td>
<td>Pure cropping pattern effect</td>
<td>Cropping pattern interaction effect</td>
<td>Sum of effects</td>
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<td>-16.66 (-6.29)</td>
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<td>3.77</td>
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<td>-2.65</td>
<td>-2.23 (-0.84)</td>
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<td>2.66</td>
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<td>0.83</td>
<td>-9.50</td>
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<td>-7.46</td>
<td>-1.66</td>
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<td>6.23</td>
<td>0.44</td>
<td>4.33 (1.64)</td>
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<td>Ragi</td>
<td>2.05</td>
<td>-0.09</td>
<td>-0.03</td>
<td>-1.61</td>
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<td>Rice</td>
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<td>1.50</td>
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<td>0.30</td>
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<td>0.08</td>
<td>-10.25</td>
<td>-0.16</td>
<td>-10.25 (-3.87)</td>
</tr>
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<td>Wheat</td>
<td>32.07</td>
<td>2.93</td>
<td>0.40</td>
<td>206.01</td>
<td>20.11</td>
<td>261.51 (98.75)</td>
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<td>5.28</td>
<td>3.15</td>
<td>170.65</td>
<td>16.49</td>
<td>264.83 (100.00)</td>
</tr>
<tr>
<td></td>
<td>(26.15)</td>
<td>(1.99)</td>
<td>(1.19)</td>
<td>(64.44)</td>
<td>(6.23)</td>
<td>(100.00)</td>
</tr>
</tbody>
</table>

SOURCE: Bindlish (forthcoming).

( ) Indicates percent of the sum of the effects for the period.
tion growth rate accelerated to 3.5 percent annually during 1965-66 to 1976-77, despite the deceleration in fertilizer growth rate by over 40 percent to 12 percent annually. This would suggest an improved efficiency of fertilizer use brought about by two related factors: technical change in the form of the new grain varieties with higher fertilizer response coefficients and an acceleration in the rate of growth of irrigation (table 2) induced by the enhanced profitability of the new varieties.

Table 2
Growth Rates for Foodgrain Production, Fertilizer Use and Irrigated Area

<p>| Period         | Foodgrains       | Fertilizer      | Irrigated area |</p>
<table>
<thead>
<tr>
<th></th>
<th>Annual 3-yr. avg.</th>
<th>Annual Gross Net</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1951/52 - 64/65</td>
<td>3.03 2.97</td>
<td>19.84</td>
<td>2.14 1.95</td>
</tr>
<tr>
<td>1965/66 - 76/77</td>
<td>3.83 3.54</td>
<td>11.78</td>
<td>3.11 2.71</td>
</tr>
<tr>
<td>1977/78 - 84/85</td>
<td>2.65 2.32</td>
<td>9.06</td>
<td>2.64 1.88</td>
</tr>
<tr>
<td>1951/52 - 84/85</td>
<td>2.89 2.86</td>
<td>16.06</td>
<td>2.74 2.22</td>
</tr>
</tbody>
</table>

SOURCES: "Area and Production of Principal Crops in India," Government of India; "Fertilizer Statistics," The Fertilizer Association of India.

NOTES: Information on foodgrain production was available only through 1983-84. Information on irrigated area was available only through 1981-82. "Annual" refers to a simple yearly series, while "3-yr. avg." refers to a three-year moving average series. Irrigated area rates use an annual series.

Finally, since the U.S. was the only supplier of food and since its reserves were declining rapidly, India realized that, should a deficit arise, increased reliance on the U.S. for food imports was likely to be unwise, as it would result in increased world food prices given India's large food import requirements. It was also injurious to national pride, as it would compromise India's pursuit of an independent foreign policy because of the dependence on scarce U.S. stocks. Thus Indian policymakers were able to overcome a number of formidable domestic
obstacles to reform, although the individuals involved in the reform paid a substantial cost. (Mr. Subramaniam, the minister of agriculture, for instance, lost the election in 1967 because of a perception that he had become too pro-American.)

The current discussion of macroeconomic and sectoral policy conditionality tied to financial aid of donors in Africa, as well as the increased food imports, are reminiscent of India’s situation for those involved in such assistance earlier. Nevertheless, many differences exist, although many African countries have devaluated, revised their food prices and liberalized fertilizer imports and distribution as did India. There have been relatively few technological breakthroughs in the case of crops grown in the semi-arid areas of either Africa or India, however. The exception is hybrid maize, which has shown impressive growth in many parts of Africa where similar effective services in the form of timely fertilizer supply, extension and output marketing facilities have been available. Some technological possibilities exist, but require effective adaptation of varieties and practices to local conditions such as that done by the Indian research system in the case of rice earlier. The national research systems of most African countries, with the exception of Zimbabwe and Kenya, have not shown the capacity to organize adaptive research programs which would lead to the production of more suitable planting material.

Unlike in India, donors who have focused on project aid until recently have neglected the development of national research systems; contrary to much conventional wisdom on the subject, they have assumed that borrowing technology from the international research systems and conducting on-farm adoptive research without building the national research system which will carry out effective on-station research will address the problem. They have therefore not invested in either the development of national research systems or in the training of nationals on the scale necessary. Now that national research systems have been recognized to be a critical bottleneck, however, all donors, who often have conflicting ideas as to what research to conduct and how, have begun to focus on the systems, creating much competition and confusion in the African countries, especially given the limited resources they can bring to bear.
The implications of food surplus in the world must also be considered here in their effect on motivation to address policy problems in Africa. Food aid is relatively easily available to African governments, whose food import requirements are small. Therefore, they have not yet attached the degree of priority to the long-run development of their own science and technology capacity and to the improvement of their agricultural delivery systems to experience sustained growth in production and productivity. Although some are experimenting with policy reform, attempts at policy reform are by themselves unlikely to solve the problem. Even in encouraging policy reform, however, the donors have not yet begun to program their assistance to create the long-run policy planning capacity in African governments. Such emphasis on capacity building is needed, given the fact that African countries start with a poorer initial base.

The contrast between India and Africa shows that the nature and the severity of external shocks can make a difference in the extent to which policymakers in developing countries are willing to undertake reform. In India's case, however, both good planning and good luck played a much more important role than is generally acknowledged. India's own trained manpower and domestic economic planning ability could be harnessed in a period of crisis. The small number of donors helping India placed emphasis on strengthening India's policymaking, implementation and technological capacity.

These comparisons reinforce the point frequently made in the case of African agriculture, namely, that the sources of stagnation of rain-fed agriculture are quite complex and will require a much longer time horizon to overcome. They will require a much more sustained effort than either donors or African governments are yet fully ready to undertake.

NOTES
