7 Lessons Learned: Major Findings and Policy Implications

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Over the past several decades, developing countries have had mixed performance in reducing poverty. While East Asia, particularly China, has achieved astonishing progress in eradicating severe poverty through strong economic growth, many African countries have experienced an increase in poverty both in absolute numbers and as a percentage of their population. Today more than one billion poor still live on less than U.S. $1 per day (Chen and Ravallion 2004).

Donor and international development agencies are evaluating these past failures and have committed themselves to concrete goals with the formulation of the Millennium Development Goals. But what strategies are needed to achieve these ambitious goals? One important pillar of such development is the creation of international "big push" strategies, led by the United Nations Millennium Project and the countries of the Organisation for Economic Co-operation and Development. These strategies call for a drastic increase in international development aid and the elimination of debts for poor countries.

Along with leading a renewed international push for eradicating world poverty and hunger, developing countries themselves have started to contribute with their own efforts. Many developing countries have begun issuing poverty reduction strategy papers (PRSPs) or equivalents to outline strategic plans and to earmark financial resources to achieve their poverty reduction goals. Common among these strategies is the promotion of public investment as a stimulus to increase private domestic savings and investments. By combining both international and domestic efforts, it is hoped that public investment will help poor countries break out of their poverty trap and ultimately meet the MDGs.

Questions that remain to be answered are these: How should these pledged resources be allocated? Can these resources be used efficiently in order to achieve the stated objectives? Are there trade-offs within and across sectoral expenditures? To answer these questions, it is crucial to investigate how these public resources contributed to development in the past.

This final chapter presents major conclusions from and policy implications of the studies completed thus far on public spending and poverty reduction in developing countries. The chapter focuses on priority challenges and strategies

for public spending on education, health and safety nets, infrastructure, agriculture, and agricultural research and development. The chapter also presents lessons learned and suggestions for future research, including important knowledge gaps yet to be addressed.

Major Findings

In this section we describe the major findings of this synthesis and their implications. We begin by establishing the theoretical role of government expenditures and their motivation. After outlining a hypothesis that government expenditures *can* affect growth and poverty, we summarize how they in fact do so in more than 44 countries in three separate regions. We further this analysis by using four country case studies to evaluate how government expenditures have helped promote growth, and specifically through what channels. Chapter 4 looked specifically at human capital expenditures such as those on nutrition, health, and education and focused on measuring how the benefits of such human capital expenditures are distributed across various income groups. Chapter 5 went further to illustrate the crucial safety nets that must be integrated into any pro-poor spending pattern and the overall reforms necessary to enhance public expenditures. In this chapter we incorporate information from the previous chapters and use a computable general equilibrium (CGE) model to simulate the effects of various spending scenarios on growth and poverty, using data from developing African countries. Then we summarize lessons learned along with general directions for future research.

The Rationale for Government Spending

With the recent establishment of the eight MDG, the international development community has intensified its efforts to increase and redirect resources in order to reduce world poverty and hunger. These efforts are reinforced by the adoption of strategic plans such as those presented in PRSPs in many developing countries. The partnership into which participating countries has entered serves as a commitment to development by improving governance and therefore public spending.

However, while there is a broad consensus that renewed economic growth is a necessary condition for meeting development goals, it is also widely accepted that growth alone is insufficient. In order for growth to become a sufficient condition, more direct public action is required, specifically more labor-intensive and agriculture-intensive investments. Additionally, the asset base of poor households (particularly human capital) needs to be fostered so that household members can participate in the growth process. Short-term public transfers are also required. These serve to protect and raise the level of consumption of the poorest households while providing time for the benefits from such a

three-pronged strategy to accrue. Public policy has a crucial role to play in achieving these objectives. Government spending policy is the most prominent among all types of public policy. Beyond this, however, we find that it is not just the scale of government budgets that matter, but also when, where, and how governments intervene.

Any credible evaluation of the levels and composition of public expenditures must start with a clear understanding of the underlying rationale or motivation for government intervention. The answer to the question regarding when governments should intervene depends sensitively on the perspective from which one approaches the issue. In Chapter 1 the welfarist approach was outlined as the main lens through which economists justify public intervention, particularly when there is market failure and a problem with income distribution. Two other approaches have gained prominence over the past three decades—the *basic needs* approach (focusing on human needs) and the *capabilities approach* (focusing on individual accomplishments and potential). Both of these approaches distinguish income as a "means" or as an "end," often highlighting the commonly observed lack of a strong correlation between income and other outcomes that enter into one's concept of development.

It is also important to recognize that trade-offs between equity and efficiency are not always present. The poor are often poor because they are disproportionately affected by market failures. This leads to "win-win" possibilities, because government intervention can lead to both a more efficient and a more equitable allocation of resources. The evidence from Chapter 3 clearly confirms this. When government increases its investment in agricultural research, rural education, and infrastructure, particularly in less favored areas, both growth and poverty reduction goals are likely to be achieved simultaneously. It is crucial, therefore, to avoid excessive pessimism regarding a negative trade-off between equity and efficiency objectives.

It is extremely important that the role of public policy be understood within the existing set of economic, social, and political *institutions*. We find that if public policies are to be capable of delivering more broad-based growth, there is a need to develop more effective institutions, particularly for providing social safety nets and social insurance. It is widely accepted that the establishment of secure and stable property rights has played a crucial role in modern economic growth.

Each country has different motivations to invest in certain geographic areas and sectors. Government should invest in physical infrastructure because it has characteristics of public goods. Typically, the market fails to provide these goods, especially in rural areas. Furthermore, returns to public investments vary, depending on the type of investment and the particular region, even within the same country. If public resources can be allocated optimally, this implies that there is great potential for more growth and poverty reduction, even with

the same amount of investment. Therefore, as demonstrated specifically in Chapter 2, it is important to include all (or most) types of public investment when assessing their impact on growth and poverty reduction.

Cross-Country Analysis of Spending Patterns and Factors

Although it has been established that government spending can affect growth and poverty reduction, it is crucial to understand how the patterns of public spending have changed over time and the factors that have affected these changes. This background was presented in Chapter 2 by compiling and analyzing government expenditures, by type, across 44 developing countries, between 1980 and 2002.

Across all three regions, total government expenditures increased from U.S. $993 billion in 1980 to $1,595 billion in 1990. By 2002, this spending had increased to $3,347 billion, with Asia accounting for 67 percent of total expenditures in 2002. Asia had the most rapid growth, at a rate of 7 percent per annum. This staggering rate of growth was followed at a slower pace by that of Africa, where expenditures grew at 4.2 percent over two decades, after a brief contraction in the early 1980s. Latin America experienced the slowest overall growth in expenditures (3.7 percent per annum) between 1980 and 2002, suffering an 18 percent reduction in spending during the mid-1980s. Most of the expenditure growth in Latin America occurred during the 1990s, in response to the two earlier contractions. Overall, total government expenditures as a percentage of GDP also increased across all regions in the study, albeit more erratically.

Studying the composition of government expenditures is useful in order to assess government spending priorities over time, and we have found that the composition of government also varied dramatically across all regions. In 2002 the top three areas of expenditure for Africa were education, defense, and health. A discouraging trend in Africa is that spending on agriculture, transportation, and communications has gradually declined. Asia has seen a steady increase in education spending and social security, but a decrease in agriculture spending by roughly half. Governments in Asia have also reduced their spending on health as a share of total government spending, which indicates that the economy is continuing to recover from the 1997 Asian financial crisis. In Latin America, social security ranks at the top of all government expenditure items, while agriculture accounts for a small fraction of total expenditures. This is mainly due to the small share of agriculture in national GDP.

Agriculture expenditure as a percentage of agriculture GDP measures government spending on agriculture relative to the size of the sector. This measurement is very important, because agriculture remains the largest sector in rural, developing regions. Compared to developed countries, in developing countries this percentage is extremely low. In the former it is usually more than 20 percent, while in the latter it averages less than 10 percent. In Africa, the percentage remained at roughly 7 percent throughout 1980–2002. Asia's perfor-

mance was better than that of Africa; its percentage remained constant at 8–10 percent. Latin America saw more of a dramatic increase, with its agriculture spending moving to 13 percent from just 6 percent over two decades. Again, though spending on agriculture research across all developing regions was low compared to that in developing countries, it increased at relatively stable rates. These various types of agricultural spending remain one of the most crucial instruments for promoting growth and alleviating poverty.

Roads, electricity, telecommunications, and other infrastructure services are also important to stimulate growth in agriculture and in rural areas in addition to enhancing food security and reducing poverty. Infrastructure scarcity is partly due to the high per capita costs of serving dispersed populations, but also due to an urban bias in the allocation of public investments. There have been major differences in total infrastructure expenditures between regions. Africa's total spending increased between 1980 and 2002. Conversely, Asia's decreased, mainly due to a rapid decline in China's government spending on infrastructure. Latin America experienced a contraction in its spending during the 1980s but recovered during the 1990s. For government spending on infrastructure as a percentage of total expenditures, the trend is more discouraging. In Africa, the share of infrastructure investment in total spending declined only slightly, from 6.5 percent in 1980 to 3.8 percent in 2002, while Asia's share dropped more than half, from 12 percent to 5 percent. In Latin America, the share declined from 6.7 percent to 2.0 percent in the same period.

Several factors have contributed to the spending patterns in many developing countries for the past two decades. Most obviously, government spending priorities may change depending on the stage of a country's development. In a largely agrarian society, government may spend more on agriculture as a share of total government spending. As a country advances through the various stages of development, the share of agricultural spending declines, but as a percentage of agricultural GDP it increases. Public spending is also affected by a country's political process. Voters' preferences, interest groups, and the sophistication of political institutions all play key roles. In many cases, the middle and upper classes have a much stronger influence on the final allocation than does the lower class. Rarely are the results of such persuasion pro-poor.

The structural adjustment programs (SAPs) implemented beginning in the 1980s have had a profound impact on government spending patterns. They were designed and implemented to correct short-term balance-of-payments problems. The most important element of SAPs is cutbacks in government spending. Fiscal restraint is one of the key contentious issues that every country faces with respect to the macroeconomic adjustments needed in the event of fiscal crises. The agricultural sector, together with infrastructure, has been particularly hard hit.

The performance of government spending relative to economic growth is mixed. In Africa and Asia, government spending on agriculture and educa-

tion were particularly strong in promoting economic growth. In Latin America, spending on agriculture, infrastructure, and social security had positive growth-promoting effects. SAPs had a negative effect on growth in Africa, but no statistically significant effects in Asia or Latin America.

Several lessons can be drawn from this study. First, various types of government spending have differential impacts on economic growth, implying that there is a greater potential to improve the efficiency of government spending by reallocating it among sectors. Second, governments should reduce their spending in unproductive sectors such as defense and curtail excessive subsidies for fertilizer, irrigation, power, and pesticides. Third, all regions should increase their spending in agriculture, particularly on production-enhancing investments such as those in agricultural R&D. This type of spending not only yields high returns in agricultural production, but also has a large impact on poverty reduction, because most of the poor still reside in rural areas and their main source of livelihood is agriculture.

Country Case Studies on Rural Investment

Chapter 3 uses four case studies to analyze how government spending patterns have helped to promote economic growth and poverty reduction. This was done by collecting detailed regional evidence of government expenditures over time and by estimating econometric equation systems. This approach can help to reduce the estimation bias by controlling for omitted variables and the endogeneity of government spending variables. It can also help to track the different effects of government spending on poverty reduction through different channels. The major findings from this synthesis show that the trickle-down effect of agricultural growth, stimulated by public investment, is still the dominant pathway in alleviating rural poverty. Therefore, any investment that can lead to a high rate of agricultural growth will also have a large impact on poverty reduction. However, nonfarm employment and rural wages have become increasingly important in helping the poor during the post–green revolution period in many Asian countries.

Cross-country analyses combined with detailed case studies show that agricultural research, education, and rural infrastructure are the three most effective areas for public spending in promoting agricultural growth and poverty reduction. Agricultural research has the greatest impact in developing countries in mitigating poverty and productivity concerns. For example, agricultural research has the second-largest impact on poverty reduction in rural India, next to road investment. In China, agricultural research has the largest productivity effect on agricultural production. Agricultural research also has the second-largest impact on overall poverty in China, after rural education.

Education investment has high returns in both economic growth and poverty reduction. In rural areas, its poverty reduction effects are often greater than its effects on productivity growth. In addition to having trickle-down ef-

fects on poverty reduction, education often helps the rural poor to improve their nonfarm wages, employment, and rural–urban migration, leading to an increased impact on rural poverty reduction. However, it is important to note that different kinds of education have differential impacts on rural poverty. Rural primary education has a substantially greater impact than do secondary and tertiary education. For example, Thailand has invested heavily in primary education and has attained one of the highest rural literacy rates in the developing world. Enhancing expenditures on agriculture and education, government investments in infrastructure are key to long-term economic growth and poverty reduction. For example, government spending on rural roads has the greatest impact on the reduction of poverty in India.

The trade-off between agricultural growth and poverty reduction is generally small among different types of investment. Expenditures on agricultural research, education, and infrastructure development have a great impact on growth as well as poverty reduction. Regional analyses conducted for China and India suggest that more investment in many less developed areas not only offers the largest amount of poverty reduction per unit of spending, but also leads to the highest economic returns.

Government spending on antipoverty programs generally has a small impact on poverty reduction, mainly due to inefficient targeting and a misuse of funds. Government spending on irrigation has played an important role in promoting agricultural growth and poverty reduction. But today this type of spending has smaller marginal returns in both growth and poverty reduction.

These questions remain: Why do certain investments have higher returns than others? And why does the sector in which growth can have both large economic returns and poverty reduction effects not receive government investment priority?

Health and Nutrition Interventions

As shown in Chapter 2, most developing countries allocate a substantial portion of their public expenditures to their social sectors (education and health budgets). Therefore, Chapter 4 looked specifically at human capital expenditures such as those on nutrition, health, and education and their effects on the poor. With an emphasis on program design, this chapter focused on measuring how the benefits of human capital expenditures are distributed across various income groups. Additionally, we identified particular types of expenditure within these sectors that are more pro-poor. The chapter emphasized that returns from a given total level of public health expenditures depend simultaneously on the composition of these expenditures, the delivery of health services, and the use of services by individuals. Although there is some evidence that health expenditures decreased in the early 1980s, in many cases these have recovered, so that by the late 1990s they were at or above 1980 levels. It may be that the problem is an inappropriate composition of health expenditures.

Within the health community and among donors, there is agreement that primary healthcare investments can efficiently and effectively improve the health status of people in developing countries. However, there is some evidence that the emphasis on providing and subsidizing inexpensive curative care through the primary health network is likely to have a significant "crowding-out" impact on private provision. This may result in a substantially smaller net health impact. However, there is also strong evidence that reducing subsidies will result in even less equal access to health services. Therefore, the introduction of fees needs to be selective; for example, they should be applied only to better-off households and to inexpensive curative care.

Improving health status requires the provision of quality care. This issue is now beginning to receive much attention. The lack of quality healthcare is particularly a problem for poor households without access to affordable private provision. There is therefore a need to find ways to deliver quality services to poor populations, first by recognizing the capacity-intensive nature of such services and then by finding cost-effective solutions. Community actors may have a potentially beneficial impact here.

Improving the quality of healthcare is unlikely to have any substantial impact on health outcomes unless ways are found to improve access to such care for poor households. Improving the distributional impact of health expenditures therefore requires both a reallocation of resources toward primary healthcare and an increase of access to quality health services for the poor. This may be done partly through enhanced resource allocation and mobilization.

While there may be some role for the introduction of fees for some services and income groups, such an approach may not be consistent with improving the nutrition and health status of poor households. However, recent experience with targeted health subsidies suggests that conditioned transfers can be very effective in increasing the access of the poor to health services as well as addressing poverty and malnutrition. The results from Mexico's Oportunidades program suggest that an integrated approach that addresses access, information, quality, and poverty provides great potential. But the design of these programs needs to reflect the health and administrative realities of the targeted countries.

Education Interventions

There is still much debate about how best to allocate scarce public resources across competing uses within the education sector. What constitutes an appropriate distribution of scarce resources across these competing uses will depend on the precise policy objectives, for example, increasing average enrollment or performance versus ensuring more equal access. However, available evidence, outlined in Chapter 4, points to some significant findings on the importance of education investments in developing countries.

Public expenditures on education in developing countries are typically regressive, reflecting the large budget share of expenditures going to tertiary-level

education. But even expenditures on primary education are at best only slightly progressive, reflecting the inequality of access. Extensive expansion is worthwhile only if basic quality is maintained (e.g., access to basic infrastructure and instructional resources, including teachers or instructors who turn up and are motivated to teach). Although extensive expansion, such as building more schools and providing facilities, is likely to be more progressive on the margin, when initial enrollment levels are relatively high, it is unlikely to be a cost-effective way of improving the equality of access relative to better-targeted expenditures. Further increasing enrollments from already high levels tends to be extremely difficult and often costly, partly reflecting the preferences and constraints facing extremely poor households. In such circumstances, targeted education subsidies can be a very cost-effective way of making education more accessible to children from the poorest households. Once a basic level of quality is attained, intensive expansion is more likely to have an effect on improving student performance than on increasing enrollment and is thus likely to be only slightly progressive even if confined to primary education.

Social Safety Net Spending

Chapter 5 expands the discussion in Chapter 4 by arguing that food subsidies, human capital (nutrition, health, and education) subsidies, and public works are crucial safety nets for the poor and must be integrated into any pro-poor spending pattern. The main findings are presented here.

Empirical evidence clearly shows that universal food subsidies are not very effective ways of transferring resources to the poor. This reflects the fact that they are very rarely progressive and often involve large consumption and production efficiency costs. Bureaucracy and leakages will obviously increase the transaction costs and thus efficiency costs. For this reason, universal food subsidies are often viewed as stopgap policies in developing countries, to be used until more cost-effective transfer instruments can be developed.

Although targeted food subsidies (e.g., those provided through ration shops) can greatly increase their benefit incidence and reduce associated efficiencies, in practice their performance has not always been great, reflecting both high amounts of leakage to the non-poor and high costs associated with distributing food and with corruption. Empirical evidence highlights the high costs often associated with such transfers.

Public works are particularly effective in addressing the issue of vulnerability to poverty and in crisis situations. Although well-designed and -implemented public works programs appear to have great potential for targeting poor households, they also appear to be a relatively expensive way of dealing with current poverty; high nonwage costs and forgone earnings make the cost per unit (net) of income transferred to poor households relatively high.

There is evidence that community participation in selecting assets and implementing programs may have high returns. However, there is also some evi-

dence that community involvement works well only when there are good governance structures and active participation of civil society in these structures. For instance, social funds put more emphasis on asset creation and community involvement in designing, proposing, and implementing projects in order to take advantage of high returns.

Many countries in Latin America have recently introduced a program innovation whereby targeted transfers are linked with a condition that households invest in their children's nutrition, health, and education. These new human capital programs are attractive because they address many of the shortcomings of existing social safety nets. Evidence shows that these programs are very well targeted, using a combination of geographic, demographic, proxy means, and community targeting methods. Rigorous evaluations have also shown that targeted human capital subsidies have a substantial impact on nutrition, health, and education outcomes.

Pro-Poor Spending: A Macroeconomic Perspective

Although Chapter 3 considered possible pathways by which government spending affects the poor, certain general-equilibrium effects were assumed to be small or nonexistent. To relax this assumption, in Chapter 6 a dynamic CGE model was developed to simulate the effects of various spending scenarios on growth as well as on poverty, using the data from developing African countries and estimated parameters from Fan and Rao (2003). The results are by and large consistent with the findings in Chapters 2 and 3, but with more quantitative assessment with regard to opportunity costs and trade-offs, therefore offering new policy insights.

Economic performance can be improved when government resources are reallocated from unproductive areas to the different target areas. The most positive overall effects are realized when agriculture is targeted. For example, the reallocation of 10 percent of government demand (1.9 percent of GDP) from unproductive areas in the beginning of the study period reduces the final-year poverty rate by 7.5 percentage points. The impact is less positive (and may be negative) when the government expands spending in the target areas without cuts elsewhere and without any additional foreign financing. This leaves fewer resources available for private consumption and investment. However, if additional foreign grants are sufficient to cover government financing needs, the scope for growth in domestic absorption is widened, with a positive impact on household welfare and poverty reduction.

The impact of reducing the depreciation rates for public capital stocks suggests that the gains from increasing the efficiency of public spending may be as important as the allocation of resources to areas with large payoffs. In another simulation, using empirical estimates of the total factor productivity linkage elasticity of defense spending, government spending was reallocated to defense. Such elasticities capture not only the opportunity cost of defense spending

but also the broader economic consequences of wars and civil strife. In all, the impact of defense spending was negative, showing an increase in the poverty rate by 20 percentage points and zero GDP growth. This clearly points to the importance of conflict resolution and management as prerequisites for successful development.

What We Have Learned: Implications for Policy

This section summarizes what we have learned from the synthesis exercise presented in this book. There are many lessons one could draw from such rich information. We limit our findings to the objectives of the proposed outline of this book.

Agricultural Spending Is Crucial for Economic Growth and Poverty Reduction

Agricultural spending is one of the most important government instruments for promoting economic growth and alleviating poverty in rural areas of developing countries for the following reasons: (1) the majority of the world's poor earn a large share of their income from agriculture, (2) growth in agriculture contributes to poverty reduction indirectly through increased rural wages and both farm and nonfarm employment, and (3) agricultural growth may also contribute to poverty reduction in urban areas by lowering food prices for urban residents and helping national economic growth.

Agricultural spending has been declining in many developed countries. However, compared to developed countries, developing countries have extremely low agricultural spending as a percentage of agricultural GDP. The former usually have more than 20 percent such spending, while the latter average less than 10 percent. More important, agricultural spending has been further reduced under the structural adjustment programs. The share of agricultural spending in total government spending gradually declined from 12 percent in 1980 to 6 percent in 2002.

Disaggregating total agricultural expenditures into research and non-research spending reveals that research (or productivity-enhancing) spending has a larger impact than nonresearch (or non-productivity-enhancing) spending. This is particularly the case for agricultural R&D, which not only yields high returns to agricultural production, but also has a large impact on poverty reduction. While governments in developing countries should increase their overall spending on agriculture, agricultural R&D deserves special treatment.

Broader Types of Investment in Rural Areas Are Needed, Such as in Education and Health

One of the main conclusions of this book is that there is a need to bolster the education and health sectors in developing countries. Human capital services

are crucial, particularly in countries where SAPs have been implemented. In Africa, governments reduced their shares of spending for education and social security, while education also suffered from reduction in government expenditures in Latin America.

The contribution of education and health spending to economic growth is also a significant factor in reducing poverty in the developing world. In regions such as Africa, government spending in health was particularly strong in promoting economic growth. Only education spending contributed positively to economic growth in Asia. In Latin America, education and health spending had a positive growth-promoting effect. Both these types of spending have positive spillover effects. Therefore, governments should reduce their spending in unproductive sectors such as defense and reallocate public monies to education and health.

An important conclusion with regard to health expenditures is that the reduction of public subsidies, and the consequent introduction of user fees, needs to be selective in that it should apply only to better-off households and to inexpensive curative healthcare. This is necessary because there is strong evidence that reducing subsidies can result in more inequity in access to health services and in health outcomes.

Public education expenditures in developing countries are typically regressive in that a large share of expenditures go to tertiary-level education. Even those countries that spend more on primary education experience inequality of access. Our conclusion is that primary education needs substantially more investment. The logic here is that once a basic level of education is attained, intensive expansion is more likely to have an effect on improving student performance than on increasing enrollment and is thus likely to be only slightly progressive even if confined to primary education.

To improve the distributional impact of public health expenditures, governments need to reallocate public monies toward primary healthcare and increasing access to quality health services for the poor. Hospitals need to target poor people for access to services, and health facilities need to be made available in sparsely populated areas where the poor reside. In addition, the poor should be made aware of the benefits of preventive healthcare. It is also important to understand the potential role of community actors in such a scenario. This is one of the alternative expansion strategies that governments can use to create better synergies between scarce healthcare resources and access to services by the poor.

It is clear that the non-poor have captured most of the benefits from public education expenditures in developing countries. One of the main conclusions for the education sector is that targeted education subsidies relative to extensive expansion can be a very cost-effective way of making education more accessible to children from the poorest households. For example, subsidies targeted at poor households should meet the extra private costs of education but also provide an additional increment of increasing consumption.

Social Safety Nets Must Be Targeted to the Poorest of the Poor

Social safety nets in the form of food subsides and public works are crucial in times of crises and for poverty reduction. Empirical evidence shows that universal food subsidies are not very effective in transferring resources to the poor because they are regressive and incur high consumption and production efficiency costs. They are therefore used as stopgap measures. Targeted food subsidies in theory increase the benefits derived by the poor and reduce inefficiency, but in practice perform badly due to leakages to the non-poor and incur high distribution and corruption costs.

When addressing the *vulnerability* of the poor, public works are important, particularly in crises such as postconflict situations or in seasonal changes in employment. Therefore, we conclude that labor-intensive public works that require few management skills and pay relatively low wages are preconditions to effectively address both current poverty and vulnerability. This narrow targeting of public works programs is crucial as a coping mechanism for the poorest of the poor in times of need.

Community participation in selecting assets and implementing programs is fundamental to asset creation, because community involvement may bring high returns. However, these communities must have good governance structures and the active participation of civil society. In addition, social funds are probably better at addressing structural poverty through community asset creation. However, good geographic targeting of these programs and active promotion of demand for them in the poorest communities is necessary for them to have a substantial impact on poverty.

An important conclusion is that increasing human capital in poor households can contribute significantly to breaking the intergenerational transmission of poverty in the longer term. Targeted government transfers conditioned on households' investment in children's nutrition, health, and education promote this accumulation of human capital.

The fact that human capital programs have been successful in some poor countries suggests that they have the potential for success elsewhere. However, the design of these programs will need to evolve in the local context for them to be successful. Other economic policies must also be conducive to generating broad-based growth capable of productively absorbing the more skilled labor force required for such programs. These programs are no panacea for development. However, we conclude that their proven performance justifies serious consideration of such programs as an important component of an overall poverty alleviation system in a developing country.

Knowledge Gaps and Directions for Future Research

Despite the existing literature on public spending and poverty reduction, much research needs to be done in the future. This section summarizes the knowledge

gaps and points out directions for future research, which should not only serve as a guide for future work by the International Food Policy Research Institute, but also have implications for public spending in relation to poverty reduction in general. Our suggestions are as follows.

1. Developing countries must pay greater attention to systematically compiling public investment data in rural areas. Various international agencies, such as the World Bank, the Food and Agriculture Organization, and the International Monetary Fund, have made efforts to help developing countries establish national statistical systems to collect, compile, and monitor development indicators related to agriculture production and inputs, income, employment, wages, and poverty. But these efforts seldom include information on rural infrastructure, technology, education, and related government investment. Without such information, it is difficult to assess the potential holistic impacts of government intervention on agricultural growth and poverty reduction.
2. A general-equilibrium analysis is needed to show how government investment in rural areas affects not only the agricultural sector and rural areas, but also other sectors and cities. To date, most of the studies conducted have been single-sector, partial-equilibrium analyses, which do not have the ability to track general-equilibrium and societal effects. Ignoring these impacts results in severe underestimation of the overall impact of public investment on poverty.
3. How to finance needed public investment in rural areas deserves more attention. There are two major means of financing expenditures for public goods—general government financing (for example, taxes) and cost recovery (for example, user fees) for service provision. The financing of public expenditures has important implications for efficiency and equity.
4. An analysis of the political and institutional context of public investments and conditions for the efficient provision of public goods and services is also much needed to improve the efficiency of public investments. In particular, how governments can design mechanisms (policies, regulations, and fiscal systems) to mobilize public resources to invest in rural areas deserves much more research attention in the future. How to reform public institutions by improving incentives, accountability, human capital, and management is also an important issue for research.

   Past assessments of the impact of public investment assumed that institutional and political constraints were exogenous to the model. Research on how governance affects the efficacy of public investment needs more attention. There is a vast literature of empirical studies on the relationship between various governance indicators and development outcomes. However, these studies have been done primarily at the cross-country level. It

is important to examine the relationship between governance and development outcomes at the sector level in the context of specific countries.

5. Research also needs to be done on the role of traditional and indigenous organizations, as well as local community involvement, in infrastructure provision. The political economy of the devolution and decentralization of power in infrastructure provision, along with problems of common property rights, also needs empirical analysis. In addition, the theory of new institutional economics suggests that pricing policies and subsidies in infrastructure need further research.

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