Infrastructure and Poverty Reduction-Making Markets Work for the Poor

Xianbin Yao

Asian Development Bank
http://www.adb.org/economics

May 2003
The ERD Policy Brief Series is based on papers or notes prepared by ADB staff and their resource persons. The series is designed to provide concise nontechnical accounts of policy issues of topical interest to ADB management, Board of Directors, and staff. Though prepared primarily for internal readership within the ADB, the series may be accessed by interested external readers. Feedback is welcome via e-mail (policybriefs@adb.org).
Infrastructure and Poverty Reduction—Making Markets Work for the Poor

Xianbin Yao

May 2003

The rural poor’s lack of access to product and factor markets leaves them largely bypassed by the growth process. Infrastructure investments complemented by policy and institutional reforms enable markets to develop and function efficiently, thereby mainstreaming the poor. Making markets work for the poor is therefore a key element of a country’s poverty reduction strategy.

The main factors underlying rural poverty include farm productivity, as well as nonfarm employment and productivity (Ali and Pernia 2003). Infrastructure investments influence all the three sets of poverty determinants. Road investments, for example, could increase agricultural productivity, nonfarm employment, and productivity, directly raising the wages and employment of the poor, and hence, their economic welfare. In addition, higher productivity and expanded employment lead to faster economic growth, affecting the supply and prices of goods that benefit the poor.

The magnitudes of effects of infrastructure investment on rural poverty transmitted through different channels, in the case of rural roads, are illustrated in the following table. The estimates presented are derived from two recent country studies on the People’s Republic of China (PRC) and India (Fan et al. 1999 and 2002). The total direct and indirect effects of road investments on poverty in the rural PRC

<table>
<thead>
<tr>
<th>Poverty-reducing Effects of Rural Road Investment</th>
<th>India</th>
<th>PRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effect through increase in agricultural productivity</td>
<td>-0.0119</td>
<td>17.92</td>
</tr>
<tr>
<td>Direct effect through increase in nonfarm employment</td>
<td>-0.0300</td>
<td>45.18</td>
</tr>
<tr>
<td>Direct effect through increase in rural wages</td>
<td>-0.0204</td>
<td>30.72</td>
</tr>
<tr>
<td>Indirect follow-on effect through higher economic growth</td>
<td>-0.0041</td>
<td>6.18</td>
</tr>
<tr>
<td>Overall</td>
<td>-0.0664</td>
<td>100.00</td>
</tr>
</tbody>
</table>

* The elasticity estimates measure the percentage changes of the rural poverty incidence with respect to road infrastructure investments, working through different channels.
are more than twice those in rural India. Given the importance of possible country-specific factors in the overall poverty-reducing impact, the decomposition results indicate the significance of all channels, viz., agricultural productivity, nonfarm employment and rural wages, and the follow-on economic growth. The direct effect through the increase in agricultural productivity accounts for close to 20 percent and 30 percent of the total poverty-reducing effects in India and the PRC, respectively. The direct effects of increasing nonfarm employment and rural wages contribute to over three quarters in India and one half of the total effect in the PRC, underscoring the particular significance of the rural labor market channel. The effect through labor markets is especially large in India, primarily because rural India has a significant proportion of landless or sub-marginal farmers, for whom rural road investment would open up gainful nonfarm employment opportunities. On the other hand, the relative indirect follow-on effect of higher economic growth on rural poverty reduction is larger in the PRC than in India. Taken together, the results show that the infrastructure investments have significantly large direct effects on rural poverty reduction.

Underlying the above effects is a mechanism whereby infrastructure development enables product and factor markets to expand. Expansion of product and factor markets enables the poor to gainfully participate in the growth process. The view on actively engaging the poor in the growth process differs sharply from the popular notion that the poor are simply to share in the benefits of growth, i.e., trickle-down effects of growth. This brief elaborates on this perspective, using the case of rural transport and communications infrastructure as illustration.

Markets and Infrastructure

A market is about the exchange of goods and services. Not only does it involve the physical flow of goods and services from producers to consumers, it also concerns price formation as well as the flow of other aspects of market information among participants. The need for responsiveness and flexibility in production is transmitted from consumers to producers via the marketing system, for example. This twin function of markets serves to coordinate supply and demand, and provides the basis for resource allocation.

Markets are everywhere. Even in remote areas there are local bazaars where exchanges take place. But markets in many developing countries are often fragmented. Such markets can provide
the function of coordination only within a limited geographic area. Fragmented markets become barriers to transactions on a large scale. Critically, they inhibit the efficient flow of information among market participants, especially those in distant locations. Thus, they limit the scope for productivity improvements and commercial production, constraining the potential for rural-based growth. In addition, they could hamper the spread of growth across the economy.

Development of a well-connected and integrated market system would improve access to markets, products, inputs and other services, thus reducing transaction costs and facilitating exchange. This contributes to mainstreaming bypassed people and regions.

A well-functioning market system is fostered by physical infrastructure (i.e., transport and telecommunications) in addition to legal, regulatory, and financial infrastructure. Such types of infrastructure have key public good dimensions. Infrastructure investments involve substantial economies of scale and externalities, and thereby provide strong justification for the public sector’s role in financing and guaranteeing such investments.

### Mainstreaming the Poor through Markets

The rural poor are producers, consumers, and suppliers of labor. The seminal work of Schultz (1964) has long established that the poor are efficient, and their decisions on production, consumption, and labor supply do respond to economic incentives. To bring forth the transformation of traditional agriculture requires public policy and investment that provide for an enabling environment as well as economic opportunities for the rural poor. Imperfection and incompleteness of markets are among the key factors that make the poor remain poor. They are cut off from economic activities because many collective goods including infrastructure are underprovided. They lack information about market opportunities. They cannot borrow against future earnings to invest in education, skills, new technologies, and entrepreneurial activities. These are some of the specific constraints facing the poor that public policy and investment should aim to address.

There have been earlier attempts to address the imperfections of markets. In the case of agriculture, for example, such attempts included state-run procurement and distribution systems, the movement of farmers’ marketing cooperatives, and pan-territorial pricing, to name a few. However, they have failed to lead to any positive advance in overcoming market impediments. Instead, they
have resulted in further market distortions and severe problems of incentives. Past experience highlights the importance for governments to make crucial policy choices and budgetary allocations to provide the foundation that facilitates a wide variety of economic activities.

Rural transport and communications infrastructure is a key dimension of such a foundation. It plays a critical key role in extending the product and factor markets, in reducing the costs of marketing agricultural produce, and in the transmission of information on prices. Studies of agricultural marketing have documented that deficient rural infrastructure drive a significant wedge between prices at market centers and those at farm-gate (e.g., Timmer, Falcon, and Pearson 1983). Low output prices and high input costs at farm-gate reduce the profitability of farmers’ output and limit them to subsistence farming or production of low-value perishable produce or cheap grains for a limited local market. Access to expanded markets and reduction in the costs of marketing, on the other hand, give farmers the opportunities to raise the profitability of existing production and provide further incentives for them to increase farm productivity.

Rural infrastructure like road, transport, and communications, among others, provide the necessary prerequisites for growth of nonfarm activities besides farm production. Significant linkages among production, consumption, and labor activities in rural economies have been amply documented in the development literature (e.g., Hazell and Haggblade 1993). Agricultural productivity improvement triggers growth in secondary and tertiary sectors, through input, output, and consumption linkages, thereby resulting in higher labor productivity and wages. These take place through diversification of economic activities, increase in mobility, and accessibility of output and factors of production. Improved geographic access and information flow also increase labor mobility, making it easier for surplus labor to move to where labor is in short supply.

Thus, the growth process, facilitated by market expansion that is underpinned by rural infrastructure development, serves as the crucial pull-up factor for mainstreaming the rural poor, enabling them to take advantage of the growth and diversification of agriculture and nonfarm opportunities.

The PRC experience in the 1980s demonstrates the importance of this poverty-reducing growth process. Much of the sharp decline in rural poverty following the rapid economic growth in the first half of the 1980s took place in the coastal regions and parts of the central regions that were initially better endowed with rural infrastructure than the other regions. The slowdown in poverty reduction in the second
half of the 1980s reflects the fact that the majority of the remaining poor were located in the remote and hilly areas of the Northwest and Southwest regions, with deficient transport and communications systems (World Bank 1991). Indeed, a prominent feature of the PRC’s poverty reduction strategy since the mid-1980s has been to speed up public investment in rural infrastructure development. The annual rate of growth of public investment in rural roads, for example, was over 23 percent in the 1990s—more than double the annual growth in the 1980s. The annual public spending on rural communications grew at 36 percent in the 1990s—three times higher than in the 1980s (Fan et al. 2002).

India’s experience since the 1990s provides another illustration. While agriculture and the rural economy have benefited from trade policy changes, they have suffered in other aspects, most notably from the decline in public investment in areas critical for agricultural growth, like infrastructure development (Ahluwalia 2002). Indeed, reforms to market-distorting trade policies make it clear that infrastructure bottlenecks subsequently have become a serious binding constraint to rural growth and poverty reduction. Unless infrastructure bottlenecks, which hinder better access and efficient functioning of product and factor markets, are removed, the positive effects expected from the trade policy changes will not be fully realized.

Viet Nam’s experience since the 1980s is similar to that of India. Significant policy reforms to market prices and trade in early parts of the reform era have called for subsequent attention to infrastructure constraints that could inhibit full development of market forces to link rural and urban sectors as well as different economic regions of the country. Indeed, the ADB’s country operational strategy for Viet Nam in the late 1990s provided an explicit operational emphasis on supporting the implementation of the government’s strategy to strengthen economic linkages (ADB 1995).

Both India and Viet Nam share the phenomenon of the PRC where there have been significant regional differences in the rates of growth and poverty reduction. Detailed subnational poverty analyses have been undertaken in recent years. A key finding of these studies (Jalan and Ravallion 2002, Ravallion and Datt 2001) is that a significant proportion of poverty in poor areas, after controlling for household characteristics, is explained by what is called “geographic capital.” Infrastructure deficiency and lack of access to outside markets are among the key elements of the geographic capital. Substantial amounts of public investment will be required to raise the level of
geographic capital in such poor areas. Unless the rural residents are able to escape geographic poverty traps, they are unlikely to improve their living standards.

**Conclusion**

Rural infrastructure development plays an important role in developing market access and supporting market expansion. Market access and strengthened market linkages enable the poor to participate fully in the opportunities unleashed by the growth process.

Apart from addressing income poverty, infrastructure development can also play a vital role in dealing with the nonincome aspects of poverty. For example, the poor’s participation in education and improved access to health services can be greatly facilitated by improved infrastructure such as roads, telecommunications, and electricity. Attributing clear and distinct impacts of rural infrastructure services on these nonincome dimensions of poverty will require careful evaluation.

Obviously, not everyone among the poor can be pulled up by their bootstraps to join in the infrastructure-mediated growth process so described. There are those who are truly dispossessed and thus unable to be gainful producers of goods and suppliers of labor. There may also be other instances in which the poor may be socially constrained or excluded, and thus are not in a position to immediately join in the growth process. Poverty of this nature will require different types of intervention.

To be sure, many factors besides infrastructure affect the extent to which markets can function efficiently, thus influencing growth and poverty reduction. This underscores the importance of thorough country and sector diagnoses to identify binding constraints to growth and poverty reduction in particular circumstances.

**References**


No. 1 Is Growth Good Enough for the Poor?
Ernesto M. Pernia
October 2001

2 India’s Economic Reforms
What Has Been Accomplished?
What Remains to Be Done?
Arvind Panagariya
November 2001

3 Unequal Benefits of Growth in Viet Nam
Indu Bhushan, Erik Bloom, and Nguyen Minh Thang
January 2002

4 Is Volatility Built into Today’s World Economy?
J. Malcolm Dowling and J.P. Verbiest
February 2002

5 What Else Besides Growth Matters to Poverty
Reduction? Philippines
Arsenio M. Balisacan and Ernesto M. Pernia
February 2002

6 Achieving the Twin Objectives of Efficiency and Equity:
Contracting Health Services in Cambodia
Indu Bhushan, Sheryl Keller, and Brad Schwartz
March 2002

7 Causes of the 1997 Asian Financial Crisis:
What Can an Early Warning System Model Tell Us?
Juzhong Zhuang and Malcolm Dowling
June 2002

8 The Role of Preferential Trading Arrangements
in Asia
Christopher Edmonds and Jean-Pierre Verbiest
July 2002

9 The Doha Round: A Development Perspective
Jean-Pierre Verbiest, Jeffrey Liang, and Lea Sumulong
July 2002

10 Is Economic Openness Good for Regional
Development and Poverty Reduction?
The Philippines
Ernesto M. Pernia and Pilipinas F. Quising
October 2002
11 Implications of US Dollar Depreciation for Asian Developing Countries
*Emma Xiaoqin Fan*
November 2002

12 Dangers of Deflation
*Douglas H. Brooks and Pilipinas F. Quising*
December 2002

13 Infrastructure and Poverty Reduction—What is the Connection?
*Izal Ali and Ernesto Pernia*
January 2003

14 Infrastructure and Poverty Reduction—Making Markets Work for the Poor
*Xianbin Yao*
May 2003