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Rural Non-Farm Activities and Rural Development

From Experience Towards Strategy

Peter Lanjouw
Gershon Feder

**Rural Development Strategy
Background Paper #4**

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and Rural Development**

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Work in Progress

*The World Bank
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This report is one in the series of background studies prepared for the 2001 update of the World Bank's Rural Development Strategy. This series was created to disseminate findings of work in progress and to encourage the exchange of ideas among Bank staff and all others interested in development issues. This paper carries the name of the author and should be used and cited accordingly. The findings, interpretations, and conclusions are the author's own and should not be attributed to the World Bank, its Board of Directors, its management, or any member countries.

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Acronyms

HPAE	High Performing Asian Economies
ITU	International Telecommunication Union
SSEs	Small-Scale Enterprises
SAMs	Social Accounting Matrices
TVE	Township and Village Enterprise
USAID	United States Agency for International Development
WDR	World Development Report
WHO	World Health Organization

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Foreword

Poverty reduction is the overarching objective of the World Bank, and with 75 percent of the world's poor living in rural areas, rural development is a key element in achieving progress in this objective. At President Wolfensohn's request, the rural family has prepared a revised rural development strategy, *Reaching the Rural Poor*. This has been done in close cooperation with the regions and the other sectoral units active in the rural space. The objectives of the new strategy are to revitalize the World Bank's activities in the rural areas by: (a) adjusting the strategic framework; and (b) formulating a program of concrete and implementable actions.

The new rural development strategy addresses a rural situation which is different from the past, and a rural population which confronts many new problems, especially the challenges and opportunities facing the poor with regard to globalization. The new vision and articulation of a development strategy builds upon the strengths of past efforts as well as incorporates new ideas from other models. In this context, our priorities are geared to fulfill World Bank poverty reduction objectives in the rural sector. We are convinced that the following critical components of a rural development strategy will contribute most to accelerated growth in rural economies and, consequently, to measurable poverty reduction: crafting efficient and pro-poor policies and institutions; facilitating broad-based rural economic growth; improving access to, and management of natural, physical, and human assets; and reducing risk and vulnerability for the rural poor.

A number of studies on both global and regional issues, as well as a broad portfolio analysis were commissioned to support the development of the new strategy. These studies provided a rich foundation for both the regional action plans and the corporate strategy. This study is one of the selected number of background papers which have been published in the Rural Development Strategy Background Paper Series to provide Bank staff and others with a more in-depth look at some of the issues surrounding rural development, beyond what is covered by the strategy document itself. This paper, and others in the series are available on line at: www.worldbank.org/ruralstrategy. Additional information on obtaining other papers from this series can also be found at the end of this report.

Robert L. Thompson
Director of Rural Development
The World Bank

1. Introduction

The traditional image of rural households in developing countries is that they are mainly engaged in farming and animal husbandry activities such as cultivation and agricultural wage labor. Recent decades have seen this view come under increased scrutiny – there is mounting empirical evidence that rural households (including farm households) are often quite diversified in their activities, with non-agricultural sources of income often contributing in a major way to household incomes.

Yet the non-farm economy remains a poorly understood component of the rural economy of developing countries. This gap in our knowledge is the product of the “sector’s” great heterogeneity, coupled with inadequate attention at both the empirical and theoretical level. More recently, attention is being given to the non-farm economy because of its perceived potential in reducing rural poverty and reducing inequality, in absorbing a growing rural labor force, in slowing rural-urban migration, and in contributing to national income growth.

In this paper we present an overview of the rural non-farm economy in developing countries at the start of the 21st century and map out the available policy options. In the next Chapter, we delineate the main dimensions of the non-farm economy by documenting its size and economic contribution in different regions of the developing world, and by exploring the various links between the non-farm economy and the farm economy in rural areas. We then turn, in Chapter 3, to an examination of the relationship between non-farm activities and welfare outcomes in rural areas. We ask in what way, and to what extent, the non-farm economy can contribute to the central development goals of poverty reduction and broadly distributed economic growth. Chapter 4 reviews some of the basic arguments for government intervention, and asks to what extent they apply to the rural non-farm economy. Against this background we explore in Chapter 5 the general experience with government intervention aimed at the non-farm economy. We present an extended discussion around the question of rural infrastructure and ask whether there are grounds for arguing that infrastructure is under-provided in rural areas. In Chapter 6 we end with an attempt to identify the key elements of a strategy aimed at promoting the non-farm economy.

2. The Rural Non-Farm Economy: An Overview

The non-farm “sector” includes all economic activities in rural areas except agriculture, livestock, fishing and hunting. Since it is defined negatively, as non-agriculture, it is not in any sense a homogeneous sector. In this paper we will therefore refer to the non-farm economy rather than suggest the existence of a sector. Judgements about the viability and importance of the rural non-farm economy also hinge crucially on what is meant by “rural.” Many countries apply different definitions when designating areas as rural or urban. Typically the distinction between rural and urban employment is based on the place of residence of workers so that those who commute to a job in a nearby urban center are considered to be rural workers. Rural is most often defined to include settlements of about 5,000 or fewer inhabitants. However, the definitions of a rural locality, based on population size and/or functions and characteristics of the settlement such as whether it has a school or hospital, or happens to be the seat of local government, do vary. For example, the two African countries of Mali and Zimbabwe designate as rural only settlements with less than 3,000 and 2,500 inhabitants respectively. Mauritania on the other hand includes settlements with up to 10,000 in its definition of rural, and Taiwan excludes only cities over 250,000 and two suburban counties surrounding Taipei. In India, whether or not a particular setting is designated as rural or urban is based, in part, on composition of the work force in that setting. As more and more of the population becomes employed in non-agricultural activities, a community may become classified as urban, even if it has not changed in any other respect! (For further discussion see Acharya and Mitra, 2000 and Haggblade et. al., 1989).

Size of the Non-Farm Economy

The non-farm economy refers to a very wide range of activities that includes, but is far from confined to, manufacturing and industrial activities. While good data are still very scarce and often outdated, the evidence points to a growing importance of the non-farm economy. There is considerable variation across countries in the importance of the non-farm economy, but there are examples in all regions of the developing world of countries in which non-farm incomes account for as much as one-half of total income in rural areas. Very little is known about even the most basic dimensions of the non-farm economy in certain regions of the world, notably the transition economies.

Table 2.1 displays aggregate statistics on the non-farm economy for a number of countries (based on their own definitions of rural). Before turning to an examination of regional patterns in the importance of the non-farm economy, there are a number of qualifications that emerge immediately from scrutiny of this table. First, the table clearly displays how far we still are from having a comprehensive overview of the non-farm economy in developing countries. For most countries even the most basic data on the non-farm economy are highly outdated or missing altogether. The information needed to ascertain how important non-farm incomes are in total rural incomes, how employment is distributed across non-farm occupations, and the relative breakdown in such employment between men and women remains largely unknown. In addition, because much of what is presented in **Table 2.1** comes from studies carried out decades

ago, the evidence can be misleading. There are good reasons to expect that figures dating back decades or longer, are very poor indicators of the size of the non-farm economy at present (see below).

Second, even for those countries included in **Table 2.1** for which data are available and fairly recent, there are grounds for believing that the reported employment rates are understatements. The figures in **Table 2.1** refer in most cases only to primary employment. Yet one of the important roles of non-farm activities is to provide work in the slack periods of the agricultural cycle. Thus primary employment status will be an underestimate of the actual percentage of labor hours that are devoted to non-farm activities.

Third, the actual definition of non-farm income can, and does, vary across data sources, depending, for example, on whether different components, such as remittance income, or income from financial assets, are included as non-farm income or attributed to some residual "other" category. This renders not only comparisons across countries difficult, but can even jeopardize comparisons within countries over time if the definition of income has not been consistently applied over time. Even where the definition of non-farm income has been consistently applied, the degree of detail that the definition captures (such as the level of detail solicited about revenues and types of costs within a given activity such as a home enterprise) can influence the final assessment of the perceived importance of non-farm incomes in total incomes.

Table 2.1: Aggregate Statistics on the Non-farm Economy

Country	Percent of Rural Employment that is Non-Farm			Sectoral Breakdown			Percent of Income from Non-Farm
	Total	Male	Female	Mining and Construction	Manufacture	Commerce & Transport	
Asia							
Bangladesh (1982)	25			12	39	25	24
Bangladesh (1981)	29						
Bangladesh (1991)	34				39	35	11
China (1980)	11				55		28
China (1986)	20				42		27
China (1990)							47
Jiangsu							
China (1990)							40
Sichuan							
India, All (1981)	18			9	37	26	29
		11		8	54	11	27
India, All (1991)	20			9	30	28	33
		10		5	50	11	
India,							
Bihar (1991)	13	6					
Kerala (1991)	44	44					
Punjab 1991	14	43					
West Bengal (1991)	26	27					
India, (1994)							34
Indonesia, Central Java (1985)	37			-	30		

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Table 2.1: Aggregate Statistics on the Non-farm Economy

Country	Percent of Rural Employment that is Non-Farm			Sectoral Breakdown			Percent of Income from Non-Farm
	Total	Male	Female	Mining and Construction	Manufacture	Commerce & Transport	
Malaysia (1970)	34	38	28		5		
Malaysia (1980)	49	53	42		10		
Nepal (1995)							
Lowlands (Tarai)							20
Hills							47
Pakistan (1982/3)			32		9		
Philippines (1971)			32				55
Philippines (1985)			33		7 (1982)		56
Sri Lanka (1981)			46		8		
Taiwan (1966)		47		3	23	16	44
Taiwan (1980)			67				
Thailand (1985)			31		5 (1983)		
Thailand (1995)							44
Thailand (1998)							43
Vietnam (1993) ¹			70				
Africa							
Burkina Faso, (1982/85)							52
Sahelian zone							
Cameroon (1976)	8	13	3	11	30	20	39
Egypt (1997)							42
Ghana (1987) ¹		37	46				
Ghana (1991) ¹		30	42				
Jordan (1997)							51
Kenya (1976)							28
Malawi (1977)	9	15	3	19	30	28	23
Mali (1976)	6	4	15	2	61	14	23
Mauritania (1977)	21			7	18	34	41
Nigeria, (1966) W. State	60	20	97				
Rwanda (1978)	5	9	1	22	23	14	40
Senegal (1970/71)	18	—	—	7	34	38	21
Sierra Leone (1974)	14	15	12	13	20	45	21
Tanzania (1975)							36
Uganda (1992) ¹		40	15				23
Uganda (1996) ¹		46	35				
Zambia (1985)	24		~66				
Latin America							
Bolivia (1997)		18	16				
Brazil (1990)		26	41				
Brazil (1997)		24	30				39
Chile (1990)		19	67				
Chile (1998)		26	65				41
Colombia (1991)		31	71				
Colombia (1997)		33	78				50
Costa Rica (1990)		48	87				59
Costa Rica (1997)		57	88				

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Table 2.1: Aggregate Statistics on the Non-farm Economy

<i>Country</i>	<i>Percent of Rural Employment that is Non-Farm</i>			<i>Sectoral Breakdown</i>			<i>Percent of Income from Non-Farm</i>
	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Mining and Construction</i>	<i>Manufacture</i>	<i>Commerce & Transport</i>	
El Salvador (1994)	36	25	72				
El Salvador (1997)		33	81	14	28	31	26
Ecuador (1995) ¹	43	37	50	10	22	37	23
Honduras (1990)		19	88				38
Honduras (1998)		22	84				
Mexico (1989)		35	69				
Mexico (1996)		45	67				
Panama (1989)		25	86				
Panama (1998)		47	93				50
Venezuela (1990)		34	78				
Venezuela (1994)		35	87				

¹) Refers to non-farm employment as primary or secondary occupation.

Sources: Adams (1999); Anderson and Leiserson (1980); Burgess (1997); Byrd and Lin (1990); Chandrasekhar (1993); Haggblade et al. (1989); Hossain (1984); Islam (1987); Lama (1997); Lanjouw and Shariff (2000), Mekong Environment and Resource Institute and World Bank (2000); Milimo and Fisseha (1986); Newman and Canagarajah (1999); Ranis and Stewart (1993); Reardon et al. (1992); Reardon, Berdegué and Escobar (2001), Sandee and Weijland (1989); Government of India (1991); Van de Walle (2000); World Bank (1995); World Bank (1997).

Asia

Drawing on the scattered information available from **Table 2.1** and on a number of studies that have examined it in this region, we find that the rural non-farm economy accounts for around 20 to 50 percent of rural employment in Asian countries. Hazell (2001) notes that services are at least as important as manufacturing in providing employment in rural areas. Hazell and Haggblade (1993) indicated that how one defines rural is very important in assessing the importance of the non-farm economy in the Asian context. In a study of 14 Asian countries they found that, on average, the non-farm employment share for rural areas increases from 26% to 36% when rural towns are added to the definition of rural areas.

Information on income shares is even more scarce than statistics on employment. Based on the data that are available, the general impression is that the rural non-farm economy is some 5-10 percentage points larger than what was suggested by (primary) employment share data. Hazell (2001) reports some evidence that this part of the economy appears to be growing over time. In Korea, non-farm income shares among farm households appear to have risen from 18% in 1971 to 46.3% in 1991. In a case study of a green revolution affected area of Central Luzon, Philippines, Estudillo and Otsuka (1998) suggest that in non-farm income shares rose from 27% in 1966 to about 51% in 1994.¹ Similarly, in a case study of economic change a village in North

¹ Hayami and Kikuchi (2000) provide a longitudinal account, covering three decades, of the process whereby the non-farm economy gained significance in a rice-producing village in the same region.

India between 1957 and 1993, Lanjouw and Stern (1998) report a strongly growing share of income coming from non-farm sources.

Hazell (2001) indicates that employment shares of women in the rural non-farm economy are significantly higher in East Asia than in South Asia. This appears to be true for every sub-sector, even the manufacturing and service sectors that are most important to them. In a review of longitudinal village studies in India, Jayarman and Lanjouw (1998), note that cultural norms often prevent women from taking advantage of opportunities in the non-farm economy to the same degree as men.

Africa

Table 2.1 indicates that employment and income shares in the non-farm economy in Africa are not noticeably lower than in Asia or Latin America. Indeed, in a review of about 100 farm-household survey studies from the 1970s through 1990s, Reardon et al. (1998) finds an average share of 42% of non-farm income in total rural household income in Africa, 40% in Latin America and 32% in Asia. This study also finds that non-farm income shares have been rising in Africa during the past few decades.

The fact that the non-farm economy in Africa seems to be as important in contributing to total income as in other, richer, parts of the developing world might come as some surprise. After all, richer regions tend to have better infrastructure and stronger agricultural sectors, both of which contribute to rural non-farm development (see below). The data thus suggest that although African households are poorer, their incentive to diversify their incomes is strong (owing to low farm incomes, risks, etc.). This notion is supported when one considers how often African households earn incomes from multiple sources. Barrett (2000) finds that in Côte d'Ivoire, Kenya, and Rwanda, the incidence of households having more than one source of income is 33%, 94% and 37%, respectively. Such rates are generally higher than what is observed in other regions (Reardon, Berdegué and Escobar, 2001) and are consistent with the notion that non-farm incomes are more commonly sought as a means to diversify livelihoods in Africa than elsewhere. We shall return below to the important distinction between non-farm activities that can be viewed as offering genuine prospects for upward mobility as opposed to activities that are perhaps better seen as diversified (or even residual) sources of income.

Latin America

Recent years have seen a considerable amount of attention devoted to bringing together empirical material on the non-farm economy in Latin America. An upcoming issue of *World Development* focusing on the non-farm economy in Latin America indicates that the share of rural people employed in RNF activities has been rising rapidly since the 1970s. Reardon, Berdegué and Escobar. (2001) suggest that in Latin America as a whole some 40% of rural household incomes stem from non-farm activities. Similar to Hazell's (2001) point for Asia, Reardon et al. suggest that there is little inter-country variation in rural non-farm income shares despite considerable differences in aggregate economic performance between countries.

Reardon et al. (2001) find that in Latin America, as in Asia, the share of non-farm income coming from services, and wage employment more generally, is much higher than might have been expected, and that the role of manufacturing, especially small scale enterprise activity, is less than might be expected. An important empirical finding for Latin America is that non-migration non-farm income tends to be uniformly more important as a share of total income than non-farm income coming from migration. This observation also runs somewhat counter to conventional wisdom where migration incomes are thought to be particularly important especially to households in Central America and Mexico. For example, de Janvry and Sadoulet (2001) find that migration income accounts for about 6% of household income to rural households in Mexico, as opposed to 36% coming from earned non-farm sources.

The Latin American data generally indicate that women tend to be highly represented in the non-farm economy. Although overall participation rates in remunerated employment are typically lower for women, their participation rates are particularly high in the non-farm economy. For example, Lanjouw (1998) finds that nearly 50% of remunerated employment (in principal and secondary occupations) of women in rural Ecuador occurs in the non-farm economy (relative to 37% for men). In rural Brazil, Ferreira and Lanjouw (2001) find that the comparable figures (for principal occupations only – although this likely understates the importance of non-farm employment for women) are 29% (relative to 18%), while in El Salvador, Lanjouw (2001) finds the figures to be 72% relative to 25%.

Research on the non-farm economy in Latin America has been sufficiently systematic in scope to permit some generalizations about the geographical distribution of non-farm activities in rural areas. The evidence tends to find that non-farm activities are higher in zones where farm incomes are also higher. However, while higher levels of per capita income from non-farm sources are observed in zones with more dynamic agriculture, the share of income coming from non-farm sources is not uniformly higher in those areas. For similar reasons as were invoked to explain the important contribution of non-farm activities to total incomes in Africa, non-farm income shares can also be high in zones where the rural population is “pushed” out of farming activities due to poor agricultural conditions.

Other Regions

Conspicuously absent is a solid empirical foundation regarding the importance and nature of the non-farm economy in the transition economies. Given the very different development paths that these countries have followed, and the wrenching changes they have undergone during the first decades of transition, there is little basis for assuming that the general picture of the non-farm economy that emerges for other regions of the world will apply to these countries. It is a matter of considerable urgency that research be undertaken to establish the general “stylized facts” about the non-farm economy in this part of the world.²

² A study that seeks to provide some preliminary insights on the evolution of the non-farm economy in the transition economies, funded by the DFID/World Bank Program, is currently in preparation.

Productivity of the Non-farm Economy and Linkages to Agriculture

Assessing the economic contribution of non-farm activities to the rural, and even national, economy is difficult because of the difficulties of assigning values to the components of this contribution. Empirical studies find little evidence that the non-farm economy is uniformly unproductive. Rather, the evidence suggests that both highly productive non-agricultural activities and low-productivity, residual, activities are undertaken in rural areas, often within the same regions (although by different groups in those regions). The evidence also suggests that there are strong and intimate production and consumption linkages between the agricultural economy and the non-agricultural economy in rural areas – undermining the notion that the two can be viewed, and addressed, separately from one another.

Productivity

An important question when considering the potential contribution of non-farm activity to development is whether such activity is efficient in converting resources into output relative to its urban counterpart or agriculture. In studies of productivity three measures are commonly used. The first two are partial measures: labor productivity, that measures the value added by an activity (gross output deducting intermediate inputs, but not deducting capital and labor costs) per unit of labor input, and capital productivity, that measures the value added per unit of capital input. By making comparisons based on one of these partial productivity measures, say labor productivity, one is implicitly treating the other input, capital, as having a zero opportunity cost. If both resources are scarce, then one must turn to an aggregate productivity measure such as the social benefit/cost ratio. This measure expresses value-added relative to the weighted sum of labor and capital productivities with weights based on their social opportunity costs. Of course, if one activity has both higher labor productivity and higher capital productivity then switching resources to it will increase the overall output of the economy. Typically, however, higher labor productivity comes at the expense of lower capital productivity as the amount of capital per worker is increased, and hence an aggregate measure is necessary.

The assessment of opportunity costs (either private or social – shadow – costs) is important in comparing productivity across activities. While commonly an average agricultural or urban wage is used to value labor and some common interest rate is chosen to value capital, in fact opportunity costs, both private and social, will typically not be reflected in these prices and are likely to vary across localities, households, gender, and so on. For example, in a situation with minimum wage legislation or wage rigidity leading to unemployment, it is often preferable to assume that labor has a zero opportunity cost – despite positive market wages. It may be quite difficult to know what wage or interest rate reflects the true opportunity cost of labor or capital inputs in any given situation. It is not always clear, for example, that capital has a high opportunity cost even when credit is very expensive. Where there are large transaction costs in financial markets, the interest rate for someone attempting to borrow may be vastly higher than the potential returns available to the same individual if he has some small savings. If the financial markets are so imperfect that it is not possible to invest savings except in one's own enterprise then labor use and capital use are linked. The prevalence of self-employment using exclusively own (or family) capital in rural non-farm activities, combined with very rudimentary

or non-existent savings institutions in many rural LDC contexts, suggests that this may often be the case. For example, a survey of rural enterprises in El Salvador found that only 7% received start-up finance from formal sources. The vast majority of firms (70%) were started using personal savings (Lanjouw, 2001).³ Under these circumstances the opportunity cost of the use of savings is zero and labor productivity would be an appropriate measure of total productivity (see, also Vijverberg, 1988, Banerjee, 1996, and Banerjee and Munshi, 2000).

A systematic divergence between private and social values is used to argue in favor of government promotion of certain sectors or technology choices, for example policies to support small-scale enterprises (SSEs). It is claimed that SSEs are more labor intensive and that the lower labor and higher capital prices faced by small-scale firms correspond more closely to the inputs' true relative scarcities. For this reason, the relative factor proportions in smaller enterprises are more 'appropriate' and they should be encouraged. Since rural firms tend to be more concentrated in the smaller-sized categories this argument would apply to the rural/urban distinction as well. (Much of the information available on productivity is with respect to the small-scale versus large-scale distinction rather than rural/urban, and concerns manufacturing.) In the productivity data that follow we shall see that there is a wide range of productivity levels across activities in the rural non-farm economy. How these are evaluated depends on an assessment of social opportunity costs.

It is commonly found that small-scale enterprises generate more employment per unit of capital than do large-scale enterprises (except for, perhaps, the smallest units). However, they do not always succeed in producing higher output with greater inputs. In a survey of the literature on this issue, Uribe-Echevarria (1992) notes that, contrary to popular belief, small-scale firms have often been found to be inefficient users of capital. Little et al. (1987) summarize the results of studies in several countries (rural and urban). They conclude that in general there is not a linear relationship linking either capital per worker or capital productivity to firm size, when size is measured by employment. It is medium-sized firms (employment over 50) that tend to have the highest capital productivity. Little et al. (1987) note, however, that in their own investigation of Indian data, when enterprises are ordered by capital size, the expected relationships hold: the smallest firms are more labor intensive, have lower labor productivity and higher capital productivity.

Using data from Sierra Leone, Honduras and Jamaica collected in the late 1970s, Liedholm and Kilby (1989) address the question of the relative profitability of *rural* small-scale firms versus their large-scale urban counterparts specifically. (Small scale is less than fifty employees.) They calculate social benefit/cost measures for enterprises in different industries including baking, wearing apparel, shoes, furniture and metal products. In over two-thirds of the industries, the social benefit/cost ratios for the small-scale firms were greater than one and higher than the ratios for the urban firms in the same country and industry. The social benefit/cost ratios for the large urban firms were often less than one – that is, their production actually decreased social welfare. Similar results were obtained for industries where output could be valued at world prices - which reflect shadow values.

³ Reardon, Crawford and Kelly (1994) provide evidence that when credit markets do not function, non-farm income is a key source of finance for investment into agriculture.

While the non-farm (or small-scale) economy is very heterogeneous, one can think of two rather different groups of occupations: low labor productivity activities serving as a residual source of employment, and high labor productivity (and hence income) activities. Hossain (1984) details daily wage rates and capital/labor ratios for 14 major cottage industries in Bangladesh. Six of the fourteen activities yield daily wages that are lower than the agricultural daily wage (12.24 Tk.) while the higher productivity activities, such as carpentry and handloom weaving, yield daily wages over 50 percent above the agricultural wage. The table also shows a positive relationship between capital per worker and wages and a negative relationship between female workers and wage rates. Controlling for educational and other personal characteristics, Lanjouw (1999) finds that women in Ecuador are significantly more likely to be employed in low-income non-agricultural activities than men are⁴.

Linkages Between the Farm and Non-farm Economies

In the mid-1970s, John Mellor stated an influential and optimistic position regarding the role of rural non-farm activity in a set of proposals for India. As a result of the green revolution technologies he saw a virtuous cycle emerging whereby increases in agricultural productivity and thus the incomes of farmers would be magnified by multiple linkages with the rural non-farm economy. These were production linkages, both backward, via the demand of agriculturalists for inputs such as plows, engines and tools, and forward, via the need to process many agricultural goods, e.g. spinning, milling, canning. Consumption linkages were also thought to be important. As agricultural income rose, it would feed *primarily* into an increased demand for goods and services produced in nearby villages and towns. Furthermore there were potential linkages through the supply of labor and capital. With increased productivity in agriculture either labor is released or wages go up. And the new agricultural surplus would be a source of investment funds for the non-farm economy. To complete the cycle, growth in the non-farm economy was expected to stimulate still further growth in agricultural productivity via lower input costs (backward linkages), profits invested back into agriculture, and technological change. Thus growth in the two parts of the rural economy would be mutually reinforcing with employment and incomes increasing in a dispersed pattern.

There are essentially two strands of empirical investigation into the nature and size of feedback effects between agriculture and the non-farm economy. The first includes econometric estimates of the relationship between growth in agricultural income and growth in employment or income in the rural non-farm economy. These use cross-section or pooled data and so suffer from the fact that both sets of growth rates may differ across regions for many reasons, introducing noise that may swamp any relationship that exists. Furthermore, there are the noted high and low wage occupations in the non-farm economy. As agricultural productivity grows, one would expect the residual employed in the non-farm economy to be drawn into agriculture, lowering employment in the non-farm economy but raising wages there. On the other hand, if the linkages are operating, higher demand for non-farm products and investment in the non-farm economy would lead to higher wages and might draw labor out of agriculture and increase employment in that economy. It is impossible to predict *a priori* whether non-farm employment should grow or

⁴ Similar patterns have been observed in Brazil (Ferreira and Lanjouw, 2000), India (Lanjouw and Shariff, 2000), and El Salvador (Lanjouw, 2001).

shrink with agricultural productivity although in either case wages should rise. In addition, as emphasized by Ranis et al. (1990), the direction of causation is not clear. They cite evidence from the Philippines that suggests that the presence of modern (although not traditional) non-farm enterprises has a positive influence on agricultural productivity.⁵

Vaidyanathan (1986) estimated a regression of the importance of non-agricultural employment in total employment on farming income, its distribution, the importance of cash crops and the unemployment rate, using several state-level data sets for India. In all cases he found a strongly significant, positive relationship between unemployment and the importance of non-farm employment. Where agriculture was unable to provide widespread employment, the non-farm economy played an important role in picking up part of the slack. The incidence of non-farm employment was also found to be positively associated with both higher farm incomes and a more equal distribution, pointing to consumption linkages. Average daily wage rates in non-agriculture are found to be highest in states with high agricultural daily wages, as expected, a relationship that is confirmed in more disaggregated district-level (Hazell and Haggblade, 1990) and village-level (Lanjouw and Shariff, 2000) studies. Overall, wage rates in the rural non-farm economy were found to be higher than the agricultural wage so the low-productivity residual activities do not dominate that part of the rural economy – although one might expect such occupations to be under-enumerated due to their seasonal and self-employed character.

Hazell and Haggblade (1990) used state and district level Indian data to look at the relationship between rural non-farm income and total agricultural income interacted with factors thought to influence the magnitude of the multiplier: infrastructure, rural population density, per capita income in agriculture and irrigation. The estimations were done for rural areas, rural towns (urban < 100,000), and the combined area. They calculated that on average a 100 rupee increase in agricultural income is associated with a 64 rupee increase in rural non-farm income, with 25 rupees in rural areas and 39 in rural towns. All of the interaction terms, except irrigation, increase the multiplier as expected. In another study in India, the North Arcot district in Tamil Nadu, a 1 percent increase in agricultural output was associated with a 0.9 percent growth in non-farm employment (IFPRI, 1985).

The second type of investigation uses social accounting matrices (SAMs) to calculate growth multipliers from certain structural relationships among agents in the economy. SAMs trace the circular flow of income and expenditure, on the one hand, and goods and services, on the other, among households, firms, the government and the rest of the world. These multipliers can easily be decomposed into portions attributable to the various linkages. One can address in a detailed manner the question of how income distribution effects the magnitude of local linkages. The main drawback of SAM multipliers is the detailed data required for their calculation.

Using a SAM constructed for the North Arcot district in India, Hazell et al. (1991b) calculate, using 1982/83 data, that .87 Rs additional value added would be stimulated by a 1.00 Rs increase in agricultural value added. This result is under the assumption of inelastic supply of agricultural products so the additional value added is in the non-farm economy. Assuming elastic supply of agricultural products, the multiplier is an additional 1.18 Rs of (agricultural plus non-agricultural) income. In this study there is no distinction made between locally produced and

⁵ See also Reardon, Delgado and Matlon (1992).

locally retailed products, so it is impossible to say how much of growth in non-farm value-added is commerce as opposed to manufacturing.

Haggblade et al. (1989) use a simple, three-parameter SAM model, and 'representative' African data on consumption parameters from Sierra Leone and Nigeria, and production parameters from surveys in many countries, to calculate agricultural growth multipliers on the order of 1.5. This means that a \$1 increase in value added in agriculture generates an additional 50 cents of rural income.

Lewis and Thorbecke (1992) present a considerably more detailed SAM analysis for the village of Kutus (population about 5,000) in Central Province, Kenya, and its surrounding region (total population, 46,000). They disaggregate production activities into: several types of agriculture, farm-based non-farm activities (such as basket-weaving, carpentry, tailoring), rural non-farm (coffee processing), town and other. Non-marketed production is included. Households are classified according to location in a similar fashion with small and large land owning farmers, rural non-farm households, and low and high education town households. Many town households are involved in agriculture, and conversely, farm households on average obtain barely one-half of their income from farming, with 19 percent of income coming from town businesses operated by farm families. The analysis indicates that additional expenditure by large farm households and high-education town households generates the lowest impact in terms of regional income growth.⁶ Additional production in agriculture provides the strongest income multiplier effects even for town households, with, for example, a 1 KSh increase in coffee *output* generating 1.12 to 1.42 KSh in regional value-added. (In value-added terms these multipliers are even larger and are close to the 1.5 found by Hazell et al. 1991b.) Farm-based non-farm activities have stronger linkages than town-based manufacturing. High education town households benefit most from production increases in all sectors of the economy. In terms of hired labor employment, the service sector, followed by farm-based non-farm and manufacturing production, has the strongest employment generating impact.

There is likely to be a change in the nature of local linkages as development proceeds. For example, using town size as a proxy, Hazell and Haggblade (1990) report that services and cottage industry dominate non-farm activities in rural areas of India with growth coming in commerce and services as one moves to rural towns, accompanied by a shift from cottage to factory manufacturing as town size increases. They also note that, considering only rural areas, the same change occurs as one moves from low to high productivity states. On the other hand, there are examples of the survival and even growth of traditional handicraft sectors when an export market is successfully developed.

The characterization of rural markets as isolated may be reasonable for goods that are costly to transport, such as furniture, and for services. However, even at low levels of development, markets are often at least partially integrated regionally and nationally. Rural firms, for example, typically do not depend only on local inputs. A shortage of imported production inputs is often

⁶ De Janvry and Sadoulet (1993) observe that in Latin America, the highly concentrated land distribution may reduce the importance of consumption linkages. With a highly skewed distribution of land and income, a few landowners benefit from the bulk of the income effects of agricultural growth, and these landowners are often absentee and therefore do not demand locally produced goods.

cited in surveys of rural firms as an important constraint on growth. Harriss (1987b) finds that markets may be widely integrated even with regard to agro-processing (the forward production linkage). For North Arcot's major agro-industry, leather, she reports that less than 5 percent of hides originated in the region with the rest coming from urban slaughterhouses in south India or imported from the north. In the rural town of Arni, over one-half of the grain supplying agro-industry and 90 percent of non-grain inputs (particularly silk and cotton) was from outside the district (with 20 percent of grain inputs from outside the state). She concludes that, with transport available and for goods with a high ratio of value-added to weight, the location of industry depends not on local demands or input supplies but on relative labor costs.

Many studies indicate that at least some part of rural expenditure goes to goods imported from outside the region. For example, a sample survey of Kutus Town, Kenya, found that, on average, 41 percent of total spending by farm families leaked out of Kutus Town and the surrounding region (Evans, 1992). Addressing the question of why agricultural investments in the Muda region of Malaysia have not stimulated much local industry, Hart (1989) notes the facilitating role of infrastructure in both changing demands and allowing cheap non-local supplies. She finds in a 1988 village survey that products from Thailand were readily available in local markets arriving via the North-South Highway. Rural electrification had also generated large demands for several non-local products, with 70 percent of households owning a television and 30 percent a refrigerator.⁷

⁷ We shall return to the importance of infrastructure in supporting and stimulating the non-farm economy in Section 5.

3. The Non-farm Economy, Inequality and Poverty

The non-farm economy is increasingly looked to as a vehicle for poverty alleviation, and the evidence suggests that, indeed, non-farm activities are generally associated with lower absolute poverty. The impact of the non-farm economy on inequality is less clear-cut, however. The typology of non-farm activities as either high-productivity or low-productivity is useful in tracing through the distributional impact of the non-farm economy. High-productivity activities in rural areas generally accrue to the relatively wealthy. Growth of these activities thus tends to increase rural inequality. Because the poor do not typically possess the skills, contacts and assets necessary to access such occupations, they usually do not benefit directly from such jobs. However, evidence suggests there may be an indirect poverty impact: high-productivity activities tighten rural labor markets more generally and thereby exert general equilibrium impacts on employment rates and wages. Low-productivity non-farm activities in rural areas cause less rural inequality, and may even serve to equalize rural incomes. While the returns to these activities are low, they generally go directly to the poor, and thereby serve to keep poverty from rising even more than it would in their absence. In this way low-productivity non-farm activities act as a safety net in rural areas. The diversification of rural incomes that accompanies the expansion of the rural non-farm income has further distributional implications in that it reduces exposure of rural households to uncertainty and can help rural households to smooth consumption. Eventually, a reduction in the degree to which rural incomes co-vary, brought about by this diversification, has implications for the operation of institutions such as rural financial institutions.

It is impossible to say with confidence whether the opportunity to engage in non-farm activities is income inequality increasing or decreasing without information about what the situation would have been in the absence of such occupations. Nevertheless, there is a strong presumption that, if the bulk of non-farm incomes goes to the richer segments of society, it is inequality increasing. Of course, even if non-farm jobs widen the distribution of income, this does not necessarily mean that the poor do not benefit at all.

A recent study of Ecuador explores these questions directly (Elbers and Lanjouw, 2001). In this study the authors explicitly recognize the bimodal distribution of non-farm occupations into respectively, low-productivity and high-productivity sub-sectors. They explore econometrically the relationship between these sub-sectors and economic welfare expressed in terms of inequality and poverty. Taking Ecuador's *parroquias* (representing around 500 or so households) as their unit of analysis they find that parroquia-level inequality rates tend to rise with the share of the local labor force employed in high-productivity non-farm activities. Employment in low-productivity non-farm activities has either no, or a negative, correlation with inequality. A key finding is that, irrespective of the association with income inequality, employment shares in both high-productivity and low-productivity non-farm activities are associated with sharply lower absolute poverty rates. Thus, while inequality and poverty are clearly related, they are not equivalent, Elbers and Lanjouw suggest that the high-productivity sub-sector acts as a engine-of-growth, lifting the poor out of poverty either directly or via generally rising wage rates, while the low-productivity sub-sector acts as a safety net that helps to prevent more households from falling below the poverty line.

In other studies evidence on the relationship between non-farm activities, poverty and inequality is less direct. However, in general, the pro-poor impact of non-farm activities is also observed in these other studies, and the evidence of the impact non-farm economy in inequality is similarly mixed depending on whether the non-farm activities are highly remunerative, or low-productivity activities.⁸ In some cases one sees the poorer/landless getting a higher percentage of their income from non-farm occupations suggesting an equalizing influence. See, for example, studies of Japan, South Korea, Kenya, Botswana, Nigeria, Gambia, and Egypt in Bagachwa and Stewart (1992), White (1991), and Adams, (1999). Ellis (2000) describes a study of rural households in Shinyanga district, Tanzania, where the poor are observed to receive a greater share of income from non-farm sources than the rich. Although high-return non-farm activities, such as shop-keeping, tailoring and carpentry, do exist in this region, the poor are not typically involved in such occupations. They participate in activities that require little investment and few skills – the low-return activities described above - and face entry barriers in gaining access to the high-return options. Similarly, Feder et al. (2000) point out that among farming households in Thailand, the larger the farm size, the lower the share of income earned from non-farm sources.

Other studies point to non-farm incomes accruing mainly to the non-poor, and contributing to a widening of the income distribution. In a decomposition analysis of income inequality by sources of income in rural areas of two provinces of China (Jiangsu and Sichuan) Burgess (1997) finds that off-farm income is inequality increasing. A longitudinal study of Palanpur, a village in North India, documents that the distributional impact of non-agricultural employment opportunities has shifted from equalizing to disequalizing over time (Lanjouw and Stern, 1998).

Adams (2000) contrasts the impact on inequality of scaling up non-farm incomes in Egypt and Jordan. He finds that in Egypt non-farm income represents an inequality-decreasing source of income, while in Jordan it is inequality increasing. He suggests that the very different impact of the non-farm economy is linked to availability and quality of land. In Egypt cultivable land is generally irrigated and highly productive. It is also very scarce. Non-farm activities are thus undertaken by those with insufficient access to such land. By contrast, in Jordan only 30 percent of cultivated land is irrigated and crop yields are low. The rural population does not press for access to land, and the most attractive returns are found in the non-farm economy, principally salaried employment in the public sector.

Several studies show that the relationship between the share of non-farm income and total income or assets is U-shaped. This fits with the residual employment/productive sector dichotomy, with better off households (either *ex-ante* or *ex-post*) involved in the latter. Hazell and Haggblade (1990) present Indian data, which show that in the mid-1970s the wealthiest and poorest households (per capita) had the highest shares of income from non-farm sources (business income in the case of the rich, and wages for the poor). But in many other studies researchers have observed that the share of non-farm income rises monotonically with overall income levels. White (1991) finds land-rich households receiving the largest returns from non-farm enterprises in Java. In Kutus Town, Central Province, Kenya, a survey of 111 farm households found that the wealthier benefited most from earning opportunities outside agriculture with the richest quarter receiving 52 percent of income from non-farm sources

⁸ For a recent review of the literature see Reardon *et al.* (2000).

compared to 13 percent for the lowest quarter (Evans and Ngau, 1991). Reardon, et al. (1992) found a similar result for Burkina Faso, with total household income strongly positively correlated with the share of income derived from non-farm sources. A recent study of Vietnam found that the lowest level of poverty in rural areas is among households whose income stems solely from off-farm self employment (van de Walle, 2000). Similar findings are reported for Ecuador (Lanjouw, 1999), El Salvador (Lanjouw, 2001) and Brazil (Ferreira and Lanjouw, 2000). In the Indian village of Palanpur mentioned above, the poor have not been direct beneficiaries from an expansion of employment opportunities outside the village – the better educated in the village have tended to secure the available non-farm jobs. However, the poor in Palanpur are likely to have benefited indirectly: despite a rapidly growing population and a fixed amount of village land, real agricultural wages have risen steadily over the past two decades, the consequence of technological change in agriculture but also the withdrawal by some villagers from the agricultural labor market due to new employment opportunities (Lanjouw and Stern, 1993, 1998). Unni (1997) reports that social status (proxied by caste) in rural Gujarat, after controlling for education and other personal characteristics, exercises an important, independent, influence on access to high-productivity non-agricultural occupations. Once again, the relatively disadvantaged appear to face barriers to employment in the most attractive non-agricultural jobs. In a survey of African field studies, Reardon (1997) also points to important barriers to employment in non-farm activities. These barriers clearly may dampen their potential to alleviate poverty.

Where individuals are involuntarily unemployed, that is, looking for agricultural employment at the prevailing wage rate but not finding it, then the agricultural wage is not the opportunity cost of labor. There is evidence from India that village-level agricultural wages are rigid and that this situation persists even in the peak seasons. With involuntary unemployment of agricultural laborers, even low wage employment outside of agriculture may be very crucial in raising the living standards of the poorest, particularly those who do not have other resources, such as family, to fall back on.

In many countries the ability of women to work outside the home is limited. Thus their opportunity cost of time also bears little relation to the agricultural wage and, for the poor, may be very low. Where data are available, **Table 2.1** indicates that non-farm employment is important to women in many countries (and as noted, the figures are likely to be particularly underestimated for women).

Cottage industry, where work is performed in the home, is particularly useful from the point of view of mixing with other activities, such as preparing food and caring for children. A study of eleven villages in Bangladesh in 1979/80 (Hossain, 1987) found that employment in cottage industries was close to a full-time occupation for men in many activities while it was most often a part-time occupation for women – despite the fact that women rarely worked in agriculture (the main exception being pottery where women are engaged full-time). The activities that have a majority of women workers are those located inside the home – rice husking, mat making, coir products and net making – where participation does not require breaking social customs. Studies also show African women dominating activities that can be undertaken in the home. Examples are beer brewing in Botswana, Burkina Faso, Malawi and Zambia; fish processing in Senegal and Ghana; pottery in Malawi; rice husking in Tanzania and retailing and vending in general

(Bagachwa and Stewart, 1992). In the Sierra region of rural Ecuador, the town of Pelileo has become well known for its tailoring activities. Up to 400 small enterprises, mostly households sub-contracted to a larger firm, are located in and around the town and are engaged in jeans tailoring. Most of the family firms are operated by women and children, supplementing their households' agricultural income. A family operation with 5 members working full time might expect to earn weekly profits of around \$200 (World Bank, 1996).

The peaks and troughs in labor demand from agriculture leave many people in rural areas seasonally unemployed. As a result, much of non-farm employment is secondary. In the slack season there may not be any agricultural employment so even a low-productivity occupation can be useful in raising and smoothing income over the year. On the other hand, it is important to realize that the types of employment available on a seasonal basis are limited. Capital (both human and physical) intensive activities are not likely to be undertaken seasonally because it leaves capital underutilized during the agricultural peak season. This in turn means that labor productivity will rarely be very high.

In addition to smoothing the flow of income received by agricultural households over the cropping cycle, non-farm income may stabilize total income by spreading risk through diversification.⁹ A smoother flow of income directly increases welfare at a constant level of expected income (making the standard assumption that utility functions are concave in consumption). It is common to see households deriving income from multiple sources. In China, for instance, most TVE workers retain rights to agricultural land and many work part-time in farming (Du, 1990). Both seasonal smoothing and risk diversification can be very important in environments where agricultural output varies greatly over the year and across years and where mechanisms for smoothing income, such as credit and transfers, are costly or absent.

The opportunity to earn non-farming income can lead to higher average agricultural incomes in two ways. First, if there are several production technologies or crops, with higher average productivity being associated with greater variability in output, then having an alternative source of income that does not fall with a bad agricultural outcome makes farmers more willing to choose the high-risk/high-return options. Furthermore, in the absence of low-cost credit, additional income from outside farming facilitates the purchase of costly inputs when they are required to take advantage of high-return options. Using data on smallholder agriculture in Kenya, Collier and Lall (1986) found that crop output was significantly related to non-crop income and liquid assets after controlling for production inputs. This suggests that wealthier and more diversified farmers were making higher productivity cropping choices. It was found, moreover, that non-farm income not only contributed directly to household resources available for input purchases but was also important for obtaining credit. In another study of Kenya, the town of Kutus, Evans and Ngau (1991) found that farm revenue is positively associated with the proportion of land devoted to coffee (versus maize) controlling for input costs, and that the proportion of land given to coffee is positively associated with non-farm revenue.

⁹ Ellis (2000) argues that diversification, as pursued by rural households, is a key dimension of their livelihoods strategies. This perspective is shown to foster both a deeper understanding of poverty and inequality outcomes in rural areas as well as to stimulate thinking about a broader set of policy responses.

Of course, to the extent that the non-farm economy depends on demand derived from local agricultural incomes, it will vary and will only effectively smooth idiosyncratic risk. For example, the North Arcot district of Tamil Nadu suffered a severe drought in 1982/83 with a fall in over 50 percent from normal rice yields. Non-farm business income also plummeted as a result (Hazell et al., 1991a). On the other hand, Reardon et al. (1992) report that for three regions in Burkina Faso, the ratio of the coefficient of variation of total income to the coefficient of variation of cropping income was 0.61, 0.76 and 0.69, indicating that total income was considerably more stable than cropping income alone (see also Reardon and Taylor, 1996). Similarly, Lanjouw and Stern (1998) show that the North Indian village of Palanpur, the expansion of non-agricultural employment opportunities has accompanied a fall in the degree to which household incomes in the village co-vary. In most situations, non-agricultural income will probably be a stabilizing force.

4. The Role of Government: Principles

Policymakers invoke a variety of reasons to justify public intervention to promote the non-farm economy. We consider the circumstances below when standard economic theory warns that the market, left to itself, cannot be relied on to deliver the socially optimal configuration of goods and services. It is useful to distinguish between those cases when the problem is a generic one, affecting both the non-farm economy as well as the farm sector, as opposed to those cases when the non-farm economy in particular is affected. It is also important to think about the organization of government intervention: the appropriate level of government; and coordination across line ministries.

Economic Principles

For the reasons described in earlier sections, governments are often interested to see the rural non-farm economy expand. There are often grounds for believing that the market, left to itself, will not produce as rapid an expansion of it as might be desired. For example, rural credit markets are widely noted to operate imperfectly, and in this way fail in their role of channeling sufficient funds to rural areas for the purpose of expanding the non-farm economy. Alternatively, positive externalities from an expanding non-farm economy, such as the reduction in pressure on urban areas from rural migration that might accompany growth of the non-farm rural economy, may not be reflected in conventional market signals. Finally, interest of policy makers to reduce poverty may not be reflected in market signals.

The General Problem of Missing Markets

A common argument in favor of public action is made with reference to *missing* or *imperfect markets*. The poorly functioning rural credit market is perhaps the most widely cited example. High transactions costs (due, perhaps, to preferences for small loans); information asymmetries; exposure to shocks that vary across households; and/or the inability of households to offer collateral (the result, perhaps, of poorly delineated property rights, or of extreme poverty) are thought to result in rationing, market segmentation, and high interest rates. They may even lead to the absence of credit markets altogether. These problems have been noted, to different degrees, in many different rural settings and can clearly apply to farm households as well as non-farm enterprises. Surveys of micro and small-scale enterprises in rural areas tend to find a high percentage of respondents who claim to be credit constrained, and start-up funding for most existing rural non-farm enterprises is generally found to have come from savings or informal loans, rather than from formal financial institutions. These factors have led policymakers to conclude that some kind of credit market intervention is warranted. However, experience with publicly owned credit institutions has been mostly disappointing. The emergence of private or NGO-operated micro-credit schemes is an institutional innovation that needs to be encouraged, although the issue of subsidy-dependence suggests that careful assessment is needed (Morduch, 1999). We will return to a discussion of rural credit as a policy tool in Chapter 5.

Externalities from the Non-Farm Economy

The second theoretical justification for government intervention occurs when rural non-farm activities are believed to be associated with externalities of some sort, or when they are thought to produce some kind of public good. The non-farm economy is generally thought to be associated with a number of specific externalities. One example, which appears to be weighing heavily in the deliberations of many developing country governments, is that a vibrant non-farm economy has implications for the spatial distribution of economic development. In particular, governments as well as donor agencies and non-governmental organizations often express an interest in promoting rural industrialization as part of a strategy to encourage the population to stay in the countryside rather than move to the cities.¹⁰ Efforts to realize this specific type of externality have led governments in various developing countries to adopt policies ranging from the promotion of industrial estates in rural areas to the provision of infrastructure and the location of public enterprises in rural areas. Government policy may also help to overcome another type of externality associated with non-farm enterprises: coordination failures might impede the emergence of a dynamic non-farm economy outside of urban areas (for an overview of these issues, see Bardhan and Udry, 1999).

Distributional Objectives from Non-Farm Activity

Recent years have seen growing attention to a third rationale for government intervention, namely that the non-farm economy is important in helping to achieve the distributional goals of society. Poverty in most developing countries has a critical rural dimension. In most developing countries it is still the case that the bulk of the population resides in rural areas, and that fertility rates in these regions tend to be higher than in urban areas. Even in those countries where urbanization has been particularly rapid in recent decades, income levels in rural areas tend to lag far behind urban incomes so that the degree of poverty (if not numbers of poor) is typically higher in rural areas than in urban ones. Women form a particular sub-group among the poor who are particularly difficult to reach with government transfers or other public interventions.

Governments in many developing countries are concerned that rural poverty cannot be eliminated via agricultural growth only and for this reason are anxious to support expansion of the non-farm economy. Diversification of the rural economy is believed not only to generate additional employment and income earning opportunities (notably for women), but also to reduce the degree to which household incomes fluctuate in concert, as a result of commonly-felt shocks such as drought, flooding, etc. This “co-varied” feature of rural incomes has long been recognized to impede the development of insurance markets and exacerbate the vulnerability of the poor to shocks outside their control. Government interventions aimed at poverty reduction have taken a variety of forms, ranging from rural public-works projects, to regional targeting of transfers, to provision of education, to the reservation of production of certain goods and services to small enterprises.

¹⁰ The positive “externality” associated with restraining migration to urban areas is, of course, itself just a antidote to the negative externalities that such migration is thought to produce in terms of congestion, pollution, and crime rates in urban areas (for further discussion, see Lanjouw and Lanjouw, forthcoming).

Targeted Versus Broad Measures

Government intervention aimed at the non-farm economy can be both at a detailed, targeted, level and at the level of the general policy environment. Studies show that certain broad policy stances, such as regarding exchange rates, industrial regulation, minimum wage legislation, agricultural input delivery policies, etc, can have unintended impacts on the non-farm economy. These broad measures must be looked at alongside the more detailed, targeted, measures.

Governmental efforts to support the development of small-scale enterprises and specifically rural enterprises have traditionally taken the form of project assistance that is directed at targeted groups. However it is also recognized that the general policy environment within which small-scale and rural enterprises operate must be looked at closely, and that policy measures may sometimes be necessary at this general, aggregated level.

There are a number of policies commonly followed in developing countries that alter the relative labor/capital rental rates such that large (urban) firms face a higher ratio than small (rural) firms. Some distort the relative costs of capital, such as subsidized credit and interest rate ceilings, and others distort the costs of labor, such as minimum wage legislation.¹¹

The common policy of maintaining an overvalued exchange rate with low or zero import duties on imported capital equipment often has a similar detrimental impact on the cost of equipment to small-scale producers because their production equipment may not be recognized as such in the tariff codes. For example, in Sierra Leone, sewing machines, a crucial piece of equipment for small tailoring firms, were classified as a luxury consumer good and taxed as such (Leidholm and Chuta, 1990). As a result of such policies, it was estimated in 1974 that the effective rate of protection, i.e., taking into account tariffs on both outputs and inputs, for large-scale clothing manufacturers was 430 percent, while for their small-scale counterparts the effective rate of protection was only 29 percent (Hagblade et al., 1986). Similar biases have been noted in the treatment of imported raw materials and intermediate inputs. In general, the need for import licenses hurts both smaller and rurally located firms.

Distortionary policies in the labor market include minimum wage legislation, mandated benefits and labor legislation. These policies are particularly prevalent in Latin American countries. Considering both distortions together, estimates of the percentage difference in the labor/capital rental rates between small and large firms as a result of government policies range from 43 percent higher (South Korea, 1973) to 243 percent higher (Sierra Leone, 1976) (Hagblade et al., 1986).

In light of the studies discussed in earlier sections describing how off-farm activities typically form only a subset of household's portfolio of activities (which usually will also include agriculture) and the numerous linkages between the non-farm economy and agriculture, it is

¹¹ The observation that wages are higher in larger firms and capital costs lower does not by itself imply the presence of distortions since there may be economic reasons for such differences. For example, urban labor may be paid more to ensure reliability or it may be more skilled. Capital costs may be lower because the level of risk is lower, and so on - that said, some policies are clearly distortionary.

apparent that agricultural policies can have a pronounced impact on rural non-farm activity. For example, the delivery of agricultural inputs such as irrigation, soil preparation, harvesting and threshing equipment, seeds, fertilizers, pesticides, veterinary supplies, etc., is often perceived as an exclusively government responsibility. In many countries there remain regulations and procedures which discourage the emergence of local markets for such productive assets and services, and which thereby also constrain the growth of the non-farm activities underpinning such markets. While cross-sectional studies suggest that some of the linkages between agriculture and the non-farm economy may diminish over time, they may be critical in the initial stages of its development. An important lesson is that, while policies aimed at the rural non-farm economy should not be made without consideration of their impact on agriculture, agricultural policies should also not be made in isolation. In developing countries, where the policy stance is often implicitly or explicitly biased against agriculture, it is unlikely that the rural non-farm economy will remain unaffected.

Level of Government Intervention

The great heterogeneity of the non-farm economy in rural areas (and the limited empirical analysis to date) imply that there is little scope for general, broad, policy prescriptions. This observation provides an important lesson for our thinking about the process of policy formulation. A wide variety of interventions may be required to promote the development of the non-farm economy, each tailored to specific local conditions. Decentralized decision-making is likely to be conducive to some aspects of sectoral development: mechanisms must be found whereby local information flows upwards, so that the localized bottlenecks are relieved and specific niches can be exploited. Certain types of policies that are important for promoting the non-farm economy, such as those dealing with education and large-scale infrastructure provision, do not lend themselves naturally to highly decentralized implementation. However, there seems to be a clear rationale for also pursuing decentralized policy design and implementation wherever possible. For example, even in the case of infrastructure, while large fixed costs and network design might justify planning and financing at a rather centralized level, other aspects such as implementation and critically, maintenance, may be best organized at a decentralized level.

The real challenge in this context will be to ensure that greater decentralization does not compromise distributional goals. The gains from decentralization are most likely to be felt in terms of more extensive, and productive, non-farm activities. It is less clear that decentralization can also be relied on to ensure that the poor benefit in particular from these increased activity levels.

The great heterogeneity of the non-farm economy; its close links with agriculture; the small-size profile of rural industrial enterprises; the clear importance of infrastructure, education, and financial services; all imply that a variety of line ministries and agencies have a role to play in promoting the non-farm economy. Yet each of these ministries is also likely to have other constituencies, as well. This plurality of stakeholders and the myriad objectives that each pursues suggests that final responsibility rarely rests in any single ministry or agency, and that the necessary degree of coordination across ministries will be difficult to achieve.

5. The Role of Government: Experience

The theoretical arguments for government intervention in the non-farm economy center around the perceived absence of certain specific markets, the possibility of positive or negative externalities, and the possibility of achieving distributional objectives. For governments to actually act on these arguments obviously depends, first, on whether in fact the market in question *is* missing, whether externalities *are* being produced, or whether social objectives *are not* being met. These are empirical questions that are often rather difficult to establish. For example, the suggestion that the credit market works poorly for non-farm enterprises is often based on surveys in which entrepreneurs are asked about perceived credit constraints, or about the reasons that their enterprise failed. Results from such surveys are often difficult to interpret, and there are both empirical as well as theoretical grounds for caution. In general, research to establish the case for government intervention is still in an early stage, especially given that the great heterogeneity of country circumstances and nature of non-farm activities implies that research must be tailored to the specific contexts.

Even if market failures, or the other theoretical grounds for government intervention, are confirmed by empirical investigation, the case for government intervention still depends on a second condition. An intervention must be possible, which both relieves the problem at which it is directed, and which does not come at an excessive social opportunity cost. Evaluating the social opportunity cost of intervention is a challenging task. It requires looking beyond market prices of inputs and outputs (taking into account, for example, that widespread rural unemployment may justify attaching a lower “shadow” price of labor than the market wage rate). It also requires a careful examination of alternative uses to which public resources and energies can be devoted (taking into account both the financial resources of the government as well as administrative and organizational capacities). Recent decades have seen a much deeper awareness and understanding of the possibility of “government failure” even where government efforts aim to address real market failures.

We provide an overview of the experience with government policies and programs below. We consider first, at some length, the experience with a key, broad domain of policy intervention: infrastructure provision in rural areas. We then progressively narrow our focus on policies that are more directly targeted at the non-farm economy.

Rural Infrastructure¹²

The importance of infrastructure in supporting the expansion of the non-farm economy is a fairly robust finding from many studies throughout the developing world. Systematically collected, comparable and comprehensive data on access to infrastructure services are not readily available. Nonetheless, compilations of indicators of access to infrastructure services, such as they are, suggest that rural households are far less well-served than urban households in developing countries. This imbalance is likely due, in part, to the generally higher per capita cost of

¹² This section draws heavily on contributions provided by Ruchira Bhattacharya. We are very grateful for her help.

infrastructure provision in rural areas compared to urban areas. However, the gap in many countries is so large that it seems unlikely that this explanation accounts fully for the imbalance. Other factors, such as the low ability of rural households to pay, and a weaker political influence of the rural sector in national politics may also play a role. The imbalance occurs with respect not only to "economic infrastructure" (which refers to services such as transport, power, communications, etc.) but is found also with social infrastructure (schools and hospitals) in many developing countries.

Rural infrastructure is generally viewed as an essential requirement for growth of the rural non-farm economy: inadequate and poor quality infrastructure imposes serious costs on virtually all economic activity; and private investment tends to occur where infrastructure is of a reasonable standard. It is often argued that rural infrastructure is less available, and of lower quality, than infrastructure in urban areas, due to the "urban bias" of policy makers.¹³ According to Alderman et al. (2000), rural areas are characterized by relatively low population densities, with maximum population thresholds of 5,000 to 10,000 per settlement. They are often associated with lower levels of basic infrastructure and service provision and price and taxation discrimination, and it is suggested that this is due to "urban bias" in public expenditure allocation and fiscal policy.¹⁴

Power shortages provide a common example of inadequate infrastructure services in rural areas. For example, electricity shortages in Wuxi Province of China during the 1980s, compelled almost every TVE (township and village enterprise) in the region to install a diesel generator in order to meet its own needs – at a total, aggregate, cost several times that of power transmitted through the electricity network (Wang, 1990). Similarly, surveys of large- and small-scale manufacturers in Nigeria and Indonesia found that 92 and 59 percent, respectively, had their own electricity generators – often operating at less than 50 percent capacity (World Bank, 1994). A survey of manufacturers in Bangladesh found that infrastructure constraints were most frequently cited as impediments to firms locating in rural areas (World Bank, 1997). Electricity, telecommunications, and road and transport costs were reported to pose the greatest constraints.

In addition to lowering costs, good infrastructure, such as in the form of transport links, is essential if non-farm enterprises are to break away from dependence on the limited demands in local markets and orient their marketing to the outside world (Mead, 1984). In a survey of rural firms in four counties of China, Byrd and Zhui (1990) note that a large majority of the firms sold more than sixty percent of output outside their home province. Such sales include sales of final goods domestically or exports abroad. An evaluation by USAID of six new rural roads in the

¹³ It is important to note, however, that improved infrastructure could impact negatively on non-farm activities due to competition from outside products and shifts in tastes (see the discussion in Section 2).

¹⁴ Lipton (1977) introduced the term "urban bias" to explain the domination of the rural poor by powerful urban interests. According to Lipton, the most important class conflict in the Third World is that between the rural and the urban classes, since "...the rural sector contains most of the poverty and most of the low-cost sources of potential advance; but the urban sector contains most of the articulateness, organization and power". Lipton's theory was criticized for not taking into account the presence and interests of the rural rich and the urban poor. Bates (1981) extended the criticism of the urban elite in his analysis of the role of African bureaucracies that, in the name of industrialization, were seen as over-controlling their economies, skewing incentives and infrastructural investment towards urban areas, and generally undermining the real material base of African economies, namely agricultural production.

Philippines found that the fall in the costs of transportation and broadening of the market led to a substantial increase in both agricultural and non-farm incomes between 1975 and 1978 following completion of the roads. Further, there was a 113 percent increase in the number of non-farm establishments in the vicinity of the roads (Ranis et al., 1990).

In simulations for the U.S. that allow for various effects of lower transport costs, Kilkenny (1998) demonstrates that the overall impact of falling costs may not be monotonic, but rather "U" shaped. At intermediate transport costs, urban goods can reach the rural areas and the benefits of concentration draw most manufacturing to urban areas. As transport costs fall further, and the rural-urban wage gap widens, the latter begins to draw non-farm industries back to the rural areas.

Improved availability of infrastructure may also be valuable in helping to overcome market failures. For example, Binswanger et al. (1989) provide evidence that placement of bank branches tends to follow availability of infrastructure. Similarly, Kawagoe (1998) indicates that railway development in early Meiji Japan played a critical role in promoting the emergence of peasant entrepreneurs and traders.

Given the widely held view that infrastructure plays a key role in promoting the non-farm economy (as well as agriculture, see Barnes and Binswanger, 1984; Binswanger, Khandker and Rosenzweig, 1989, Lanjouw and Stern, 1998, World Bank, 1996; Hazell and Fan, 1999), it is worth reviewing the evidence on the availability of infrastructure in rural areas. We divide our discussion into three sub-sections. First, the term "infrastructure" is defined. Second, a brief discussion on the challenges facing rural infrastructure is presented. Third, empirical evidence on the differences in access to infrastructure for rural *versus* urban populations is examined.

Definition of Infrastructure

As described in the 1994 World Development Report on *Infrastructure for Development*, infrastructure refers to a variety of services that are often designated as "social overhead capital." While neither term is precisely defined, both are characterized by features of public goods, spillovers from users to non-users and economies of scale (World Bank, 1994).

Hirschman (1958) included communication, drainage, education, irrigation, law and order, power, public health, transport and water supply in his definition of infrastructure or social overhead capital. However, he also defined a sub-set of "hard core" infrastructure that he limited to transport and power. The 1994 WDR's focus on "economic infrastructure" as differentiated from "social infrastructure" reflects the separation between "hard" and "soft" infrastructure (such as power and transport on the one hand, and education and health services on the other). In its report on infrastructure for development, the WDR includes the following services:

Public utilities: power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas.

Public works: roads and major dam and canal works for irrigation and drainage.

Other transport sectors: urban and interurban railways, urban transport, ports and waterways, and airports.

In this section, we generally focus on economic infrastructure sub-sectors examined in WDR 1994, but we do also give some consideration to the broader definition of infrastructure.

Challenges Facing the Rural Infrastructure Sector

What are possible causes of “urban bias” in infrastructure provision? Spatial factors often play a role. Due to its public good nature, infrastructure provision and maintenance has traditionally been viewed as a responsibility of the public sector, usually the central government. In rural areas, the reach of central government may be incomplete, often limited to local district administrative centers. These are often located at some distance from more isolated rural communities. As a result, organizing the delivery and maintenance of infrastructure in remote communities is complicated and perhaps of limited political value. These spatial factors also hinder the ability of scattered rural communities to organize for collective action.

In addition to spatial explanations for “urban bias,” it is also necessary to pay attention to economic arguments that favor infrastructure allocation to urban areas. Lower population density and lower income levels in rural areas present unique challenges for cost effectiveness and cost recovery in the delivery of services and public goods in these areas. For example, lower income levels in rural areas may result in lower demand by rural populations for electricity or telephones, making it difficult to recover the cost of providing these services into rural areas.

In the case of provision of rural roads, the lower population density in rural areas raises the per capita cost of providing road networks in rural areas. These costs have to be compared to the benefits that the networks will bring. According to Schelling and Liu (2000), conventional road projects’ cost-benefit analyses focus on the quantification of direct road user benefits. However, most rural access roads have very low initial traffic volumes, and expected benefits from improvement come primarily through improved socio-economic opportunities, which increase traffic, but are difficult to forecast and quantify in monetary terms.

Similar problems occur in the case of rural electrification. Developing sustainable rural electrification programs requires that the benefits be correctly estimated, and that cost recovery and institutional delivery mechanisms be well-designed (Lamach et al., 2000). However, when demand is constrained by non-price factors, especially non-availability or lack of access, the demand schedule that is constructed often underestimates the benefits that consumers might derive from electricity. Also, using current levels of consumption may not be an accurate measure of demand, as demand may be held down by inadequate supply (*ibid.*). The economic benefits of electricity are also difficult to estimate based on the cost of substitutes, since electric light provides a “better” kind of light than, say, kerosene lamps.

Rural Versus Urban Access: the Empirical Evidence

Most data on the allocation of public investment between rural and urban regions are too crude to allow accurate comparisons among countries. Nevertheless, the available data suggest that the allocation has been more equal across rural-urban sectors in the high-performing Asian economies (HPAE) than in other developing countries with comparable population levels or comparable per capita incomes (Campos and Root, 1996).¹⁵ For example, **Table 5.1** below provides a rough view of the access to electricity in these countries and other developing countries during the 1980s.

Table 5.1: Percentage of Rural and Urban Population Served by Electricity (Selected Years)

Region and country	1983 population	Per capita GNP (US \$)	Urban	Rural	Year
<i>HPAEs</i>					
Indonesia	155.7	560	39	10	1984
Malaysia	14.9	1,860	85	55	1983
Thailand	49.2	820	78	40	1984
<i>Other Asia</i>					
Bangladesh	95.5	130	20	2	1981
India	733.2	260	<25	15	1981
Pakistan	89.7	390	<25	15	1981
Philippines	52.1	760	40	22	1980
Sri Lanka	15.5	330	35	8	1982
China	1019.1	300	>80	60	1982
<i>Latin America</i>					
Argentina	29.6	2,070	>95	5	1981
Bolivia	6	510	72	9	1981
Brazil	129.7	1,880	>95	19	1981
Chile	11.7	1,870	>95	42	1981
Ecuador	8.2	1,420	79	13	1980
<i>East and West Africa</i>					
Burkina Faso	6.5	180	<15	1	1980
Ethiopia	40.9	120	10	<1	1982
Guinea	5.8	300	21	4	1982
Cote d'Ivoire	9.5	710	93	20	1981
Liberia	2.1	480	86	4	1982
Kenya	18.9	340	83	12	1982

Source: Munasinghe (1987), as cited in Campos and Root (1996).

More recent figures on the disparities between rural and urban populations' access to different types of infrastructure are not readily available in a carefully compiled form, but some impressions can be acquired by piecing together disparate bits of information. The tables below present access to water and sanitation services, electricity, telecommunications and roads for sample countries. The figures presented have been collected from various sources, sometimes with differences in their understanding of "access." However, while these estimates may not be reliable indicators of absolute levels of access, they do serve the purpose of illustrating *relative* differences between rural and urban regions.

¹⁵ Among the HPAEs, Indonesia, Malaysia and Thailand have large rural sectors, while Taiwan and Korea have modest rural sectors.

Access to Water

Table 5.2 presents figures on access to safe water and adequate sanitation for urban and rural populations for a sample of countries. These data are collected by the World Health Organization (WHO) from Member States through questionnaires, as part of the WHO's effort in monitoring and evaluating safe drinking water and sanitation.

Table 5.2: Indicators on Access to Safe Water and Adequate Sanitation

Country	Year	Population with access to safe water (%)		Population with access to adequate sanitation (%)	
		Urban	Rural	Urban	Rural
Chad	1994	48	17	74	7
Nigeria	1995	80	39	82	48
Uganda	1995	60	36	60	50
South Africa	1994	90	33	78	12
Ecuador	1995	81	10	70	26
Guatemala	1995	97	48	91	50
Panama	1995	99	73	99	81
Nicaragua	1995	93	28	88	28
Nepal	1996	61	59	74	18
Pakistan	1996	85	56	75	24
Indonesia	1995	87	57	88	61
Albania	1994	97	70	97	10
Romania	1991-93	70	10	81	3
Kyrgyz Republic	1991-93	93	42	87	31
Ukraine	1991-93	77	12	70	8

Notes: Percentage of population with access to safe water refers to the proportion of population with access to an adequate amount of safe drinking water in a dwelling or located within a convenient distance of the user's dwelling. The population covered includes urban population served by house connections, urban population without house connection but with reasonable access to public standposts, and rural population with reasonable access to safe water.

Reasonable access is defined as "within the home or within 15 minutes walking distance." In urban areas, a distance of not more than 200 meters from a house to a public standpost may be considered reasonable access; in rural areas, reasonable access implies that the housewife does not have to spend a "disproportionate part of the day" fetching water for the family's needs. *Adequate amount of water* is the amount of water needed to satisfy metabolic, hygienic and domestic requirements, i.e. 20 liters of safe water per person per day. *Safe water* is defined as water that does not contain biological or chemical agents at concentration levels directly detrimental to health.

Percentage of population with adequate sanitation refers to the proportion of population with access to a sanitary facility for human excreta disposal in the dwelling or immediate vicinity.

Source: WHO (1997), as cited in Bosch *et al.* (2000).

From **Table 5.2**, it is clear that for all the sample countries, access to safe water and sanitation is consistently lower for rural populations compared to urban populations. Even the definition for "reasonable access" for rural areas, which does not state a time-limit for water collection for rural areas (unlike the limit of 15 minutes walking distance in urban areas), seems to imply that it is acceptable for rural populations to spend more time for water-collection.

Access to Electricity

Table 5.3 presents the increase in rural and urban electrification for developing countries, by region. While the proportion of population connected to electricity over time has increased for

both rural and urban areas, the proportion of rural populations with electricity is lower in both years than the corresponding number for urban populations.

Table 5.3: Urban and Rural People Connected to Electricity, 1970 and 1990 (%)

<i>Region</i>	<i>Urban</i>		<i>Rural</i>	
	<i>1970</i>	<i>1990</i>	<i>1970</i>	<i>1990</i>
North Africa & Middle East	65	81	14	35
Latin America & Caribbean	67	82	15	40
Sub-Saharan Africa	28	38	4	8
South Asia	39	53	12	25
East Asia & Pacific	51	82	25	45
All developing countries	52	76	18	33
Total served (in millions)	320	1,100	340	820

Note: These estimates are only approximations.

Source: World Bank project and sector reports, other materials, and surveys of electricity statistics by the World Bank's regional staff in Asia and Latin America, as cited in World Bank (1996d).

Table 5.4 presents the proportion of households connected to electricity in urban and rural areas for sample countries. As evident from the table, electricity coverage is much higher in urban than rural areas for most countries. However, in Eastern and Central Asia, rural and urban households report almost equal coverage.

Table 5.4: Percentage of Households with Electricity

<i>Country</i>	<i>Rural</i>	<i>Urban</i>
Cote d'Ivoire	12.7	73.1
Ghana	4.3	61.7
South Africa	27.2	74.6
Ecuador	74.8	97.4
Jamaica	69.3	86.1
Nicaragua	33.1	92.3
Panama	48.7	98.1
India	30.5	83.1
Nepal	8.9	88.6
Pakistan	58.3	94.6
Vietnam	38.8	87.9
Albania	99.9	100.0
Bulgaria	100.0	99.9
Kyrgyz Republic	99.5	99.5
Ukraine	99.8	99.7

Source: LSMS surveys, as cited in World Bank (2000). For India, the source is the 1993/4 50th National Sample Survey household survey.

Access to Telecommunications

No precise indicator for ‘access’ to the telephone or telecommunications network exists, that can be applied universally or consistently across countries. For example, “teledensity” measures telephone lines per 100 people, providing an estimate of the population served by fixed line networks. However, teledensity does not take into account the growth of cellular phone networks that have become significant in many areas of the developing world, including some of the poorest, such as Bangladesh. Nevertheless, the indicators used in this section, while

incomplete, are meant to provide a rough picture on availability and access to telecommunications.

Table 5.5 shows that teledensity levels are consistently much higher in urban areas than rural areas. However, one problem with using teledensity levels as an indicator of a population's access to telecommunications is that it does not distinguish business and government lines (usually all of these are classed as 'business' lines) from residential lines, thereby masking the extent of household penetration. This is especially important for developing countries, since their national networks usually have a higher percentage of business, government and institutional lines.

Table 5.5: Urban Versus Rural Teledensity (main telephone lines per 100 people)
(1994-98 figures, latest available figures presented).

Country	% urban main lines	% rural main lines
Colombia	98.9	1.1
Haiti	99.9	0.0
Honduras	89.1	10.9
Bangladesh	91	9
Bhutan	92.9	7.1
Sri Lanka	60.7	39.3
China	71.6	28.4
Thailand	55	45
Poland	70.5	29.5
Romania	85.7	14.3
Estonia	80.2	19.8
Kyrgyz Republic	73.0	27.0
Russia	87.3	12.7
Iran	92	8
Oman	67	33
Syria	82	18
Botswana	78	22
Ethiopia	99	1
South Africa	71	29
Uganda	97.6	2.4
Chad	81.3	18.7
Cote d'Ivoire	99	1
Sierra Leone	87	13

Source: ITU database.

Table 5.6 uses household surveys to ascertain the proportion of rural and urban households having a telephone connection. Once more, the pattern of low rural penetration is repeated.

Table 5.6: Percentage of Households with Telephone Connections

Country	% of urban households with telephones	% of rural households with telephones
Nepal	10.38	0.11
Panama	57.45	9.27
South Africa	45.66	4.71

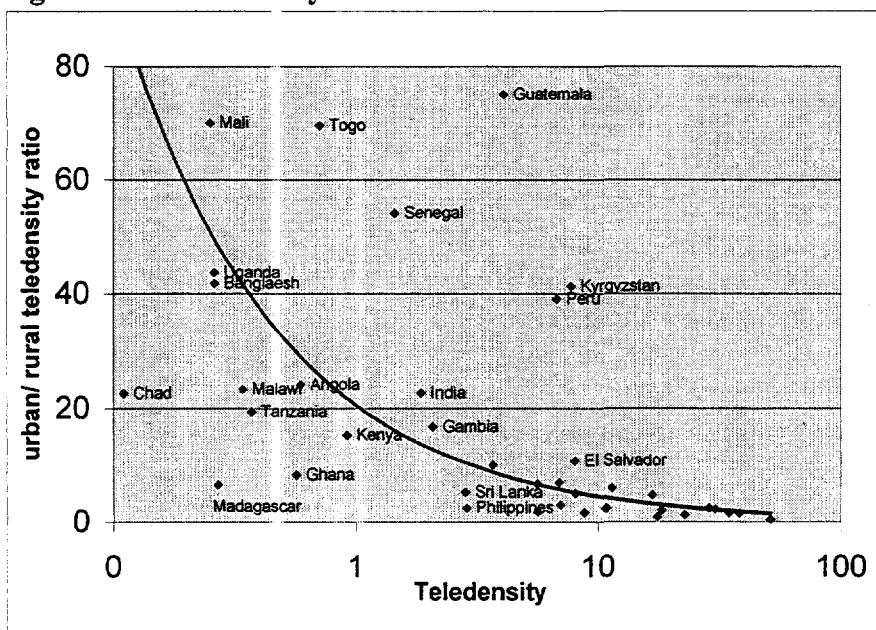
Source: LSMS surveys, as cited in Dymond et al. (2000).

According to Dymond et al. (2000), because of the problem of low affordability in rural areas in low-income countries, access to telecommunications in developing countries is better measured

by the availability of a *public phone* in every neighborhood, village or vicinity, rather than a telephone in every household. Although most people in low-income groups do not have a telephone in their home, this does not imply that there is no desire to use the telephone if it is available.

Using International Telecommunication Union (ITU) statistics, Dymond et al. (2000) present a rough estimate of the disparity between rural and urban areas. ITU statistics show the percentage of a nation's telephone lines located in the main city. Using a conservative assumption that 80% of all the telephone lines outside the capital city serve other urban areas, as opposed to villages and remote areas, Dymond et al. (2000) estimate disparities between 20:1 and 60:1, as implied by Figure 5.1¹⁶.

Figure 5.1: Teledensity



Source: Dymond et al. (2000)

Access to Roads

Rural roads are an important component of access to transport for rural populations. While the previous sections on access to water and sanitation, electricity and telecommunications present figures illustrating the differences between rural and urban areas, this section looks more closely at the quality and spread of the rural road network, without any systematic attempt to compare it with the urban road network. This is due to conceptual as well as data-availability constraints. For one, it is difficult to separate road networks into urban and rural sections, as they are both

¹⁶ This graph only *illustrates* a situation, which the authors (Dymond et al., 2000) know to be the case, from many visits to developing countries. The assumption that 80% of telephones outside the capital are in urban locations is an estimate (and very conservative in many cases). Even if a reasonable average, it is most likely incorrect in most cases. Because of the inherent inaccuracy of this or any methodology to estimate the situation, the graph should not be used to infer reality in the case of individual countries.

part of the same road network. Hence we focus here on indicators of all-weather access for rural populations, as well as the quality and ease of transport. Where available, rough data on expenditures on “rural roads” as a percentage of total roads spending is presented, as an indicator of public emphasis (or lack thereof) on provision/ maintenance of the rural *versus* urban sections of the national roads network.

Rural roads systems are often of poor quality and of unpredictable availability. Malmberg Calvo (1998) illustrates the condition of rural transport infrastructure in Sub-Saharan Africa, where the majority of the poor live in rural areas. According to Malmberg Calvo, rural transport in Sub-Saharan Africa is characterized by “female porterage, treacherous river crossings, seasonal access, and an occasional visit by a motorized vehicle.” Household surveys show that 87% of trips in rural Africa take place on foot and that women spend more than 65% of the household time on transport.¹⁷

For rural populations in developing countries, community roads, tracks, paths and footbridges often constitute the local transport infrastructure. These serve as the first and last leg of journeys to access water and firewood as well as access to surrounding towns and cities. However, these tracks and paths that connect to the designated transport network are not generally included in statistics on the transport system. They are usually outside the direct responsibility of the government and are often overlooked by donor agencies (*ibid.*). As Malmberg Calvo discusses in the case of rural Africa, information on the undesignated network is poor or not available, and the network is largely unmapped despite its importance.¹⁸

Table 5.7 presents a 1991 review of resource allocation in 6 sub-Saharan African countries. The figures indicate that the rural roads portion of the roads sector spending accounted for about 1% of total government expenditures and less than one-third (usually much less) of total roads spending. However, these figures only present central government spending. They do not include spending by local governments or private vendors and thus they underestimate total spending on rural roads.¹⁹

¹⁷ Surveys were conducted in Burkina Faso, Zambia and Uganda (Barwell, 1996). The results were consistent with that from data from earlier surveys in Ghana and Tanzania (Malmberg Calvo, 1994).

¹⁸ Malmberg Calvo presents data from sub-Saharan African countries to illustrate the length of the undesignated rural transport network, which forms the transport lifeline for rural communities. For example, in South Africa, there are twice as many undesignated roads as local government roads. The Makete district in Tanzania has more than one and a half times as many undesignated roads as local government roads. A community of 2,500 people in a sub-district in Ghana has twice as many undesignated roads and three times as many tracks as local government tracks.

¹⁹ Since most spending on local infrastructure is made by local governments, central expenditure spending figures are an unreliable indicator of spending on transport infrastructure. Also, these figures do not include spending from road funds or by private vendors. Unfortunately, figures on spending by local agencies and private vendors are rarely published in a consolidated form, which makes tabulation of local infrastructure spending across countries difficult. In the absence of more accurate figures, **Table 5.7** can be used as a rough guide.

Table 5.7: Expenditures for Rural Roads

Country	% Rural pop. ^a	Year	Lengths (% of total)	Veh-km (% of total)	% of total roads spending	% of total national budget
Malawi	91	1987	53	NA	15.0	1.0
Kenya	84	1989	52	13	31.0	2.4
Tanzania	85	1989	32	NA	12.0	1.0
Nigeria	73	1989	58	12	22.0	1.0
Cameroon	69	1987	35	10	10.7	0.9
Senegal	64	1985	39	10	7.0	0.4

a. Population figures for 1980.

Source: Population figures from World Development Indicators database, World Bank.

Roads figures from Gaviria (1991), "Rural Transport and Agricultural Performance in SSA: 6 Country Case Studies," Joint SSATP/MADIA Study, World Bank.

Table 5.8 presents figures on accessibility, with data on percent of the population without all-season vehicle-passable road within 1-2 km of the household. All the percentages presented in Column 10 reflect rural populations in sample countries. Urban households are assumed to have all-weather access to vehicle-passable roads. For example, in Chad, 75% of the total population (which almost comprises the entire rural population) do not have such a road near the home. Similarly in India, about 200 million rural people lack access to an all-season vehicle-passable road within 1-2 km of the household. These figures show that basic access to roads and transport is unavailable for sometimes large sections of the rural population in developing countries.

Table 5.8: Road Network, Mobility and Accessibility in Selected Countries (1998 data)

Country	Area 1000 km ²	Pop. Mil.	Rural pop. as fraction of Total (%)	GDP per Capita US \$	Main Road Network (1000 km)	Local Road Network (1000 km)	Total Road Network (100 0km)	Paved (%)	Accessible to rural residents
Low-Income									
Burkina F.	274	11	83	243	10	6	16	12	17
Chad	1284	7	77	233	6	34	40	1	75
Ethiopia	1104	61	83	106	20	9	29	15	60
Ghana	239	19	63	405	15	23	38	24	20
Guinea	246	7	69	507	12	18	30	17	30
India	3288	980	72	439	1496	1823	3320	46	22
Nepal	147	23	89	210	5	7	13	31	40
Nigeria	924	121	58	343	63	73	136	27	10
Tanzania	945	32	69	249	28	60	88	4	30
Middle-Income									
Brazil	8547	166	20	4691	265	1400	1665	10	9
Latvia	65	2	31	2667	20	39	59	39	3
Namibia	824	2	70	1824	14	50	64	8	30
Peru	1285	25	28	2528	17	57	74	12	25
Romania	238	23	44	1698	15	185	200	68	5
Russia	17075	147	23	1883	531	40	571	-	5
S. Africa	1221	41	47	3225	233	301	534	12	20
Tunisia	164	9	36	2151	14	9	23	79	5

Note: % of pop without all-season motorable road within 1-2 km of household

Sources: Columns 2-5: World Bank, World Development Indicators Database; columns 6-9: International Road Federation, World Road Statistics 2000, Data 1994-98 (where available); Column 10: data from country-specific studies and rough estimates based on expert knowledge, as cited in *Design and Appraisal of Rural Transport Infrastructure: Ensuring Basic Access for Rural Communities* (2000).

Table 5.9 presents figures on percentages of paved and unpaved roads in selected Latin American countries. From the small percentages for paved roads, we can assume that paved roads comprise mainly national highways, main roads and urban roads, which means that rural roads are mostly unpaved.

Table 5.9: Paved and Unpaved Roads in Selected Countries in Latin America

<i>Country</i>	<i>Pop. (million)</i>	<i>% Pop. rural</i>	<i>Area (‘000 km²)</i>	<i>Road Network (‘000 km)</i>		<i>% Paved</i>
				<i>Paved</i>	<i>Unpaved</i>	
Argentina (1996)	33.0	11	2767	62.0	838.0	7.0
Brazil (1996)	152.0	21	8741	152.0	1505.0	9.0
Bolivia (1995)	7.2	40	1099	2.9	49.3	5.6
Chile (1995)	14.0	16	757	12.9	66.4	16.3
Paraguay (1995)	5.0	48	407	2.8	22.0	11.6
Uruguay (1996)	3.2	10	176	8.6	29.8	22.4

Source: Schulz (1997).

Population percentages from World Development Indicators database (1995-96 figures).

Access to Education and Health Services

In this section, we touch very briefly on the provision of “social infrastructure” in rural areas. At the onset, it must be mentioned that our attempt is not a comprehensive study on the provision of rural education and health services, or its impact on the rural non-farm economy (although the significant and positive correlation between education and non-farm income is one of the more solid stylized facts about the non-farm economy). We attempt merely to present a preliminary picture of patterns in rural access to education and health services, in order to indicate that the patterns of provision observed with “economic infrastructure” are unlikely to be overturned when we consider health and education.

As discussed by Knight and Shi (1996), education is available more widely in urban than rural areas of many developing countries. This may be due to a wide variety of different reasons. First, there may be higher private and social rates of return to education in the urban economy. Second, education in rural areas may be demand-constrained due to high opportunity costs as well as low perceived benefits. Third, there may be cultural and traditional constraints, which discourage, for example, the enrollment of rural girls in schools. Fourth, access to education in rural areas may be constrained due to the problems of location and pricing. More qualified and trained teachers may be unwilling to live and teach in isolated rural areas. Lower salary levels in rural areas also discourage better-trained teachers from teaching in rural schools. Governments may simply prefer to focus provision of schooling facilities in urban areas.

Our interest here is merely to present empirical evidence of this disparity on a case to case basis. **Tables 5.10** and **5.11** present evidence from China on average years of education for rural and urban populations in selected districts, as well as educational attainment levels for rural and urban populations as a whole. These tables indicate that the level of educational attainment in rural populations is consistently lower than that of urban populations in China.

Table 5.10: Average Years of Education in Chinese Provinces

<i>Province</i>	<i>Urban</i>	<i>Rural</i>
Beijing	9.90	6.01
Shanxi	9.80	6.26
Liaoning	9.29	6.23
Jiangsu	9.39	5.48
Anhui	9.23	4.55
Hunan	9.70	5.13
Hubei	10.08	5.45
Guangdong	9.55	6.07
Yunnan	9.10	4.05
Gansu	9.26	3.90

Source: 1988 national household sample survey by Institute of Economics, Chinese Academy of Social Sciences, in Knight and Shi (1996).

Table 5.11: Educational Attainment in Rural and Urban China

<i>Proportion of sample (age 16 and above) with:</i>	<i>Rural (%)</i>	<i>Urban (%)</i>
No more than primary education	61	19
No more than lower middle school graduates	30	37
Upper middle or professional school graduates	8	33
College graduates	0.5	12

Source: 1988 national household sample survey by Institute of Economics, Chinese Academy of Social Sciences, in Knight and Shi (1996).

Table 5.12 presents indicators on access to health and education services in rural versus urban areas in Ecuador. The patterns reflect those of China and the general picture of the rural-urban “social” and “economic infrastructure” divide in most developing countries. Though it is important to keep in mind the challenges faced in public provision of rural health and education services (such as lower population densities in rural areas, limited scope for cost recovery, budget constraints and competing urban needs, and lack of trained health workers and teachers willing to work in rural areas), the figures presented consistently point to lower levels of public provision of these services in rural areas.

Table 5.12: Access to Health and Education Services in Ecuador

	<i>Urban</i>		<i>Rural</i>	
	<i>Poor</i>	<i>Non-poor</i>	<i>Poor</i>	<i>Non-poor</i>
<i>Education of household heads</i>				
No education	14 %	5 %	30 %	19 %
Primary school only	61 %	37 %	64 %	63 %
Secondary school only	21 %	33 %	5 %	14 %
Tertiary education	4 %	25 %	0 %	4 %
<i>Access to health care</i>				
Upon illness, minutes of travel before treatment	17	19	38	35
% of households treating at least one illness informally	30 %	22 %	35 %	31 %

Source: World Bank (1996b).

Table 5.12 shows that 30% of the rural poor are likely to have had no education compared to 14% of the urban poor in Ecuador. In the case of access to health services, it shows that the rural poor spent an average of 38 minutes before they could access treatment, whereas the urban poor spent 17 minutes for the same.

The pattern of lower levels of rural school enrollment is repeated in Zambia, where both primary and secondary school attendance are lower in rural areas compared to urban areas, as evident from **Table 5.13**. According to Kelly (1998), many of the factors that contribute to lower enrollment levels in rural areas are supply-side factors: "...Many of the schools are little more than make-shift, temporary, dark and unsafe structures. There is a great shortage of desks, no teacher's table or chair, and a broken or faded chalkboard. Teaching days are lost when lessons cannot be held because of rain, storms and leaking roofs, or because teachers have gone to collect their salaries or buy household supplies. Long distances, swollen rivers, hazardous routes (along escarpments and in game areas) make attendance difficult. Many rural schools depend heavily on untrained teachers. Few have the normal complement of female teachers. Almost none have female heads or deputies. Few receive support visits from inspectors or education officers. Outside the school setting, rural children, unlike their urban counterparts, rarely encounter English, the language used in school. Textbooks, in support of a curriculum that reflects largely urban middle-class values and experiences, portray situations and conditions that may be familiar to urban children but have never been experienced by their rural counterparts (piped water, electricity in homes, railway, supermarket, etc.)..."

Table 5.13: Proportion of children of school-going age enrolled in Zambia

<i>Enrollment rate</i>	<i>Urban (%)</i>	<i>Rural (%)</i>
<i>Primary</i>	101	88
<i>Secondary</i>	36	12

Source: Zambia Living Conditions Monitoring Survey (1996) as cited in Kelly (1998).

In another example from Zambia, **Table 5.14** shows that rural provinces (which are off the Line-of-Rail) have lower school attendance rates, a higher proportion of untrained teachers, and lower primary completion rates, among other things, compared to the more urbanized provinces.

A report on health services in Zimbabwe presents statistics from two areas: Chitungwiza, which is a large conurbation near the capital Harare, and the rural district of Murehwa (Bijlmakers et al., 1996). According to the report, 85% of those seeking treatment in Chitungwiza reached the first place of treatment in less than one hour (1993 figures), whereas in Murehwa district, the corresponding figure was only 42%. Furthermore, in Chitungwiza, 21% incurred costs in reaching the first place of treatment (1994 figures) of about US \$0.25 (1994 figures). In comparison, 32% of those seeking treatment in Murehwa district incurred costs: about 38% paid less than US \$2 and 25% between US \$2 and US \$4. These figures illustrate higher costs and greater length of time that rural populations encounter, compared to urban populations, in accessing desired health services – yet another indicator of the lower levels of access available to rural populations.

Table 5.14: Educational disadvantages of very rural provinces in Zambia²⁰ (1996)

	% of 13 year-olds attending school	% of population with Grades 8-12	% with no school or Grades 1-4 only	% completed primary school (1990-96)	% of untrained teachers
<i>Provinces off the Line-of-Rail</i>					
Eastern	52	12	61	75	24
Luapula	65	15	42	59	30
Northern	61	17	45	63	28
North West.	61	14	54	53	39
Western	69	17	48	56	32
Median	61	15	48	59	30
<i>Line-of-Rail provinces</i>					
Central	76	25	35	85	26
Copperbelt	80	39	19	104	11
Lusaka	78	42	18	105	7
Southern	71	20	40	83	22

Source: LSMS (1996); Kelly, with Msango & Subulwa (1998) as cited in Kelly (1998).

Rural Education

Returns to education in rural areas are generally very high in non-farm activities, especially in the high-productivity occupations. Targeted efforts to improve education levels of the poor in rural areas will be necessary in order to promote employment in such occupations. As the poor are typically the least educated, such policies will generally be progressive. However, some evidence does suggest that the poor can face other barriers to entry into high-productivity non-farm jobs, and as such education can be seen as only part of the solution.

The preceding section provided some evidence that “social infrastructure” such as education and health services, is also unequally distributed between rural and urban areas, with urban areas typically enjoying higher levels and quality of service provision. It is important to emphasize the central significance of education to the non-farm economy. As stated earlier, this has been one of the more robust stylized facts emerging from empirical research on the non-farm economy during recent years. A very large number of studies have documented that education levels are very important in determining the type of non-farm activity in which individuals are engaged as well as the earnings accruing to these individuals. The contribution of education in the non-farm economy tends to be considerably greater than what is found for agriculture. Breaking down the non-farm economy between casual non-agricultural wage employment and regular, salaried, employment typically reveals that the probability of employment in the latter sector rises as education levels rise. The opposite is often observed for casual non-agricultural activities. (Involvement in self-employment is usually most likely for those with some basic education, but is lower for both the illiterate and those with high levels of education). These probabilities are generally estimated on the basis of econometric models that control for a whole host of other individual and household characteristics, and it is thus not very likely that education levels are

²⁰ In this urban-rural comparison, conditions in the provinces that lie along the Line-of-Rail (the railway line running from the Copperbelt to Livingstone that has been the axis of development in both colonial and post-colonial times) are compared with those in the rest of the country (though Central, Lusaka and Southern Provinces all have extensive deprived rural areas).

actually proxying the influence of some other characteristic. Additional analysis, examining the returns to education within the rural non-farm economy confirms that earnings tend to rise sharply with higher education levels – much more strongly than is the case within the agricultural sector (see Jolliffe, 1999, for evidence pertaining to rural Ghana).

The policy message seems fairly straightforward. Efforts to improve education levels in rural areas will be necessary in order to promote employment into high-income, regular non-farm occupations. Given that the poor are typically the least educated in rural areas, one might expect the incidence of this kind of policy to be quite pro-poor. However, it is also clear that raising education levels cannot be expected to suffice to guarantee employment in the non-farm economy. This is suggested, for example, by empirical evidence that other characteristics also play an important role in determining the probability of employment, controlling for education levels. Lanjouw and Shariff (1999) find in rural India, for example, that the probability of employment in the salaried non-farm economy, controlling for education levels, is lower for individuals coming from scheduled castes, for women, and for individuals from households with small landholdings. Qualitatively similar findings have been reported for other countries.

Rural Public Works

Rural public works offer policy makers an opportunity to directly provide non-farm employment to the extreme poor in rural areas while at the same time undertake much needed infrastructure investments in these regions. Experience suggests that public works schemes have enjoyed considerable success in addressing rural poverty, but that their contribution to local infrastructure has been much less encouraging. To the extent that the investment impact of the public works schemes can be enhanced by experimenting with alternative technical and financial designs and by strengthening implementation, there exist opportunities for policy makers to use such schemes to both directly and indirectly promote the non-farm economy.

Government-run public works schemes in rural areas are an important tool for poverty alleviation purposes by providing employment during periods of hardship associated with natural disasters, poor climate conditions or general economic downturns. Most of the employment created is non-agricultural and for this reason public works projects merit attention as a policy lever which has an impact on the rural non-farm economy. These projects typically build infrastructure, primarily in rural areas, and are operated either on a continual basis to give employment to the poor, or in response to natural calamities such as harvest failures, or to compensate for temporary income falls. Ravallion (1991) reviews cost/benefit analyses of two large public works schemes: the Maharashtra Employment Guarantee Scheme (EGS), with an average monthly participation of half a million (1975-89), and the Bangladesh Food for Work Programme, which was of comparable size in 1990. An important impact of these schemes was that, by drawing labor away from other activities, wages in other sectors increased. Simulations suggest that this indirect benefit of higher wages received by those not employed by the programs could be as high as the direct benefit to participants. The opportunity to engage in this non-farm activity stabilized incomes substantially. Income was found to be fifty percent less variable in villages with a public works program than similar villages without such a program. Finally, women were able to benefit and had participation rates as high as men's. Particular

features of the employment schemes were conducive to this result, for example, short travel distances and the provision of child care. More generally, the powerful role of public works schemes in preventing famine in many developing countries during periods of impending disaster, has been carefully documented by Drèze and Sen (1989).

However, as emphasized by Ravallion (1991), these schemes are often best seen, first and foremost, as anti-poverty programs: the quality of infrastructure that is provided is often quite low. In that sense the potential of these schemes to leverage a longer term expansion of non-farm activity (as well as agricultural growth) via a building up of the local infrastructure network is not always fully realized. Part of the difficulty has to do with the inherent tension in trying to achieve two goals with a single instrument. The poverty alleviation goal points to as high a share of unskilled labor costs in total costs as possible, while the infrastructure construction goal would entail a higher share of skilled labor and non-labor costs in order to secure higher quality outputs. However, other factors also play a role. Coordination across ministries (Social Welfare and Public Works, for example) may not be perfect. Opportunities to experiment with innovative financing arrangements may not be fully taken advantage of. Alternative technical designs may not be tested. These additional factors can be influenced by policy makers and to the extent that they are interested, there is scope for strengthening the overall impact of public works schemes.

Private Sector Development

Aside from taking the lead in improving access to rural economic and social infrastructure, governments in developing countries have generally sought to promote the non-farm economy via efforts to stimulate private-sector non-farm activity in rural areas, especially small-scale enterprises. These efforts have generally focused on removing perceived obstacles to private sector development, such as credit market failures, but have also extended to the creation of industrial estates and the reserving of certain productive activities to small-scale enterprises.

Rural Credit

Enterprise promotion in rural areas has generally centered around the provision of credit to enterprises. In recent years a considerable amount of experience has been gained on micro-enterprise credit schemes modeled on the example of the Grameen Bank in Bangladesh, embodying features such as being locally based, involving group lending, disbursing of loans in staggered sizes, and charging of market interest rates. A large literature generally endorses the positive reputation of such schemes although it has been noted that additional attention is needed to regulation and supervision of these proliferating institutions, as well as to the degree of subsidization that is warranted. Mobilizing rural savings is an important priority as part of a general effort to strengthen the operation of rural financial institutions, but it may have the impact of reducing investment levels in some rural non-farm enterprises.

Credit schemes aimed at the rural non-farm economy have proliferated at a considerable pace since the 1970s. Initially credit programs targeted small-scale enterprises and rural industries and operated through government-owned commercial or development banks as well as private

commercial banks. The record with such projects has been rather mixed. Loans from government institutions or mandated lending by private banks often ended up in the hands of the wealthiest segment of the targeted group. More recently, following the emergence of innovative schemes such as pioneered by the Grameen Bank in Bangladesh in the mid-1970s, micro-enterprise credit schemes have exploded in number throughout the developing world. These programs typically offer small, short-maturity loans at higher interest rates than government directed credits. They motivate repayment through arrangements such as group lending and repeat lending in escalating loan sizes, and often forgo collateral and third party guarantees. Today, the overwhelming volume of direct enterprise promotion in rural areas centers around such provision of credit, and a large literature reviewing these schemes has generally endorsed the positive reputation that they enjoy (Hagblade and Mead, 2000). Key design features that are thought to contribute to their success are that they be locally based, should lend to groups, disperse small initial loans with additional lending conditional on repayment and charge interest rates that ensure their financial viability.

Meyer (2000) identifies two important outstanding issues that demand attention from policy makers. One concerns the appropriate regulation and supervision of micro-credit institutions to deal with the hazards associated with nonregulated institutions that mobilize deposits, and the regulatory standards for making non-collateralized loans. The second concerns the appropriate amount of subsidization for such micro-credit institutions. Some subsidization may be socially desirable to stimulate innovation and build institutions. However, there is also a risk that proliferation of small, inefficient and poorly managed micro-credit institutions has been excessive.

Adams (1988) points to another dimension of rural credit markets that deserves attention. The high transaction costs of maintaining a dense branch network in rural areas make it unattractive for financial institutions to develop mechanisms to mobilize small-scale rural savings that would then be available for lending to entrepreneurs. However, rural people do save – most start up capital is from family resources, and the lack of low-cost savings institutions makes the pooling of local resources more costly.

Paradoxically, the neglect of rural savings that accompanies most government policies aimed at lowering interest rates, may in turn stimulate the emergence of at least some types of non-farm activity. Banerjee (1997) and Banerjee and Munshi (2000) describe how imperfections in capital markets (e.g., regulations that prevent savings from moving, absence of institutions for non-local lending, etc.) result in rural industrialization in communities where real economic opportunities may be slim, but savings may be abundant. Such savings-driven industrialization is suggested by Banerjee to characterize some Indian rural industrialization (light manufacturing in Punjab, knitted garments in Tamil Nadu) as well as some of China's township and village enterprises. Vijverberg (1988) makes similar observations in the Africa context. Firms in such situations tend to be quite small and inefficient in the use of factors of production. They are often located in regions in which there exist sizeable agricultural surpluses looking for profitable outlets. In such circumstances financial market reform that integrates the rural and urban flow of funds can actually discourage the expansion of the rural non-farm economy, unless other factors (e.g., better infrastructure, lower wages, etc.) make the location of enterprises in rural areas attractive.

Industrial Estates

Industrial estates, aimed at providing a complete package of services to enterprises, have generally been found to favor medium to large-scale rural enterprises and in that way by-pass the poor. Such estates rarely function as "growth poles" in backward areas because of their propensity to be located in relatively more advanced regions and, with the important exception of links to local labor markets, because of their otherwise relatively limited connection to the local economy.

Industrial estates targeted at the development of small-scale and rural enterprises are closely associated with India. The "Indian model" was introduced in the 1960s and comprises a comprehensive package of support to small-scale enterprises. From initial feasibility studies, to entrepreneurship and management training, technical research and extension, marketing assistance, common workshop facilities, infrastructure and workshop facilities and finance, the India model offered cradle-to-grave support for assisted firms. The Indian model spread during the 1960s and 1970s to a large number of countries such as Indonesia, Malaysia, Pakistan, Tanzania, Swaziland, Lesotho, Botswana, Burkina Faso, and Nigeria (Haggblade and Mead, 2000).

With few exceptions it has been found that these industrial estates have not reached their rural target group, often because the sites and services provided are too expensive. Uribe-Echevarria (1991) notes that, between 1970 and 1980, rural industrial estates in India grew by 63 percent while those located in urban and periurban areas grew by more than 200 percent. A rationale often provided for establishing industrial estates in rural areas in the first place is that these will act as "growth poles" and stimulate local economic activity. However, Harriss (1987b) investigates the industrial estates in North Arcot district, India, and finds first that they are situated not in backward areas but in the more developed areas of the district and second that they have few local linkages. There are few agro-industries and their inputs are not local.

While systematic analysis is scarce, Harriss's observations are also likely to apply to industrial estates and special economic zones elsewhere. The *maquila* factories in Mexico, Central America, and the Caribbean present a famous example of factories that draw very little on inputs other than labor from the surrounding regions in which they are located. These factories are also typically located in regions with adequate supporting physical, institutional and regulatory infrastructure (often in special industrial estates created with the explicit objective of attracting them) and are thus not generally found in the most backward, most poor, regions of the host countries. It is important to acknowledge however that even in this limited capacity, the impact of such firms on employment levels and wage rates can be significant.

Reserving Production

Production reservation of specific goods to small-scale enterprises has been attempted in India in the past. The experience has generally been discouraging, with research suggesting that the policy undermined longer term growth prospects in the textiles and sugar industries in order to secure a transitory employment boost in the short run.

India is also associated with the policy of reserving production of specified goods to small-scale or traditional enterprises as a method of preserving certain sectors in the face of competition from modern factories. For example, in the 1950s India banned textile mills from expanding capacity, except for export, and later reserved synthetic cloth production for small-scale powerloom (less than six looms) and handloom production. The intention was to support the handloom producers, but since powerlooms were much more profitable, powerloom production grew four times as quickly from 1956-81. Asking whether this unintended result of the reservation policy was beneficial, a rough social cost benefit analysis of powerloom versus mill production by Little et al. (1987) suggest it was not. Mill production was much more socially profitable than powerloom production at any plausible shadow wage rate. They note also that, while the reservation policy certainly increased employment in the textile industry directly, it is likely to have lowered it in the end by destroying the industry's export potential. Similar developments occurred in the sugar industry, where restrictions on mill production have encouraged an intermediate product, khandsari, rather than the traditional gur industry. The traditional industry was probably hurt by the policy, and cost/benefit analyses suggest that khandsari production was less beneficial than mill production.

6. Towards a Strategy Promoting the Non-Farm Economy

A recent note by Berdegué, Reardon, Escobar and Echeverría (2000) reviews the main lessons emerging from recent research on the non-farm economy in Latin America, and points to a series of major lessons for policymakers. As is clear from our more wide-ranging assessment of the non-farm economy, these lessons are a good starting point for thinking about policy intervention more generally:

- Agriculture cannot be relied on as an exclusive source of improved livelihoods in rural areas; a more balanced process of rural development must be pursued.
- Agricultural policies can promote non-farm activities such as agro-processing and the other industrial, commercial and service sectors that characterize modern agriculture. Policies (technology generation and diffusion, infrastructure, education, agrarian reform, credit, etc.) should be designed and developed with these links in mind.
- Projects and policies aimed at promoting the non-farm economy should not just focus on improving the *capacity* of households to become involved in the non-farm economy, but should also stimulate the *engines* that pull rural households into the non-farm economy. Tourism and manufacturing are examples of engines that are not traditionally viewed as part of the rural landscape. Engines of non-farm growth that offer employment to women in particular should be emphasized.
- Local government and institutional participation will need to be engaged in a whole variety of capacities, ranging from land-use planning, education provision, infrastructure investment, regulation, training and financing.
- Efforts must be expended to assure that public institutions with responsibilities pertaining to non-farm activities (e.g., education, housing, public works, small-scale industry, etc.) coordinate efforts and look beyond their traditional competencies to include the non-farm economy. Education and transport infrastructure in particular, must receive concerted attention.
- Richer and poorer zones must be treated differently, with less emphasis in richer zones on subsidization and more on reducing transactions costs. In poorer zones public intervention to provide the basic enabling environment will continue to be required.

The recommendations of Bedegué et al. (2000) tie in closely with the themes of the present review. Drawing on these recommendations as well as the review of experience presented in earlier sections, we can consider below what might be some of the elements of a strategy for promoting the non-farm economy in developing countries.

A strategy for promoting the non-farm economy cannot take the form of a “one size fits all” set of recommendations. Non-farm activities are highly heterogeneous, and constraints on expansion of the non-farm sector will differ across countries, and across regions within countries. One important implication of this heterogeneity is that it is important to delineate the different responsibilities of different levels of government with respect to promoting the non-

farm economy. Another is that the boundaries defining the competencies and responsibilities of different branches of government (e.g., different ministries responsible for agriculture, infrastructure, education etc.) may need to be revisited so as to better serve the needs of a “sector” which has traditionally fallen outside their purview.

For similar reasons, it is not possible to propose a detailed policy blueprint. Rather, our review would suggest the importance of tackling such a task armed with the general lessons from experience in combination with a careful assessment of the context-specific details of the setting in question. The local details are likely to be very important.

While promoting the non-farm sector in general is pro-poor, promoting certain types of non-farm activities will affect poverty directly; while the influence of others will be at best indirect. Our survey has emphasized the importance of recognizing that both highly productive non-agricultural activities and low-productivity, residual, activities are undertaken in rural areas. It is common for the low-productivity activities to predominate in remote areas, where poverty tends to be concentrated, where infrastructure services are scarce and where agro-potential is also low. High-productivity activities tend to cluster in better endowed regions. But some combination of the two types of activities tends to be observed nearly everywhere. While the returns to low-productivity activities are generally low, they generally go directly to the poor, and thereby serve to keep poverty from rising even more than it would in their absence. In this way low-productivity non-farm activities act as a type of partial safety net in rural areas. High-productivity activities, on the other hand, often due not go to the poor, as they generally require complementary assets such as education, access to credit, wealth, networks of contacts etc. A pro-poor impact remains possible, however, as evidence suggests that expansion of high-productivity activities tightens rural labor markets in general, and this leads to higher wages and participation rates for all.

Promoting non-farm activities will likely affect the distribution of income in rural areas, but the direction of change is ambiguous. The high-productivity, low-productivity typology of non-farm activities is also useful in tracing through the distributional impact of the non-farm economy. Growth of the high-productivity activities generally leads to an increase in rural inequality, while low-productivity non-farm activities in rural areas may actually reduce rural inequalities. Diversification of rural incomes also reduces exposure of rural households to uncertainty and can help rural households to smooth consumption. Eventually, a reduction in the degree to which rural incomes co-vary, brought about by this diversification, has implications for the operation of institutions such as rural financial institutions.

Activist policy intervention to promote non-farm activities must be anchored to evidence that markets are in one way or other failing to produce socially desirable outcomes. Government involvement in seeking to expand the rural non-farm economy is generally founded on the notion that markets left to themselves will not provide sufficient stimulus for socially desirable non-farm development. Depending on country-level circumstances government intervention can be approached at a detailed, targeted, level and at the level of the general policy environment. Often a wide variety of policy interventions will be required, because of the non-farm economy’s great heterogeneity. However, a good starting point in any strategy for non-farm development is to also scrutinize existing government policies and regulations (for example in agriculture,

infrastructure development, urban planning, etc.) for possible impediments to rapid non-farm development. Decentralization and improved coordination across government agencies are likely to be essential.

A key element in a strategy for non-farm development is infrastructure. Experience points to the importance of economic infrastructure in supporting the expansion of the non-farm economy (as well as agriculture), yet the evidence also suggests that rural households are far less well-served than urban households in developing countries. The imbalance appears to be more extreme than what might seem warranted based only on considerations of relative costs of provisioning. Certainly the higher per-capita cost of infrastructure in rural areas, combined with the generally lower ability to pay of rural households, implies that recent initiatives to engage the private sector in the provision of infrastructure may be more difficult to apply in rural than in urban areas.

Social infrastructure, particularly education, is also critical. Returns to education in the non-farm rural economy are very high, especially in the high-productivity occupations. Efforts to improve education levels in rural areas will continue to be essential in order to promote employment into such occupations. As the poor are typically the least educated, such policies will generally be progressive. However, some evidence does suggest that the poor can face other barriers to entry into high-productivity non-farm jobs, and education must consequently be seen as only part of the solution.

Rural public works offer a means to directly involve the extremely poor in non-farm employment while at the same time strengthening infrastructure. Experience suggests that public works schemes have enjoyed considerable success in addressing rural poverty, but that their contribution to local infrastructure has been less noteworthy. There is much that can be done to strengthen the investment impact of the public works schemes, for example by experimenting with alternative technical and financial designs and by strengthening implementation.

A key instrument for promoting private sector activity in the non-farm economy is to improve delivery of financial services to rural areas. In recent years a considerable amount of experience has been gained on micro-enterprise credit schemes modeled on the example of the Grameen Bank in Bangladesh, embodying features such as being locally based, group lending, disbursing of loans in staggered sizes, and charging market interest rates. A large literature generally endorses the positive reputation of such schemes although it has been noted that additional attention is needed to regulation and supervision of these proliferating institutions, as well as to the degree of subsidization that is warranted. Mobilizing rural savings is an important priority as part of a general effort to strengthen the operation of rural financial institutions, but it may have the short-run impact of reducing investment levels in some rural non-farm enterprises.

Caution is warranted in developing interventions aimed specifically at the non-farm economy. Experience provides ample evidence on the dangers of inappropriate policies. Industrial estates, aimed at providing a complete package of services to enterprises, have generally been found to favor medium to large-scale rural enterprises and in that way by-pass the poor. Such estates rarely function as "growth poles" in backward areas first because of their propensity to be located in relatively more advanced regions, but, even in the backward areas, because of their generally highly limited links to the local economy, with the possible exception of the labor

market. India's experience with the reservation of production serves to caution also against this particular approach to promotion of the non-farm economy. Research suggests that the policy seriously undermined longer term growth prospects in the Indian textiles and sugar industries in order to secure a transitory employment boost in the short run.

Finally, a strategy for non-farm development must recognize the links between non-farm activities and agriculture. It is worth re-emphasizing in closing that myriad intimate links bind the non-farm economy and the agricultural sector together in most parts of the developing world. While not all linkages are everywhere equally strong, policy makers should bear in mind the interactions between the two "sectors" and should design a strategy for promoting the non-farm economy which does not come at the expense of agricultural development. More important even, a strategy for promoting the non-farm sector should try to build on the links between agriculture and the non-farm economy in such a way that the two sectors reinforce one another and are jointly strengthened by their respective expansion. For example, experience shows that the multiplier linkages between agriculture and non-farm activities are typically stronger and more numerous when rural areas are served by adequate infrastructure, well-functioning financial systems, and a regulatory environment which acts to promote rather than stifle these linkages. The evidence to date suggests that policies promoting both agricultural and non-agricultural activities, such as investment in economic and social infrastructure (such as education), are generally more effective in stimulating non-farm activity than policies that are targeted exclusively at the non-farm economy. Even when the original impetus comes from the non-agricultural side, such as when tourism activities expand in agriculturally backward areas, intervening so as to strengthen the links between the local farm sector and this non-farm activity is likely to secure the most broad-based distribution of benefits.

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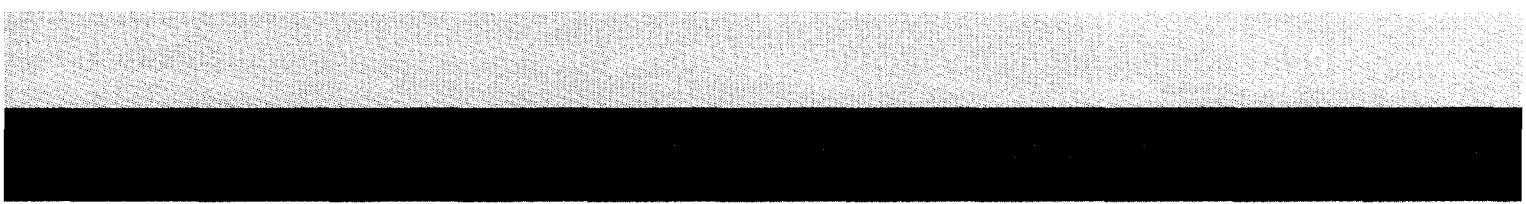
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