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Rural Nonfarm Employment

A Survey

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Although governments in some countries are implementing projects to support small-scale and rural enterprises, more commonly the rural nonfarm sector operates in a policy environment that is biased against it. This survey highlights the positive roles that the rural nonfarm sector can play in promoting growth and welfare by slowing rural-urban migration, using more appropriate technologies, providing seasonal or alternative employment for those left out of agriculture, and improving household security through diversification. The apparent neglect of this sector does not seem warranted on the basis of available information.

Summary findings

So little is known about the rural nonfarm sector that those making policy to assist rural small-scale enterprises have done so largely "unencumbered by evidence." The Lanjouw survey of nonfarm data and policy experience attempts to correct this.

Until recently, the commonly held view was that rural nonfarm employment was relatively nonproductive, producing goods and services of low quality. The rural off-farm sector was expected to wither away with development and rising incomes, and this was viewed as a positive, rather than a negative, event. A corollary of this view was that the government need not actively worry about the sector — or be concerned about how policies elsewhere might harm it.

More recently, opinion has swung the other way, and it is increasingly argued that neglect of the sector would be mistaken. The survey highlights the positive roles that the rural nonfarm sector can play in promoting both growth and welfare. In the widespread situation of a rural workforce growing faster than the employment

potential in agriculture, the nonfarm rural sector can lower unemployment and slow rural-urban migration. It is particularly useful in employing women and providing off-season incomes. The technologies used in small-scale rural manufacturing may be more appropriate and thus generate greater income from available productive inputs.

What role could government play in promoting the nonfarm sector? The emphasis of government policy has been on large-scale urban industry as the main engine of growth. More recently, there has been a move toward a more "broad-based growth" approach, with greater emphasis on the development of agriculture and the rural economy. Increasingly countries have targeted project assistance schemes, for example to provide training, infrastructure, and technology to support small-scale and rural enterprises. Nonetheless, in most countries it remains true that projects to support the nonfarm rural sector are undertaken in a policy environment which is biased against this sector.

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Rural Non-Farm Employment: A Survey[1]

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I. Introduction

A. Why Are We Interested?

The rural non-farm sector is a poorly understood component of the rural economy and we know relatively little about its role in the broader development process. This gap in our knowledge is the product of the sector's great heterogeneity (see Box 1 for examples), coupled with a dearth, until recently, of empirical or theoretical attention. As expressed by Liedholm and Chuta (1990, pg 327) "...policy makers and planners charged with the formulation of policies and programs to assist rural small-scale industry in the Third World are often forced to make decisions that are 'unencumbered by evidence'." In fact until recently, a commonly held view has been that rural off-farm employment is a low productivity sector producing low quality goods. As such, it was expected to wither away as a country developed and incomes rose, and its withering was seen as a positive rather than a negative occurrence. A corollary of this view is that government need not worry about the health of this sector in a pro-active sense, nor be concerned about negative repercussions on the rural non-farm sector arising from government policies directed at other objectives. More recently opinion has swung away from this view, and there are a number of arguments which suggest that neglect of the sector would be mistaken. For

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example, the sector's role in absorbing a growing labor force, in slowing rural-urban migration, in contributing to national income growth, and in promoting a more equitable distribution of that income, warrants further scrutiny.

Agriculture Cannot Employ a Growing Rural Labour Force.

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In many developing countries a large proportion of the population lives in rural areas, and this population continues to grow at a substantial rate. For example, in Bangladesh the rural labour force is projected to grow at over 3 percent annually over the next decades (Hossain, 1987). Given limits to arable land, such growth rates in the rural labour force will not be productively absorbed in the agricultural sector. A cursory look at the historical fall of the agricultural labour force in developed countries makes this clear. For example, the percentage of the labor force employed in the agricultural sector fell from 35 to 5 percent (1801 - 1951) in Great Britain; from 28 to 17 percent (1899 - 1947) in the Netherlands; from 68 to 12 percent (1840 - 1950) in the United States; and from 85 to 33 percent (1872 - 1960) in Japan (Kuznets, 1966). This leaves migration to urban areas or the development of non-farm employment in rural areas to take up the slack. Not only does an increasing level of urbanization impose various social costs (see below), but it has become amply evident that the large-scale urban industrialization strategies pursued by many developing countries in previous decades have failed to absorb a growing labour force.

A Role to Minimize Migration

The simple observation that enterprises often tend to congregate in urbanized areas in most

countries, and to be large in scale, suggests that there are certain positive reasons for this to happen. In the literature concerned with economic growth these reasons would fall under the heading of the benefits of scale, scope or agglomeration. A large local market, a locally available skilled workforce, a wider variety of production inputs, technological spillovers and lower costs to the provision of infrastructure are a few examples of the latter and they are real (social) benefits of concentration.

There are, however, private reasons for industry to thrive in urbanized environments which do not reflect benefits to society. Some of these are created by governments. For example, requiring firms to obtain licenses for production or foreign exchange makes it advantageous for them to locate near government offices. The provision of high quality physical and social infrastructure in urban areas to an extent not warranted on the basis of lower costs is a phenomenon commonly observed in developing countries, and ascribed to the presence of a political elite in cities. This lowers the relative costs of urban-based production in a way which is socially costly. Perhaps most important, however, in causing a divergence between private decisionmaking and social benefits is the fact that firms do not incorporate most of the negative externalities, such as congestion, pollution and higher land values, that they impose when they decide to locate in a city.

Rural-urban migration flows have been substantial and persistent. Over the period 1960-80, rural out-migration and urban in-migration have been estimated at 1 and 1.8 percent annually for the forty developing countries with available data (Williamson, 1988). For the same countries, projected figures to 2000 are approximately 1.5 and 2.5 percent, respectively. For some countries the rates are much higher. For example, during the 1970's, Nigeria and Tanzania are estimated to have had 7.0 and 7.5 percent increases in urban population annually with over 60 percent due to rural-urban migration (Todaro, 1994). Most governments have voiced concern about this relocation of people. In a U.N. survey of

developing country governments in 1978, only six of 116 respondents deemed the country's spatial distribution of population 'acceptable'. Similar results were found in a 1983 survey (Williamson, 1988). As a result, many countries have expressed an interest in developing economic activity in rural areas to encourage the population to stay in the countryside. This concern is shared by donor agencies and particularly non-governmental organizations (NGO's) who have become active in programs of credit, training and technical assistance to both rural and urban small-scale enterprises (see, Meyer, 1992, and section 4).

As a Contributor to Growth.

Parallel to the arguments made above about location decisions are arguments concerning production technology choices. It is often pointed out that for a number of reasons, often artifacts of government policies, relative factor costs diverge between rural and urban areas. The factor costs facing rural-based enterprises are thought to more accurately reflect the social opportunity costs of those factors and hence the labour intensive technologies used in rural locations are more socially "appropriate". That is, they are more productive when inputs are measured in terms of their real, social, costs. Even if such activities do not generate very high labour income, in an environment with seasonal unemployment, any utilization of labour can contribute to raising total income. And there is always a time frame issue - withering need not be rapid. If total production in the sector can be raised in a cost effective manner then for many years it can make an important contribution to national income.

Income Distribution

There are several distributional reasons to focus on this sector (given that redistribution via taxes

and transfers is politically and administratively costly in all countries). Firstly, to the extent that rural industry produces lower quality goods which are more heavily consumed by the poor, good health of this sector has indirect distributional benefits via lowering prices to the poor. Second, the sector fulfills two other functions - it is a residual source of employment to the poor who, because they are small landholders or are landless, cannot find sustenance in agriculture. Through diversification it also supplies a way of smoothing income over years and seasons to people who have limited access to other risk coping mechanisms such as savings/credit or insurance.

The fairly scanty evidence concerning the productivity and distributional characteristics of the sector will be examined in turn in sections II and III below. Section IV considers the dynamic potential of the sector and, in conclusion, Section V examines the role for policy. But first we look at some aggregate statistics which demonstrate that, whatever withering may occur in the future, the rural non-farm sector is currently large, and even growing, in most developing countries.

B. Overview of the Non-Farm Sector

The non-farm "sector" includes all economic activities except agriculture, livestock, fishing and hunting. Since it is defined negatively, as non-agriculture, it is not in any sense a homogeneous sector (see Box 1). For convenience, however, the term sector will be retained. Judgements about the viability and importance of the rural non-farm sector hinge crucially on what is meant by "rural". We will illustrate in this paper, for example, non-farm activity undertaken by farm households as independent producers in their homes, the subcontracting of work to farm families by urban-based firms, non-farm activity in village and rural town enterprises, and commuting between rural residences and urban non-farm jobs. For example, Basant (1994) finds, in a survey of rural employment in the Indian state of

Gujarat, that 25 percent of rural male non-agricultural workers commuted to urban areas for work. See Box 2 for a somewhat unusual example of this phenomenon.

Many different definitions of rural are used in the collection of census and survey information making comparisons across countries difficult. Typically, the distinction between rural and urban employment is based on the place of residence of workers, so 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, do vary. For example, in Table 1, which displays aggregate statistics for a number of countries based on their own definitions of rural, the definitions range from Mali and Zimbabwe, which limit rural to settlements with less than 3,000 and 2,500 inhabitants respectively, to Mauritania, which includes settlements with under 10,000, to Taiwan, which excludes only cities over 250,000 and two suburban counties surrounding Taipei (for further definitions see Haggblade, et.al., 1989). Clearly, a more limited definition of rural lowers the percentage of employment which is found outside of agriculture.

A number of features of the data suggest that the percentage of rural employment found in the non-farm sector may be underestimated for all countries. The figures in Table 1 refer only to primary employment. As will be discussed below in section III, 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 labour hours which are devoted to non-farm activities. After surveying farm management surveys and time allocation studies of African farm households, Haggblade, et. al. (1989) conclude that 15-65 percent of farmers have secondary employment in the non-farm sector and 15-40 percent of total family labour hours are devoted to income-generating non-farm

activities. Note that this is income-generating activities. Much of non-farm activity in all developing countries, especially that of women, is unremunerated work, such as clothing production, food processing and education for the household, which is not included in employment figures. As countries develop, more of these tasks are commercialized and more non-farm employment appears in the statistics (although the problem never disappears - see Thomas, 1992). This is a second reason to expect an underestimate of non-farm activity. Finally, since rural enterprises are typically small and dispersed there is reason to think that they may simply be missed in surveys. (Anderson and Leierson, 1980, note that in some African countries under-remuneration has been as high as 40 percent.)

Bearing these considerations in mind, it is clear from Table 1 that the non-farm sector is substantial in many countries - both in terms of income and employment - and has, in the aggregate, been growing over time. For example, in China non-agricultural employment grew from 11 percent of total rural employment in 1980 to 20 percent by 1986. Town and village enterprises (private and communal ownership in localities with less than 30,000 inhabitants) increased real output and employment at annual rates of 23.4 and 12.7 percent respectively over the period 1978-86, with employment in manufacturing increasing at 7.7 percent. In fact, TVE's have been veritable "engines of growth" for the Chinese economy. As indicated in Table 1, the non-farm sector is composed of services, commerce & transport, construction and mining, and manufacturing. There is some evidence to suggest that there is a shift in composition towards services and away from manufacturing in the smallest localities as development proceeds (see below).

We turn now to take a closer look at those characteristics of activity in this sector which affect its contribution to social welfare, either through income growth or through positive distributional features.

II. Characteristics of the Non-Farm Sector - Productivity

A. Measures of Productivity - Theory

Measures

An important question when considering the potential contribution of non-farm activity to development is whether or not such activity is more or less 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: labour productivity, which measures the value added by an activity (gross output deducting intermediate inputs, but not deducting capital and labor costs) per unit of labour input, and capital productivity, which measures the value added per unit of capital input. By making comparisons based on one of these partial productivity measures, say labour 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 the social benefit/cost ratio. This measure expresses value added as a ratio of the weighted sum of labour and capital with weights based on their social opportunity costs. Of course, if one activity has both higher labour productivity and higher capital productivity then switching resources to it will increase the overall output of the economy. Typically, however, higher labour 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.

Opportunity costs

The assessment of opportunity costs (either private or social - shadow - costs) is important in

comparing productivity across activities even when one is using partial productivity measures. Inputs (and outputs) must be valued. While commonly an average agricultural or urban wage is used to value labour 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, etc., particularly when markets are very imperfect. For example, in a situation with minimum wage legislation or wage rigidity leading to unemployment, it is often preferable to assume that labour has a zero opportunity cost - despite positive market wages. More generally, it may be quite difficult to know what wage or interest rate reflects the true opportunity cost of labour 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 transactions 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 labour 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. Then the opportunity cost of the use of savings is zero and labour productivity would be an appropriate measure of total productivity (see, Vijverberg, 1988).

Social Versus Private Values

Private and social values do not necessarily coincide. 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, in favor of policies to support small-scale enterprises (SSE's). It is claimed that SSE's are more labour intensive and that the lower labour and higher capital prices faced by small-scale

firms correspond more closely to the inputs' true relative scarcities (see section IV). 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 which follow we shall see that there is a wide range of productivity levels across activities in the rural non-farm sector. How these are evaluated depends on an assessment of social opportunity costs.

B. Measures of Productivity - Empirical

Considering manufacturing, 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 the 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 and others (1987) summarize the results of studies in several countries (rural and urban). They conclude that in general there is not a linear relationship between either capital per worker or capital productivity and firm size, when size is measured by employment. It is medium-sized firms (employment over 50) which tend to have the highest capital productivity (see, for example, Tables 2a and 2b, for Thailand and India). They 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 labour intensive, have lower labour productivity and higher capital productivity (Table 2b). The choice of technology can be crucial to levels of labor and capital productivity (see Box 3).

Using data from Sierra Leone, Honduras and Jamaica collected in the late 1970's, Liedholm and Kilby (1989) address the question of the relative profitability of *rural* small-scale firms vs 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. The shadow price of capital was assumed to be 20 percent, unpaid family labour was (conservatively) valued at the level of wages in the small-scale sector for skilled workers, and labour in urban firms was valued at 80 percent of actual wages (with the latter based on survey estimates of minimum wage distortions, see Haggblade, *et. al.*, 1986). 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 (see Table 3). 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 (see Table 3, figures in parentheses). It was also found that the productivity of rural enterprises was lower for those operating in localities with populations less than 2,000 and for firms with one person. In fact, in Honduras, output per hour in one-person firms was 53 percent below wages in small-scale industry overall and 11 percent below the agricultural wage (Liedholm and Mead, 1987).

It is clear that the non-farm (or small scale) sector is very heterogeneous, comprised of activities with a wide range of labour and capital productivities. One can think of two rather different groups of occupations: low labour productivity activities serving as a residual source of employment, and high labour productivity (and hence income) activities. A study of Java notes the wide range of returns to labour in the non-agricultural sector : "owners of brick and coconut plants cleared fives times as much as a successful farmer, daily wages in some seasonal work would not purchase 100 grams of rice" (Alexander, *et. al.*, 1991). White (1991) investigating historical Indonesian data from the early years of

the century, notes that when agricultural wages for men were 15-30 guilder-cents per day and for women 10-20, wages in cottage industries were generally less than 10 and as low as 2-3 cents per day. Based on a more recent 1981/82 survey of a Javanese village, Ines Smith (1988) describes the role of *anyaman*, bamboo weaving, as a source of income for 30 percent of households. She points clearly to its residual employment character, both because earnings were very low - below casual agricultural wages - and because of the attitude of villagers. They were always seeking alternatives and when such were found, the bamboo weaving was dropped. On the other hand, Du (1990) reports that the average annual per capita income in (rural) town and village enterprises (TVE) in China was Y726 in 1985 versus Y351 in agriculture. Hossain (1987) details daily wage rates and capital/labour ratios for 14 major cottage industries in Bangladesh (see Table 4). Six of the fourteen activities yield daily wages which are lower than the agricultural daily wage (12.24 Tk.) while the higher productivity activities, such as carpentry and handloom weaving, generate daily wages over 50 percent above the agricultural wage. The table also shows a positive relationship between capital per worker and wages and the negative relationship between female workers and wage rates. Similarly a study of two regions in Uttar Pradesh, India, in 1985 finds that value-added per worker ranges from about 600 Rs/year in oil crushing to over 11,000 in cane crushing (Papola, 1987). The data on wages presented in Table 5 is drawn from a survey of cottage industries in three provinces in Thailand in 1980/81. The returns to labour per hour indicated in the table may be compared to a 20-30 Baht per day wage rate for farm labour. Clearly there is wide variation by region and by type of cottage industry. The high productivity activities, Thai noodle making and wood carving, are more capital intensive and more skill intensive, respectively, and face healthy demands. Low productivity silk and cotton weaving are activities dominated by women, generally under subcontract, with considerable competition from factory made substitutes (especially for cotton) and a large pool of potential workers.

III. Characteristics of Non-Farm Employment Sector - Inequality and Poverty Alleviation.

As discussed in the previous section, there are at least some activities in the non-farm sector which give workers low returns even relative to casual agricultural wage labour. This is particularly true for non-farm labour performed by women. This employment may nevertheless be very important for the welfare of households for the following reasons:

A. The Distribution of Non-Farm Jobs

It is impossible to say 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 then it is inequality increasing and vice versa. Of course, even if non-farm jobs widen the distribution of income, this does not mean that none of the poor will benefit.

The evidence here is very mixed. In some cases one sees the poorer/landless getting a higher percentage of income from non-farm occupations suggesting an equalizing influence and poverty alleviating role. This has been shown for Japan, Taiwan and South Korea. (Table 6 provides details for Japan.) The table shows that the largest land-holding households in Japan, which corresponds to the highest income households, receive the smallest percentage of income from non-farm sources. An equalizing impact has also been found in studies of Kenya, Botswana, Nigeria and the Gambia (Bagachwa and Stewart, 1992). Other studies show that the relationship between non-farm income and total income or assets is U-shaped. This fits into 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 shows that in the mid-1970's the wealthiest and the 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. On the other hand, White (1991) finds that in Java it has been the land-rich households

which have received the largest returns from non-farm enterprises (see Table 6). 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 quartile receiving 52 percent of income from non-farm

sources compared to 13 percent for the lowest quartile (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 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, 1994). In the North Indian village of Palanpur, the poor have not been direct

beneficiaries from an expansion of employment opportunities outside the village (although indirectly they

may well have benefitted -- see Box 4).

B. Unemployment

Where individuals are involuntarily unemployed, i.e. looking for agricultural employment at the

prevailing wage rate but not finding it, then the agricultural wage is not the opportunity cost of labour.

There is evidence from India that agricultural wages are rigid and that this situation persists even in the

peak seasons. The following two studies, cited in Dasgupta (1993) are indicative. Analyzing household

survey data from West Bengal, Bardhan (1984) estimated that unemployment among male casual workers

was 8 to 14 percent in peak and 23 percent in slack seasons, and for female casual workers 20 percent

in peak and 42 percent in slack seasons. Data from six villages in the semi-arid regions of India

(ICRISAT) in the mid-1970's yields average estimates of unemployment (based on frustrated job search) for males of 12 and 39 percent in the peak and slack periods, and 11 and 50 percent for females respectively (Ryan and Ghodake, 1984). There are many theories as to why wages should be inflexible including various efficiency and nutritional wage theories, imperfect information theories, and resistance on the part of workers themselves (see Dasgupta, 1993, and Drèze and Mukerjee, 1989). With involuntary unemployment of agricultural labourers, 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. The fact that people take up low productivity occupations suggests that they, at least, view them as worthwhile.

C. Women

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 1 indicates that non-farm employment is important to women in many countries (and as noted, the figures are likely to be particularly downward biased for women).

Cottage industry, where work is performed in the home, is particularly useful from the point of view of mixing with other occupations, 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). This is clear from Table 7 which presents the distribution of working hours for workers engaged in various cottage industries. Family responsibilities clearly occupy

a large part of women's time. The activities which 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 which 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). Boxes 5 and 6 provide examples of cottage industries, where women are able to earn incomes from activities at home.

D. Seasonality

The peaks and troughs in labour demand from agriculture mean that many people in rural areas are seasonally unemployed. In 1983, a labour force survey in Thailand estimated that 20 percent of the workforce was underemployed due to seasonal variations (Romijn, 1987). As a result, for both men and women much non-farm employment is secondary, versus primary, (regular versus semi-regular) performed in the off-season. Again, in the slack season there may not be any agricultural employment so even a low productivity occupation can be useful to raise and smooth income over the year. On the other hand, it is important to realize that the types of employment which are 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 labour productivity will rarely be very high.

Box 7 details four cottage industries in Thailand where employment is primarily under subcontracting arrangements. Most of these activities are secondary and provide additional household income during the slack seasons. As a result of such non-agricultural employment, the variation in

household labour utilization over the year is considerably smoothed. The wages paid are very low (see Box 7) but they are preferred to the alternative of being unemployed. Interviewers were told that, despite the low pay, people would work more if it were available (Mead, 1982). Other data from Thailand (discussed in Romijn, 1987) indicates that 90 percent of wicker workers, 74 percent of wood carvers and 78 percent of handloom weavers are also involved in farming.

E. Diversification

In addition to smoothing the flow of income received by agricultural households over the cropping cycle, non-farm income may stabilize income by spreading risk through diversification. A smoother flow of income directly increases welfare at a constant level of 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 fact that villagers are concerned about risk is indicated in a study by Morduch (1993) of ten Indian villages in the semi-arid tropics (ICRISAT) over the period 1976-84. He found that households which were estimated to be more constrained in their ability to obtain consumption credit when faced by a bad harvest were more likely to minimize the possibility of a bad harvest in the first place. They scattered their plots more widely and chose a more diversified cropping pattern.

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 which does not fall with a bad agricultural outcome makes farmers more willing to choose the high risk/high return options. (A similar rationale is posited to explain why larger, wealthier farmers are often observed to be the first to adopt new agricultural technologies.) 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. It is informative that even the wealthiest farm families still diversify risk by continuing to grow maize.

Of course, to the extent that the non-farm sector depends on demand derived from local agricultural incomes, it will covary 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. For nonagricultural households in the surveyed villages, average non-farm business earnings were 493 (1973/74 rupees) in 1973/74, fell to 19 rupees in 1982/83 and rebounded to 1,094 by the following year (Hazell, P. *et. al.*, 1991a). Clearly in this case non-farm income was very sensitive to levels of agricultural income. 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. In most situations, non-agricultural income will probably be a stabilizing force.

IV. Dynamic Potential

A. Intersectoral Linkages - Theory

In the 1960's, Hymer and Resnick (1969) formulated a model to explain the purported decline of rural non-farm activities under colonialism. They envisaged an initially self-sufficient economy producing both agricultural goods and other goods and services, labelled Z-goods, for local consumption. With the advent of colonial links there would arrive, on the one hand, new opportunities for exporting cash crops and natural resources and, on the other, cheap and higher quality manufactured goods available from the outside world. Both the competition from imports and the drawing off of labour into the growing cash crop sector would stifle rural non-farm activity. Ranis and Stewart (1993) have recently extended this model by positing a two part Z-goods sector, with part of the sector engaged in producing traditional goods and services in households and villages (the low productivity activities seen above) and the other composed of more modern activities which are more often located in towns. Once the heterogeneity of the rural non-farm sector is recognized one can more easily accept that some parts of the sector are dynamic. Ranis and Stewart contrast the Philippines and Taiwan, and conclude that while the Philippines experience with colonialism corresponded to the Hymer-Resnick model, Taiwan came through its colonial period with much of its rural non-farm sector intact (see below). Boomgaard (1991) documents the disastrous impact of colonial rule on the Javanese textile industry. There, while the import of colonial goods had a detrimental impact some parts of the non-farm sector, the sector was simultaneously growing in importance as a source of residual employment as land became more scarce

in the face of population growth.

In the mid-1970's, John Mellor stated an influential and contrary position regarding the role of rural non-farm activity in a set of proposals for India (see also Mellor and Lele, 1972, and Johnston and Kilby, 1975, for early contributions). As result of emerging 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 sector. 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 labour and capital. With increased productivity in agriculture either labour is released or wages go up. And the new agricultural surplus would be a source of investment funds for the non-farm sector.

To complete the cycle, growth in the non-farm sector 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 sectors would be mutually reinforcing with employment and incomes increasing in a dispersed pattern.

In both of these stories, a lack of demand for rurally produced goods is viewed as the crucial issue. In the first view, demand stagnates as rising incomes are spent on cheaper manufactured imports. In the second, geographic isolation and the tastes of the rural population combine to make demand for locally produced goods increase with income. The following section surveys empirical work which

attempts to determine whether there is, in fact, a positive feedback effect of agricultural growth on the rural non-farm sector and, if so, how important the various linkages are. In addition to informing the theoretical debate outlined above, this line of inquiry has been supported by an interest in calculating cost/benefit analyses of agricultural investments which capture the full set of regional impacts. It should be noted that, in terms of policy, a finding that agricultural growth spurs the rural non-farm sector does not, by itself, mean that agriculture should be targetted, nor does an absence of linkages mean that it should *not* be targetted.

B. Intersectoral Linkages - Empirical.

Econometric Studies

The empirical investigations come in two types. The first is econometric estimates of the relationship between growth in agricultural income and growth in employment or income in the rural non-farm sector. 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 which may swamp any relationship which exists. Furthermore, as emphasized above in section II, there are high and low wage occupations in the non-farm sector. As agricultural productivity grows, one would expect the residual employed in the non-farm sector to be drawn into agriculture, lowering employment in the non-farm sector 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 sector would lead to higher wages and might draw labour out of agriculture and increase employment in that sector. It is impossible to predict a priori whether non-farm employment should grow or 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.

Vaidyanathan (1983) 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. This means that where agriculture was unable to provide widespread employment, the non-farm sector 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 which is confirmed in more disaggregated district level studies (Hazell and Haggblade, 1990). Overall, wage rates in the rural non-farm sector were found to be higher than the agricultural wage so the low productivity residual activities do not dominate the sector - although one might expect such occupations to be under-enumerated due to their seasonal and self-employed character.

Hazell and Haggblade (1990) perform a similar analysis using state and district level Indian data in which they also look at the relationship between (total) agricultural income and rural non-farm income. They interact agricultural income 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 calculate 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. As a result the multiplier is estimated to range from .93 in high productivity, more urbanized, states (Punjab and Haryana) to .46 in low productivity states (Madhya Pradesh and Bihar). Estimating the same regression with rural non-farm employment rather than income as the dependent variable they found that an increase in (total) agricultural income by 100,000 rupees is associated with 3.7 more non-farm jobs, 2.1 in rural areas and 1.6 in rural towns. 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).

Ranis, *et. al.* (1990) report on several micro studies from the Philippines. For example, an Upper Pampanga River project which roughly doubled net farm income was associated with a 7 percent per year increase in non-farm employment, 1975-79. Most of the non-farm activities in the area were consumption based (93 percent), although employment related to production linkages grew more strongly over the period. Between 1960 and 1975 there were high rates of growth in small rural establishments in areas with rapid agricultural growth.

Social Accounting Matrices

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. SAMs require a (marginal) input/output table; an

account of who receives income, both factor incomes and net transfers; and information on the marginal expenditure patterns of all agents. When supplies are not infinitely elastic, then price effects of demand changes must be incorporated. Data this rich is not available. Information gives way to assumptions and SAM multipliers are left with something of a blackbox quality. They should be treated with the appropriate skepticism (see Harriss, 1987, for a critique).

Bell, *et.al.* (1982) present a study of the World Bank's irrigation project in Muda, Malaysia, for the period 1969-74. They found that every dollar of extra value added in agriculture generated an additional 83 cents of value added through linkages. Of this 83 cents, 33 cents could be attributed to production linkages. The study assumes that supplies of non-agricultural output are perfectly elastic and therefore prices remain fixed in the face of demand shifts. Agricultural output is assumed to be inelastic in supply. Further, 'local' refers to any good sold in the region and therefore includes non-local goods retailed locally. Both of these features tend to bias the multiplier upwards, so it should be seen as an upper bound.

Using a SAM constructed for the North Arcot district, Hazell and others (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 also under the assumption of inelastic supplies of agricultural products so the additional value added is in the non-farm sector - and is similar to the result in Bell *et al* (1982). Assuming elastic supplies of agricultural products, the multiplier is an additional 1.18 Rs. of (agricultural plus non-agricultural) income. Unfortunately, as in the Bell, *et.al.* (1982) study, there is no distinction between locally produced and 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) compare marginal consumption expenditures for rural households in Nigeria, Sierra Leone, Malaysia and India (see Table 8). Marginal consumption of locally produced non-foods is much larger in the Asian studies (about 35 percent versus 15 percent), although marginal expenditure on local products including food is about 80 percent in all countries. They note that African expenditure on non-food goods is likely to be biased down more than in Asia because of the higher proportion of nontraded goods and services. Using a very 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, they 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 half of their income from farming with 19 percent of income coming from town businesses operated by farm families.

The SAM is estimated using marginal expenditure patterns and assuming either infinite supply elasticities (fixed-price multipliers) or infinite supplies of non-agricultural commodities and inelastic supplies of agricultural commodities (mixed multipliers) with excess demands met from imports from

outside of the region. Under either assumption, additional expenditure by large farm and high education town households generates the lowest impact in terms of regional income growth. 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 (see Table 9, columns 1 and 2). (In value-added terms these multipliers are even larger and are close to the 1.5 found by Hazell, *et.al.*, 1992.) 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 labour employment, the service sector, followed by farm-based non-farm and manufacturing production, has the strongest employment generating impact (Table 9, columns 3 and 4).

Other evidence is available concerning specific structural relationships which influence inter-sectoral linkages.

Consumption

Hazell and Roell (1983) study the Muda project in Malaysia in 1972/73 as well as the Gusau agricultural development project in northern Nigeria in 1976/77. In this study it is also assumed that output supplies of non-agricultural products are elastic so there are no price effects. The share of locally produced items in marginal non-food spending for the top income decile in Muda was 61% while it was 55% for the poorest. In Gusau increasing income resulted in a broadly unchanged share of locally produced items in marginal non-food spending. In Muda, redistributing $1.00 income from the 9th decile to the second decile was calculated to reduce demand for locally produced nonfoods by about 20 cents, while in Gusau, aggregate regional demand for nonfoods would not change significantly. The authors

ascribe this difference to the relative isolation of the Gusau villages - pointing to the important influence of infrastructure on linkages (see below). In both regions it is the largest farms by size-holding which have the most desirable expenditure patterns from the point of view of stimulating the local non-agricultural economy.

A comparison of the industrial and agricultural growth in 16 regions of Colombia 1960-75 showed that the larger the share of modern medium/small farming, vs. traditional or modern extensive farming, the stronger the linkage between agricultural income growth and industrial production.

Capital

Governments often play a large role in transferring agricultural surpluses to the non-farm sector via trade policies, the underpricing of output by marketing boards, and government spending patterns. The same is seen at private level. Harriss and Harriss (1984) report for the town of Arni, Tamil Nadu, south India, that over a period stretching from 1983 back more than 40 years, about 15 to 40 percent of the starting capital of non-farm enterprises derived from agriculture (mainly profits plus occasional land sales). Haggblade, *et. al.* (1989) estimate that in Kenya and Sierra Leone agricultural income is the source of between 15 and 40 percent of nonfarm investment funds. However, they note that the opposite has also been observed in many countries, with non-farm earnings allowing investments in agriculture (see discussion above under diversification).

C. Dynamic Aspects of Linkages

If we assume that the consumption behaviour of higher income or more urban households reflects

the direction in which expenditure patterns will move as development proceeds then one can look at cross-sectional data to predict dynamic changes in linkages. In the Muda study (Hazell and Roell, 1983) about 28 percent of marginal spending by the top 4 deciles was on imported nonfoods while the bottom four deciles averaged 19 percent. In the Philippines, the elasticity of expenditure on local products (food and non-food) was found to fall rapidly with income, from .94 for households depending on rainfed upland farming with an average household income of 3,405 pesos to .435 for nonagricultural households with an average income of 17,930 pesos (Ranis, et. al., 1990). Note that since the elasticities are all positive, the demand for local products does increase in absolute amounts as incomes rise. Hossain (1987) in a study of villages in Bangladesh found that the demand for imported industrial goods rose at the expense of local manufactures as incomes increased. Harriss (1987b) reports that in the rural town of Arni, south India, the relative importance of goods produced in metropolitan factories or wholesaled via big cities increased from an already high 57 percent of local commodity flows in 1973 to 75 percent by 1983. In the latter year, new urban products had appeared in the markets such as soft drinks, cosmetics and consumer plastics (Harriss and Harriss, 1984).

There is likely, too, 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. This transition in types of activities with urbanization was also found in a detailed study of employment in the city of Bouake, Cote d'Ivoire (population 110,000 in 1970) and surrounding region. Traditional activities diminished rapidly in importance close to the city. For example, basket making, weaving and pottery comprised 6.2 percent of total employment at a

distance of 25+ km from the city but only 1.9 percent within 10 km. Similarly, the percentage of rural employment provided by manufacturing fell in Pakistan from 12 percent in 1968/9 to 9.4 percent in 1982/3 and in Colombia from 18 percent in 1970 to 10.1 percent in 1978 (Uribe-Echevarria, 1991). On the other hand, there are examples of the survival and even growth of traditional handcraft sectors when an export market is successfully developed (see section V, below, and Box 8).

Vogel (1994) presents a cross-country comparison of SAM production multipliers to consider dynamic changes as development occurs and incomes rise. The 27 countries included are grouped as low, middle and high income developing, NICs, and low and high income developed. Because of the need for consistency across countries and data deficits the SAMs are highly aggregated and reliant on strong assumptions. Just as an example, six of the countries did not have any rural household income or expenditure information so the missing data were simply estimated from figures for other countries. Furthermore, non-agriculture is not decomposed into rural and urban so one cannot trace the linkages between agriculture and rurally produced goods and services. Nevertheless, a few points are interesting. First, at very low levels of development the strongest linkage is through consumption. The backward production linkages via agricultural inputs become stronger with development as agriculture becomes more capital intensive. Finally, the forward linkages, via agricultural processing, are never very strong and decline as processing becomes less important in the overall economy. The important point is that all of the multipliers presented here are estimated using data on a country's current state. When using them to predict the results of more than marginal changes, it must be realized that the multipliers themselves may change in the process.

Implications of Infrastructure - Competition vs. a Larger Market

In his view of the operation of local linkages, Mellor treated the local area as isolated, that is, closed to outside demands and supplies. The characterization of rural areas as isolated is possibly accurate for some goods which are costly to transport, such as furniture, and for services. However, markets are often integrated regionally and nationally. Rural firms, for example, typically do not depend only on local inputs. A shortage of imported production inputs is often 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 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 labour 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, 59 percent of total spending by farm families accrued to Kutus Town and the surrounding region. However, this spending was almost exclusively for food, services and purchases of goods produced elsewhere. The remaining 41 percent of spending leaked out of the region, mainly to Nairobi and the rest of the world (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.

The flip side of this is that rural infrastructure is also crucial to the growth of the rural non-farm sector. Although improved infrastructure may have a detrimental impact on rural non-farm enterprise due to competition from outside products and shifts in tastes, poor infrastructure also imposes serious costs on rural firms. For example, due to electricity shortages in Wuxi Provence of China, almost every TVE had installed diesel generators to meet its own needs - at a cost several times that of power transmitted through the electricity network (Wang, 1990). This is a widely observed problem for all firms (rural and urban) in developing countries. Two recent surveys of large- and small-scale manufacturers in Nigeria and Indonesia found that 92 and 59 percent, respectively, had their own electricity generators - operating at less than 50 percent capacity (World Bank, 1994). It is a problem which is particularly acute in rural areas and for smaller firms, raising costs and leaving them less able to compete with foreign or domestic imports.

In addition to lowering costs, good infrastructure in the form of transport links are essential if non-farm enterprises are to breakaway from dependence on local market demands and sell to the outside world (see Mead 1984). An evaluation by USAID of six new rural roads in the 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 when the roads were built. Further, there was an average net increase in the number of non-farm establishments in the region of the roads of 113 percent (Ranis, et.al., 1990). 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. They may also include subcontracting relationships with urban (or foreign) firms, an indirect way to tap into a wider market.

Tapping Larger markets - Subcontracting (Putting Out).

Subcontracting is a system whereby a buyer agrees to purchase semi-finished or final goods from another firm (or household) which it then sells to consumers or to another producer. A common system in developing countries is for a local "agent" to contract with households to produce goods which he then sells to an urban firm which then packages the goods and distributes them domestically or for export. There are many different arrangements concerning which parties bear the costs (and risks) involved in the financing of costs during production, ensuring quality, and marketing. The urban-based or multinational firm has an advantage over households in terms of marketing, both from the point of view of knowing what larger markets will purchase and because they may have their own distribution network. It may have less costly access to technical information which can be passed on to suppliers. By buying in bulk or producing semi-finished goods themselves, such firms may obtain inputs at lower cost which can be dispersed to household workers. (See, for example, the case of yarn being advanced or sold to cottage knitters or unfinished dresses being distributed to cottage embroiderers in Box 7.) Local agents have an advantage over non-local firms in their ability to chose the best workers and to supervise work in progress. As a result, the local agent is often expected to ensure quality. Local agents working as independent subcontractors may also bear the financial burden of purchasing finished goods from the households and finding buyers. Subcontractors can supply inputs - knowledge of the wider market and technology, and finance - which are costly for rural households to obtain. Thus, particularly when expanding sales beyond the immediate vicinity, rural households may benefit from working under subcontract instead of trying to produce and sell final products independently. Of course, larger rural enterprises may be able to take on these roles themselves. For example, Yang (1994), in a study of a factory producing health-care products in the village of Shenquan, China, describes how it, in effect, set up an independent retailing arms to purchase the factory's output and market it in urban centers.

The main advantage to firms gained from choosing a geographically dispersed mode of production via subcontracting is lower labour costs (other potential advantages of subcontracting include the ability to pass on fluctuations in output demand and cheaper inputs due to greater specialization and economies of scale on the part of suppliers - Mead, 1984). By subcontracting, a firm can utilize labour hours where the opportunity cost of labour is close to zero - either by subcontracting in regions with unemployment or by supplying work which can be done by women at home or in the agricultural slack seasons (see above). At the same time, the firm can capture some of the benefits of an urban location. This strategy will only be cost effective in certain sectors, for instance where the (unskilled or traditionally skilled) labour component is high, where the capital requirements are minimal, and where transport costs are relatively low.

Getting a handle on how important subcontracting is as an employment contract is difficult because such work is often supplementary (and hence does not appear in labour force surveys of primary employment) and because outworkers are often not registered and do not appear in enterprise surveys. However, sectoral studies indicate that subcontracting is quite prevalent in certain industries such as clothing manufacture. Box 7 details the operation of some cottage subcontracting arrangements in Thailand. In all cases local agents (who may themselves be operating on a subcontract basis) act as intermediaries in subcontracting out work to village households. In the case of bamboo weaving we see local we see local subcontractors taking on a financing and marketing role as the wealthier village producers of bamboo goods purchase from their neighbors and sell the goods on to urban buyers.

Subcontracting systems are not just limited to cottage workers in backwards regions of poor countries. They can continue to be important as a country develops. Japan, for instance, stands out among developed countries in its continued heavy reliance on subcontracting relationships between small

and large-scale firms (representing perhaps a third of all employment). Paine (1971) suggests that this pattern is the result of the need to introduce flexibility into the otherwise very rigid lifetime employment system introduced in Japan after World War I. Taiwan is often discussed among developing countries as an example of the successful development of a geographically dispersed industrial structure, and subcontracting has been a notable feature of this development. The initial impetus in the development of rural industry in Taiwan came from agriculture and was stimulated by a fairly equitable distribution of rural income and investments in higher value crops. However, the newer rural industries operate on a subcontracting basis with export oriented urban firms, often using imported inputs, and are no longer dependent on the local market for growth. Many aspects of Taiwanese policy may have contributed to these developments. For example, a land reform policy was effectively implemented and farmers' organizations developed, with government support, which helped farmers to pool their savings, improve irrigation and obtain new technologies. Unlike most countries, Taiwan avoided the problem of urban bias in its provision of infrastructure with rural areas well connected to both electricity and transport networks. Rural industrial estates and export processing zones were also established at an early stage. All of these factors are likely to have contributed to an annual 11.5 percent growth in rural nonagricultural income over the period 1962-80 (Ranis and Stewart, 1993).

Subcontracting among small producers in rural areas is also prominent in certain industries and regions in other countries. Small producers cluster, often around a town or small city, and form dense networks with strong divisions of labour. They obtain agglomeration benefits from proximity to each other while avoiding the large urban areas. Examples are: Emilia Romangna, Italy; Silicon Valley, California; Baden Wurtemberg, Germany; Cambridge, UK (Uribe-Echevarria, 1991).

V. Policy Implications: Lessons and Experience

By means of conclusion, this section considers what, if any, role there might be for government intervention in the non-farm sector. Governmental efforts to support the development of small-scale enterprises and specifically rural enterprises have traditionally taken the form of project assistance which is directed at targeted groups. These efforts have a fairly long history. Financial support programs were launched in Mexico, Venezuela and Argentina in the 1950's, and in Brazil, Chile and Colombia in the 1960's. These were intended to transform cottage enterprises into modern small-scale firms. In Africa programmes to support small-scale firms via the creation of industrial estates and training were initiated soon after independence. The focus of these programs was often on assisting in the transfer of business from foreign owners to nationals (Uribe-Echevarria, 1992). Following independence, India followed a strategy of import substitution, investing heavily in large-scale heavy industry. At the same time, traditional small-scale industries were protected by reserving certain goods for production in small scale firms and limiting the capacity of larger firms (see below). In all cases, however, it was the large-scale urban industrial sector which was expected to be the real engine of growth. In light of experience, there has been a move away from this view and new emphasis on more 'balanced' growth, with the development of agriculture and the rural economy gaining importance. Interest in the non-farm sector is a part of this focus on rural development.

Nevertheless, in most countries projects to support small-scale and rural enterprise continue to be undertaken in a general policy environment which is biased against them. Before turning to targeted projects, we consider the differential impact across firms of some common policies.

A. Policy Impacts

Input Price Distortions

As noted in section II, there are a number of policies commonly followed in developing countries which alter the relative labour/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 labour, such as minimum wage legislation. Note, however, that 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 labour may be paid more to ensure reliability over the year 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.

Interest rate ceilings on specified types of loans are imposed in order to give an incentive to investment. However, interest rate ceilings also make it unprofitable to lend to borrowers who impose high transactions costs, e.g. those who can provide little information on credit worthiness and desire small-sized loans, and have little collateral (and thus represent greater risks). This lowers the potential funds available to small and start-up enterprises, forcing them to rely more heavily on the informal market at markedly higher interest rates. While in principle investment credit subsidies would encourage greater capital intensity of production overall, in practice not all credit is subsidized and similar biases result. Subsidies are mainly captured by larger firms (especially urban) and both subsidies and interest rate ceilings lower the cost of capital to large urban relative to small rural producers. Another indirect impact of government policies which lower interest rates has been emphasized by Adams (1988). Low lending rates make it unattractive for financial institutions to develop mechanisms to mobilize small-scale rural savings (again because of transactions costs) which would then be available for lending to entrepreneurs. 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.

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 (Haggblade, 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 firms and rurally located firms.

Distortionary policies in the labour market include minimum wage legislation, mandated benefits and labour legislation. These policies are particularly prevalent in Latin American countries and less so in Asia and Africa. If minimum wages and benefits are binding (which they are not always) then they serve to raise the cost of labour to affected firms. Because enforcement is weak, even in countries with labour legislation the labour market distortion it typically small, except, perhaps, for firms which are very large and visible and therefore forced to comply. In general, the labor market distortion is thought to be less than the capital market distortion. Considering both distortions together, estimates of the percentage difference in the labour/capital rental rates between small and large firms as a result of government policies range from 43 percent higher in large firms (South Korea, 1973) to 243 percent higher (Sierra Leone, 1976) (Haggblade, et.al., 1986).

Policy Stance with Respect to Agriculture

In light of the studies discussed in earlier sections describing first, how off-farm activities typically form only subset of a household's portfolio of activities (which usually will also include agriculture), and second, how there exist numerous linkages between the non-farm sector and agriculture, it is apparent that agricultural policies can have a pronounced impact on rural non-farm activity. Although the strength of the linkages between the two sectors varies across regions and countries, virtualy all of the studies confirm the presence of some relationship. Moreover, while cross-sectional studies suggest that some of the linkages may diminish over time, they may be critical in the initial development of the sector. Taiwan and China provide the classic examples. An important lesson is that while policies aimed at the rural non-farm sector should not be made without consideration of their impact on agriculture, nor should agricultural policies 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 sector will remain unaffected.

B. Project Impacts

Projects rather than policies have been the primary method of encouraging the development of rural enterprise. The primary difficulty of project assistance, however, is that small and geographically dispersed enterprises are exceedingly difficult to reach, particularly in a cost effective manner. And the number of small enterprises is vast - even the largest projects, such as the Grameen bank in Bangladesh, with more than 630,000 borrowers in 1989 (Hulme, 1990), is thought to reach only a small fraction of potential beneficiaries.

"..virtually all small enterprise surveys reveal that only a tiny fraction of the entrepreneurs have heard of the programs intended for them and even fewer have been aided by them " (Liedholm and Mead,

1987, page 101).

Project assistance to small-scale and/or rurally located enterprises takes several forms in terms of targets and type of assistance. Some projects are designed to aid potential entrepreneurs in starting new enterprises while others assist operating firms to develop. The former often offer a range of services, both financial and non-financial, from equipment loans and education in business skills, such as accounting, to advice on technologies and marketing. Other projects provide one or two components which are seen as particular constraints to the development of the sector.

Financial Projects

By far the most common form of project assistance is targetted credit programs. These may be operated through government-owned commercial or development banks, private commercial banks, or NGOs. The record with such projects is very mixed. Loans from government institutions or mandated lending by private banks tends to end up in the hands in the wealthiest segment of the targetted group for the reasons cited above under credit subsidies (e.g. transactions costs). Some projects are quite successful in keeping costs under control while others are plagued by both high transactions costs and high rates of default (see table 10). The Grameen Bank, an oft cited project funded by the International Fund for Agricultural Development (IFAD) which lends to poor women in Bangladesh for both agricultural, especially livestock, and non-agricultural projects, has a default rate of less than 1 percent (Hulme, 1990). (However, even at a sixteen percent rate of interest it does not cover the administrative costs of its small-scale and dispersed lending program.) The projects which are most successful are locally based, lend to groups, disperse small initial loans with addition lending conditional on repayment and charge something approaching realistic interest rates.

Combined Financial and Non-Financial Projects

Experience with projects which attempt to launch new enterprises, offering a range of services as opposed to simply credit, have been very expensive to implement and very limited in reach. In a mid-1980's assessment of its microenterprise projects, USAID found that the average costs per dollar lent in enterprise formation projects was $3.20 compared to $0.43 - $0.51 in projects to foster existing businesses with more limited non-financial components. Even the latter, which charged real interest rates over 15 percent, did not cover operating costs. It was also found that the projects aided only several hundred clients per year, with the exception of purely financial credit projects which reached several thousand. Of course, the fact that a project is not financially self-sustainable does not mean that it is not worthwhile so it is not clear what one should conclude from this type of information aside from the fact that external (to the project) funding will continue to be necessary. There is remarkably little systematic analysis of social costs and benefits given their importance to project design. Leidholm and Mead (1987) discuss the results of two cost/benefit analyses of projects offering non-financial assistance. In most cases, the costs were found to exceed the benefits. The successful projects were those which did not attempt to start from scratch and offer a whole package of services but rather those which focused on loosening a single constraint, such as providing a new market or introducing an improved technology. Projects aiding existing rather than potential entrepreneurs were also found to generate more net benefits.

Apart from credit, particularly for working capital, marketing problems are one of the most often cited constraints on rural enterprise development. Careful consideration of the market potential of non-farm activities is very important in project design. Box 8 provides examples of both success and failure in this dimension. As we have seen in the cases of Taiwan and China, non-traditional rural enterprises can successfully break away from reliance on a local market by exporting. This can also be true for

traditional handicrafts. In Ghana, for example, handicrafts has recently been a rapidly growing export sector, growing by 75 percent between 1993 and 1992. This sector has been promoted by aggressive product and market development by the government (Levy, 1994. See also Box 8).

C. Other Government Programmes Targetted at the Non-Farm Sector

Industrial Estates

With few exceptions it has been found that industrial estates targeted at the development of small-scale and rural enterprises have not reached that 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. Little of the production on the estates is for local consumption. For example, in the case of one estate only 7.5 percent of output remains in the district and, of that, 75 percent goes to urban areas. Of the leather industry, 89 percent is exported. Of course, where such firms are intensive in their employment of local labour, they will still have an impact on the local economy.

Reservation Policies

India has frequently used the tool 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 1950's 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 that 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 industries 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 production khandsari was less beneficial than mill production.

Public Works Schemes

Many of the benefits of non-farm employment discussed in section III have been found for employment generated by government-run public works schemes. These projects 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, to compensate for temporary income falls. The importance of infrastructure for the development of the private non-farm sector has been noted in section IV. Ravallion (1991) reviews cost/benefit analyses of two large public works schemes: the Maharashtra

Employment Guarantee Scheme, 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. First, by drawing labour 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.

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Box 1

From Petty Vendors to ....

From Vendors in Zambia

The charcoal vendor:
 She purchases three large bags of charcoal per week and divides them into twenty small tins each. Net revenue is 12.00 K per week.

The chikanda cake vendor:
 She buys chikanda root from another vendor and prepares chikanda "meal" cake which looks like uncooked sausages. She sells four cakes a week which take one and a half days to prepare and sell. Net revenue is 22.8 K per week.

The boiled egg vendors:
 A partnership of three people. Two of them travel by train to a city 1,000 km away every two weeks to by fresh eggs. They purchase 75 crates of 30 eggs on each trip and sell them in the market as boiled eggs. They receive a net profit per week per person of 42.45 K.

To Cigarette Manufacturer in Indonesia

 Surya Wonowidjojo began manufacturing hand-rolled kretek cigarettes, a mixture of tobacco and cloves, as a cottage industry in 1958 in the Javanese village of Kediri, employing fewer than 50 people. By 1982 the company, Gudang Garan, produced approximately 2 billion cigarettes with a turnover of US $700m and employed 35,000 members of the 90,000 inhabitants of the rapidly growing Kediri. Mr. Surya is a multi-millionaire, and one of Indonesia's richest businessmen, owner of 5 personal homes and two helicopters.

Sources: *Financial Times* (March 1983); Milimo and Fisseha (1986).

Box 2
Mexico: Industrial Estate or Rural Town?

Ciudad Industrial, Mexico, is an interesting hybrid of a small rural city and an industrial estate. Situated in the middle of the semi-arid Llanos valley, a region of marginal agricultural productivity and little industrial development, this 'city' was planned to bring new economic opportunity to local people. In 1952 an automobile manufacturing plant began producing Fiat automobiles and Dina (Diesel Nacional) buses and trucks. A government agency was formed to plan and contruct the new city and by 1958 there were three factories and about three thousand workers producing railroad cars, automobiles and trucks, and textile machinery (the latter factory was later converted to tractor production). By 1966, the 'city' had grown to 14,000 inhabitants.

The way in which Ciuadad Industrial was allowed to develop by the planners has given rise to a somewhat unusual situation. The city has some the typical features of an urban area - a post office, schools, small shops, a church. However, commercial permits have been issued sparingly so the business district is quite limited. In addition, *cantinas* and other drinking establishments are forbidden so there is a dearth of night life. Finally, only those with jobs in the factories, administration or the few commercial operators are allowed to be resident in the city. As a result, the city is something like an industrial estate with workers in residence. Another result has been that a large proportion of those employed in Ciudad Industrial choose to remain living in the surrounding rural villages, of which there are about thirty within a half hour radius, and commute daily to the city to work. Life is freer in the villages and many workers have small plots of land that they can continue, in this way, to cultivate. This residence pattern is facilitated by an extraordinarily dense transport network. For example, the next largest city, with about 8,000 residents, was connected to Cuidad Industrial by approximately 150 scheduled buses per day, and even to smaller towns buses number over fifty per day. In addition, there are large numbers of private automobiles in the region purchased by workers on concessionary terms from the car factory.

One can think of the total region as a single geographically spread metropolitan area. Rather than losing workers to outmigration, the rural areas have retained them as residents. As a result, the relatively high incomes earned from employment in Cuidad Industrial find their way back to the villages in the form of new housing and demand for other village produced goods and services. The urban workers have been active in community affairs, contributing their skills to town water projects, electical systems, etc. In the late 1960's a group of anthropologists did a study of the 'modernity' of attitudes of those who commuted to work in the factories and those who remained in the villages in order to discover if, as has been suggested, work in industry promoted a more modern view of the world than that of traditional villagers. They found that attitudes did not differ substantially. It appears that not only did the urban workers bring material wealth back to the rural areas in which they were resident, but they brought modern ways of thought as well.

Source: Poggie, Jr. (1987)

Box 3
Dhenki Huskers Versus the Commercial Mill

Paddy husking is a leading rural industry in Bangladesh and until the 1960's, almost all husking was done using the traditional *dhenki* technique. The *dhenki* is a heavy wooden bar with a pestle at one end. The bar is used as a foot operated lever to lift and drop the pestle into a mortar set below on the ground. Two or three people are required to operate the *dhenki*. While many households husk their own paddy, it is an occupation which provides an important source of income to poor families, and especially women (see Box Table 3.1). The most prevalent alternative to the *dhenki* technique is small rural mills using a steel huller driven by a diesel or electric motor. These mills also employ two to three people. Large mills have four or five steel hullers driven by steam engines (powered by husks) or diesel or electric motors. These mills also have attached to them non-mechanized soaking, parboiling, drying, pre-cleaning and winnowing operations, and they buy, husk and sell rice as well as simply husking it for a fee. The large mills employ about twenty people. Finally, there are automatic integrated mills using rubber roll huskers and mechanized processes for the related operations. These mills often include wholesale operations or work on contract for the government. They employ about thirty workers per mill.

The first rows of Table 3.1 show the increase in the number of mechanized mills and the concommitant fall in *dhenki* operations over the past three decades. A large factor behind this spread has been the expansion of electricity into rural areas at low prices. Other factors include accelerated depreciation and tax holidays making capital investments more attractive. It is clear that the shift from *dhenki* husking to mechanized methods lowers total employment: a *dhenki* can husk 1.43 maunds of rice per day compared to 124 for a large husker. A small huller replaces 91 *dhenki* operators and a large mill replaces 226 *dhenki* operators. Further, there is an additional loss to women since the move away from the traditional technique means a move away from female employment.

The second section of the table gives some relevant operating and productivity figures for *dhenki*, small huller and large huller husking techniques. Not surprisingly, the capital/labour ratio for the *dhenki* technique is much lower than for the mechanized methods. The relationship is not monotonic as the larger mills, while using more capital than small mills, provide even more employment and so have a lower capital/labour ratio. Capital productivity, VA/FC, is highest for *dhenkis*, reflects these factor intensities. However, because of the abysmal labour productivity in *dhenki* operation, large mills provide the highest profit rate on capital and have the lowest per maund cost of processing. Note that this is subtracting the cost of labour at some positive value, probably the agricultural wage, and gives a negative profit rate for *dhenki* operations. If the shadow value of labour is about zero in this context, then the VA/FC ratio is a more appropriate indicator of social productivity and the *dhenki* appears superior.

Fully automated mills can process over 1,000 maunds of rice per day, replacing about 1,000 *dhenki* operators with about thirty employees. At the low levels of capacity utilization attained by these mills, their capital productivity is only 0.15, compared to 0.94 in the large huller mills and 2.27 with the *dhenki*. They are also costly in foreign exchange and appear to be clearly less appropriate than the other techniques examined.

Ranis, *et. al.*, provide information on rice husking in the Phillipines which indicates that the relative productivities of various technology choices depends on capacity utilization. They find that at current rates of utilization, village rubber role/steel huller mills (capital cost $7,633) have the lowest cost

Box Table 3.1
Characteristics and Productivity of Husking Technologies

	Dhenki	Small Huller Mill	Large Huller Mill
Percent of Crop Husked by:			
1967	83%	17%	-
1977	65-75	2-25	5-10%
1981	60-65	25-30	10
Employment, L (no.)	2.6	2.5	20.5
Percent family	62%	19%	18%
Percent female	100	9	4
Fixed Capital, FC (Tk)	3,285	85,832	453,667
Working Capital (Tk)	816	2,456	108,479
Value added, VA (Tk)	7,445	37,964	426,347
Net Yearly Profit, NP (Tk)	negative	22,066	281,412
FC/L (Tk)	1,263	34,333	22,130
VA/L (Tk)	2,863	15,186	20,797
VA/FC	2.27	0.44	0.94
NP/FC	-	0.26	0.62
Paddy husked per 8 hour day	1.43	50.72	124.12
Per Maund cost of Husking (Tk)	27.40	4.04	3.50

per unit processed closely followed by the largest scale *cono* mills (capital cost $42,700). At 50 pecent capacity utilization, however, the small-scale steel huller mills (capital cost 4,734) dominate as long as their somewhat lower quality is acceptable followed by the rubber role/steel huller combination. Labour productivity does not differ much across mill types. The Philipine government has actively encouraged the move to large mechanized process of threshing, drying, and milling with credit subsidies, licensing policy, and government run milling complexes.

Sources: Ahmad, Q. K. (1990); Ranis, *et.al.* (1990)

Box 4

Outside Employment and the Economy of a North Indian Village

Palanpur is a village located in the west of the populous Indian state of Uttar Pradesh. Since 1957 the village has been the subject of close study, with surveys of the village occurring on five occasions up to 1993. During the years 1957/58, 1962/63, 1974/75, and 1983/84 detailed information covering a very wide range of topics was collected, including village population, its structure and composition, incomes and occupations, land usage and cultivation practices. Most recently in 1993, a survey was conducted in which further occupational and demographic material was collected. For this last year however, not enough information to permit the calculation of incomes was collected.

Palanpur is not a large village. In 1957/58 its population numbered 528, growing to 585 in 1962/63, 757 in 1974/75, 960 in 1983/84 and 1133 in 1993 (a growth rate per annum of 2.1% over the entire period -- not far from the Indian average). Although the population of Palanpur has been growing, land available to villagers has not increased. This region in which Palanpur is located is quite densely populated, even in rural areas, leaving little scope for augmenting cultivable land. Growing population has translated into increased pressure on those land resources which are available.

Agriculture lies at the heart of the village economy. Wheat is the main crop grown during the winter season and rice is grown during the summer months. Sugarcane is the main annual crop grown. Technological changes in agriculture, commonly grouped together under the heading of the "Green Revolution" (comprising mechanized irrigation, new high-yield variety seeds, and improved fertilizers) have exerted a profound influence on cultivation practices and first introduced in Palanpur between the 1962/63 and 1974/75 surveys. Wheat yields have increased by a factor of two or three, and rice yields have risen even more sharply. Moreover, prior to these advances, villagers had been able to only one harvest per year. Double-cropping is now commonplace. Intensification of agriculture has continued beyond 1974/75, with further expansion of irrigation devices and other productive assets. This has allowed agricultural production to rise alongside village population.

An Expanding Non-Farm Sector.

Alongside agricultural intensification and population growth, a further major development has impacted on the economy of Palanpur over the course of the 36 years covered by the study. Prior to 1974/75 very few of the villagers were employed outside of agriculture - usually in traditional caste-based occupations barbering or carpentry, or desperate last-resort non-farm activities within the village for those unable to participate in agriculture. The railway line which runs just adjacent to the village did offer some limited non-farm employment but aside from this virtually no villagers were employed outside of Palanpur. Outside income represented at best 10 percent of village income. By 1974/75 several sources of non-farm employment outside the village had become available. For example, eleven villagers had found employment in a cloth mill or spinning factory in the nearby towns of Chandausi and Moradabad, and were commuting on a daily basis to these towns (usually by rail, but also by bicycle, ox-cart, and foot). In total in that year some 44 villagers were either regularly or semi-regularly employed in such outside activities. By 1983/84, the range and extent of village employment in outside activities had expanded further. As many as 71 village households had at least one member employed in the railways, in textiles, a bread factory, metalworks, in clerical work, as teachers, or as an electrician. In this year, regular outside job income represented 34 percent of village income. The number of households with outside jobs had declined somewhat by 1993, to 59, although the range of activities had expanded further.

The big change between 1983 and 1993 was a sharp decline in regular outside employment while semi-regular employment actually continued to expand.

The outside jobs in which Palanpur villagers are engaged cover a broad range of activities, and can vary markedly in terms of stability and remuneration. In general the highest incomes accrue to activities which may suffer from other, less attractive, features. For example, the steel polish workshops in which 8 villagers were employed in 1983/84 operated on a piece-rate basis, offering an opportunity for sizeable incomes but little job security. They were also said to provide an unpleasant and hazardous work environment which only young men would be able to cope with. In Palanpur, employment in the non-farm sector is exclusively male. (Women are rarely involved in agriculture, and then usually only on family-owned land).

Access to, and incomes from, outside jobs

The growth of outside jobs represents an expansion of opportunities which has been embraced by many in Palanpur, both better off and worse off. The distribution of outside employment opportunities has shown clear patterns, perhaps the most being that they tend to cluster around well-defined locations and socio-economic groups. Certainly, in 1974/75 and 1983/84 a relatively small number of employers accounted for the bulk of outside jobs. These included a spinning factory in Moradabad, a bakery in Chandausi, and the railways. Similarly the composition of the group of employees shows identifiable sub-groups, often caste-based.

Table 1 presents results from three probit models exploring the determinants of outside job employment. For 1974/75 we examine the relationship between certain household characteristics and the probability of having at least one member employed in a regular outside job. For 1983/84 and 1993 we are able to examine employment data at the level of the individual to investigate the determinants of outside employment.

For all three years, holding other variables constant, a larger household size increases the probability of regular outside employment. Education, proxied either with a household level indicator, or with years of schooling for individuals, also increased the probability of employment. In 1974/75 and 1993 the more land cultivated the less likely a household would have a family member employed outside the village. In 1983/84, the significant land variable was land owned, once again suggesting that the influence of land (either owned or operated) was more through its providing an alternative productive activity than representing a role of wealth acting to facilitate the acquisition of outside employment. (Note that due to widespread sharecropping in Palanpur, land owned and land operated need not be perfectly correlated). The probit specifications included a series of caste dummies but were generally not significant and are not reported here.

Table 2 examines the determinants of outside job incomes in Palanpur in 1974/75 and 1983/84, on the basis of a Tobit model. In 1974/75 an additional bigha cultivated reduced outside job incomes by Rs 76 (in nominal terms). An additional household member increase average outside job income by Rs 488, while a household with at least one literate member, other things being equal, earned Rs 2748 more from outside employment. In 1983/84 an additional bigha of land (approximately one sixth of an acre) cultivated reduced the average amount earned from outside employment by nearly Rs.100 (Rs 72 in 1974/75 rupees). An additional household member increased earnings from outside employment by Rs 898. Whereas in 1974/75 literate households had tended to earn more from outside employment, by 1983/84 the relationship had switched in sign and such households averaged Rs 3130 less from outside

employment. This is surprising given the finding that higher levels of schooling strongly increased the likelihood of regular outside employment. One possible explanation is that income levels might only one feature of outside employment which is attractive, and that higher incomes are more usually associated with relatively less stable and more dangerous jobs. In this case, the more educated might prefer relatively lower paid, but stable and more comfortable, jobs.

Impact on Income Distribution

A study of the impact of outside income on total income inequality in Palanpur described first how over time such income became increasingly important in the village economy over the survey years up to 1983/84. In 1957/58 outside job income made up about 8 percent of total income and this had risen to 34 percent by 1983/84 (recall that there are no income figures available for 1993). Regular outside income had a differing impact on the distribution of total income in the different years. In 1974/75 income from regular outside jobs was very equally distributed when villagers were ranked in terms of total per capita incomes. In 1983/84, outside job incomes accrued disproportionately to households which were richer in terms of total per capita income. In that year those who held well paying outside jobs were also those who were well-off in total income terms. A difficulty in interpreting the contribution of certain income sources to total income inequality arises from the fact that as a particular income source becomes increasingly important, it has a larger role to play in determining total income inequality. As a result, it becomes increasingly difficult to establish the counterfactual of what the distribution of total income would have been in the absence of that specific income source. Nonetheless, it seems clear that by 1983/84 (a year during which the agricultural harvest was also particularly poor) outside job income contributed markedly to increased income inequality. On the basis of an inequality decomposition exercise, the contribution of outside job income to total income inequality in 1983/84 amounted to 49 percent, while in the previous three survey years the contribution had not exceeded 13 percent.

Impact on the Poor: Direct and Indirect

Examination of the impact of outside job income on income inequality suggests that poor households in Palanpur derived relatively little direct benefit from employment opportunities outside the village (which is not to say that they did not engage in various non-farm activities *within* the village). A study of the chronically poor in Palanpur lends independent support to this contention. This study demonstrates that while a fair amount of income mobility does take place among village households, there exists in Palanpur a subgroup of households which are relatively less likely to participate in this income mobility and who figure highly among the poor in any one year. This group of households has in common that at least some members in any one year are employed as casual agricultural laborers. Agricultural labor is widely perceived in the village as a "last-resort" employment option, offering low incomes and working conditions which are often considered as demeaning. Households which were involved in agricultural labor in the earlier survey years, were considerably more likely to still be involved in this occupation in the later years, and to still be counted among the poor in those later years. Very few households engaged in agricultural labor have ever been able to move out of poverty by means of access to outside employment. This suggests that some form of rationing is taking place in terms of access to outside employment, and the long-term poor are most likely to feel the effect of this rationing.

Although the poor in Palanpur cannot be said to have benefitted much in a direct way from the expansion of off-farm employment opportunities outside the village, there are two routes through which the growth of outside jobs may have contributed to improved living standards of even the poor. First, between 1957/58 and 1983/84, despite a growing population, real wages received by agricultural laborers

increased from the equivalent of 2.5 kilograms of wheat per day to 5. We have already seen that agricultural intensification has been made possible by improved agricultural technologies. These have also raised the labor intensity of cultivation. However, it is hard to imagine that returns to labor would have risen by this magnitude, against a backdrop of a growing labor force, if the non-farm sector had not acted as an important additional source of labor demand.

Second, there is some evidence suggesting that over time per capita incomes in Palanpur have come to move less in concert around their long-term paths. In the earlier survey years, income shocks tended to affect all households in the same direction. Covariate incomes are widely recognized to act as critical impediments to well functioning village insurance and credit markets. Increased access to outside incomes has reduced the vulnerability of households to covariate income shocks and has resulted in greater divergence across households of their yearly income "draws". As income shocks become more idiosyncratic across households, there is increased scope for within-village transfers of incomes. A study of the Palanpur credit market in 1983/84, revealed that indeed an informal market was in operation and that while far from perfect, the poor were not entirely rationed out of this market nor facing impossibly high interest rates. While it is difficult to demonstrate that the off-farm sector played a decisive role in promoting and strengthening the credit market, it seems likely that it has exercised some influence in this respect.

Sources:

Drèze et al (1992), Drèze et al (forthcoming), Lanjouw and Stern (1993).

Box Table 1
Probit Results for the Probability of Holding a Regular Outside Job

Estimated Coefficients with probability values in parentheses:

	1974/75	1983/84	1993
Total Observations	112	953	1123
Observations at 0:	75	890	1087
Observations > 0:	37	63	37
Variable			
Constant	-0.62	-1.87	-2.298
	(0.073)	(0.000)	(0.000)
Land Owned	-0.01	-0.02	-0.003
	(0.409)	(0.022)	(0.734)
Land Cultivated	-0.03	-0.01	-0.028
	(0.013)	(0.158)	(0.015)
Household Size	0.17	0.06	0.087
	(0.002)	(0.005)	(0.009)
Literate Household Member	1.14		
	(0.013)		
Education of Individual		0.14	0.094
		(0.000)	(0.000)

Note:

1. For 1983/84 and 1993, the unit of observation is the individual, whereas for 1974/75 it is the household.

2. 7 Individuals from the population of 960 in 1983/84 were discarded due to lack of information on educational status. 10 individuals from the population of 1133 in 1993 were discarded for the same reason.

3. Caste dummies were included in the above specifications but were not significant and are not reported here.

Table 2

Tobit Results for Household Earnings from Outside Employment

1974/75 and 1983/84

Estimated Coefficients with probability values in parentheses:

	1974/75	1983/84
Total Observations	112	143
Observations at 0:	75	48
Observations > 0:	37	95

Variable		
Constant	-1586	-4349
	(0.073)	(0.004)
Land Owned	-39	-76
	(0.200)	(0.200)
Land Cultivated	-76	-99
	(0.013)	(0.038)
Household Size	488	898
	(0.000)	(0.000)
Literate Household Member	2748	-3130
	(0.003)	(0.037)

	1974/75	1983/84
Log Likelihood with All Coefficients (Except Constant) zero (0)	-412.9	-458.6
Log Likelihood for Model(M)	-396.7	-440.0
Likelihood Ratio Test Model	32.4	37.2
Degrees of Freedom	8	8
Critical χ^2	15.5	15.5

Box 5

The Papad Ladies

Shri Makila Gricha Udyog Lijjat Pappad is a women's food processing cooperative in India. It was founded by seven poor women in 1959 and originally financed by an 80 rupee loan. In 1978/79 the organization sold 300,000 rupees of pappads and had over 6,000 active earning members spread throughout seven states. Lijjat is a commercial enterprise run on cooperative lines on a putting out, or subcontracting, basis. Any woman over the age of fifteen may join as a member/co-owner by agreeing to certain principles: for example, religious devotion to work, cooperation for the benefit of all members, rolling pappads for Lijjat only and rolling a minimum of three kilograms of dough per day.

Each day at four in the morning, the women in charge of preparing pappad dough arrive at the Lijjat centres. Most centres have their own minibuses to collect workers. By six the dough is ready for distribution. Members come to collect dough and bring with them the pappads that they rolled in their homes, or a Lijjat owned shed, the previous day. The pappads are weighed and compared to the amount of dough distributed. Quality checks are very thorough with any pappads which are not clean, white and completely dry rejected. Then the pappads are packed in polyethylene bags and labelled. Members are paid in accordance with the quantity and quality of their pappads and given more dough. This is rolled in the afternoon when the sun is very hot and they dry quickly. A woman may earn between 4 and 40 rupees per day and 1.2 rupees are deposited into a compulsory savings account.

Sales are through agents who are paid on a commission basis. The organization does not depend, as do many cooperatives, on sales through official marketing outlets (e.g., the Khadi Village Industry Commission). Unlike most putting out arrangements, here all of the intermediaries are women in the same organization. As a result, the workers receive a larger part of the proceeds.

Source: Carr (1984)

Box 6

Pelileo - Jeans Tailoring in the Ecuadorean Sierra

The rural town of Pelileo is located some 200 kms south of Quito in the Sierran province of Tungurahua. The town has a population of 26,000 and is connected by paved road to the city of Ambato, about 20 kms away.

In Pelileo there are around 400 enterprises engaged in the tailoring of jeans. This activity started in the early 1970s when an entrepreneur started sub-contracting out to households. Rapid expansion of tailoring activities took place during the 1980s. While Pelileo has specialized in jeans tailoring, other communities in Tungurahua have focussed on shoe-making, knit-wear and shirt-making. In total some 3,000 people are employed in one capacity or other by the jeans economy. A few firms are large (about 15 out of the 400 in Pelileo, employing around 70 people each), but most are household based, with an average of no more than 5 members. Most of the household based enterprises operate in a subcontracting relationship with the larger firms.

Many of the smaller firms are located in the environs around Pelileo, where households combine their tailoring activities with agriculture. Agriculture in this part of Tungurahua province has stagnated in recent years, and tailoring represents an important, albeit modest, supplement to household income.

In the household based enterprises, one person, using a simple sewing machine, tailors a pair of modest-quality jeans in about 45 minutes. The cost of inputs in producing such jeans is about US $5.00, and profit received per pair of jeans is approximately $0.60. For a five-member firm, with each member tailoring perhaps 9 hours per day, six days a week, total weekly profits amount to less than $220. In many of the household firms, women and children make up the workforce. For these individuals alternative income sources are often scarce.

Larger firms produce jeans of better quality in approximately 27 minutes (compared with 23 minutes per pair in the US). A pair of such jeans fetches a price of around $14 in Quito. Unlike the lower quality products produced by household firms, and usually marketed locally with crudely imitated designer-labels, these jeans are sold under their own labels and are exported to Colombia, Peru and even as far as Canada.

Government provided credit to small enterprises, through the Banco Nacional de Fomento (BNF), can be obtained in loans ranging from $1,500-5,000. This credit is available at relatively attractive interest rates (about 36% per annum in nominal terms), but additional transactions costs through corruption, delays and complications significantly raise the total cost of credit from BNF. A private financial institution known as INSOTEC provides loans of similar size at a rate of about 6% per month. All in all, credit is available but expensive. Few of the Pelileo entrepreneurs turn to such sources of finance, preferring to draw on savings and sources of informal credit.

Source:
Personal interview with the head of the Pelileo Chamber of Commerce in Pelileo, Ecuador, May 1994.

Box 7

Subcontracting in Thailand

Subcontracting to individuals working in their homes in rural locations is a common practice in several industries in Thailand:

Clothing: Parent firms cut cloth and make dresses and blouses in their factories. They distribute the clothing to rural households to be embroidered on a piecework basis. The firms then inspect, package and market the finished goods. The relationship with households is intermediated by local agents who are hired, again on a piecework basis, to transport the garments, to choose households on the basis of their local information, and to collect and return the finished items. Because of the seasonal demand for workers in agriculture, piece rate wages increase during the peak season.

Knitting: In this case the capital requirements are more substantial, in the form of a knitting machine, and this cost is borne by the households (facilitated by a large supply of second hand machines). Again agents distribute yarn from the parent firm to the households and collect the finished goods. In the case of one firm interviewed, the yarn was sold, rather than advanced, to its agents, transferring the financing cost from the firm to the agents. The seasonal shortage of workers is especially acute in this industry because the peak demand for sweaters corresponds to the peak agricultural demand for labour. Under this pressure, piece rate wages vary by about 20% over the agricultural cycle. In the off season there is considerable underutilization of the capital equipment with workers expressing the wish to obtain more orders despite low pay.

Fish Nets: Fish nets are made either by tying string or by cutting, joining and finishing pieces of factory made netting. With both methods labour is subcontracted. A villager or a town merchant may supply string or netting to another villager to tie or finish. Again, town merchants operate through local agents. Unlike the previous cases however, here households sometimes buy inputs themselves, produce nets, and sell them locally. As with sweaters, peak demand for nets corresponds to peak demand for labour from agriculture and again piece rates increase about 20% at that time. The netting factories also subcontract (via agents) households to inspect and repair netting.

Bamboo Weaving (*anyaman*): households make products to order, with orders received through either village or outside intermediaries. Sometimes less skilled, or particularly difficult, parts of the work are subcontracted further. Capital equipment is minimal and owned by the households and they purchase the raw materials (bamboo and varnish). Occasionally the intermediaries supply credit on orders.

Sources: Mead, (1982); Smyth (1988).

Box 8

In Search of Markets

One of the important lessons of past attempts to increase non-farm employment in rural areas is that careful consideration of potential markets is crucial. This is particularly true in the case of programs to support women's employment as often the expansion of traditional craft-based activities with limit potential is encouraged, with limited success. Tototo Home Industries is an NGO operating out of Mombasa, Kenya. In addition to a training and credit program targetting women's groups, it runs a training course and workshop for sewing, tailoring and tie-dye and markets handicrafts through a retail shop in Mombasa, and wholesaled to other retail outlets in Kenya. Of the 42 women's groups participating in the program, at least 12 have marketed goods through the Mombasa retail outlet, retaining most of the profit. However, demand is not bouyant. The Bogoa Women's Group sold goods woven from palm leaves from 1980-85, then in 1986 their last order was returned by Tototo, having failed to sell at shows in Nairobi and Mombasa. They have no other market so production stopped. A similar problem was faced by a women's group in Mapimo. For a short period of time the group made a substantial profit making traditional jewelry from copper wire, brass and colored beads. However, after two years, they were producing far more than could be sold and the project collapsed. This problem was also experienced by the Women in Development Project in Swaziland. The local market was quickly saturated by production of crochet work, patchwork and other handicrafts. Other marketing problems have occured when goods are not suited to consumers demands. For example, a project in Honduras to process mangoes into mango puree faltered because the package size was far to large and because puree was not a traditional food. In response to these problems, smaller packaging was designed and new products developed such as jams, candy, and a mango filled biscuit.

If market potential is considered in advance, projects can be designed which take advantage of both local and export opportunities. The women's momvement in Guyana responded to a government ban on imports of cakes, biscuts and sweets by successfully initiating domestic rural production of coconut sweets. A ready-to-eat infant food mixed based on local foodstuffs was created and patented by a home science college in Madras, India. Produced by villagers, the product was marketed as an indigenous substitute for more expensive imported baby foods. It was exhibited at trade fairs, the World Vegetarian Congress and sold to schools and orphanages.

The rural weaving industry in Guatemaula was targetted by a local NGO, Fundap, in 1986, supported by USAID, Appropriate Technologies International and the government. At that time, handicraft production was a source of income for about 18 percent of the labour force. In the project area, the municipality of Momostenango in Westerm Guatemaula, the figure was 27 percent in 1976. The NGO researched the domestic and international market for artisanal products, and finding the products from this region competitive in quality and price, decided to invest in the development of both the wool and weaving industries. The project included credit, training in new techniques, the introduction higher quality sheep and improved product marketing. Of particular importance was the establishment of a weaver organization which jointly ran a exhibition and sales room.

Sources: Carr, M. (1984); Gutierrez, R. (1990); McCormack, et.al. (1986)

Table 1

Country	Percent of Rural Employment which is Non-Farm				Sectoral Breakdown				Percent of Income from Non-Farm
	Total	Male	Female		Mining & Construction	Manufacturing	Commerce & Transportation	Services	
Asia									
Bangladesh (1982)	44%				12%	39%	25%	24%	8%
China (1980)	11					55		28	
China (1986)	20					42		27	
India, All (1981)		18		(male)	9%	37%	26%	29%	
			11	(female)	8	54	11	27	
India, All (1991)		20		(male)	9%	30%	28%	33%	
			10	(female)	5	50	11	33	
India,									
Bihar (1991)		13	6						
Kerala (1991)		44	44						
Punjab (1991)		14	43						
Uttar Pradesh (1991)		25	8						
West Bengal (1991)		26	27						
Indonesia,									
Central Java (1985)	37	-	-		-	30			
Malaysia (1970)	34	38	28			5			
(1980)	49	53	42			10			
Pakistan (1982/83)	32					9			
Philippines (1971)	32								55%
(1985)	33					7[a]			56
Sri Lanka (1981)	46					8			
Taiwan (1966)	47				3	23	16	44	
(1980)	67								
Thailand (1985)	31					5[b]			

[a]1982

[b]1983

Table 1 Continued

Country	Percent of Rural Employment which is Non-Farm			Sectoral Breakdown				Percent of Income from Non-Farm
	Total	Male	Female	Mining & Construction	Manufacturing	Commerce & Transportation	Services	
Africa								
Burkina Faso, (1982/85)								
Sahelian zone								52%
Cameroon (1976)	8%	13%	3%	11%	30%	20%	39%	
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	36
Tanzania (1975)								23
Zimbabwe (1982)	19							
Zambia (1985)	24		~66					
Other								
Colombia (1974)	43%							
El Salvador (1975)	32							

Sources: Anderson and Leiserson (1980); Byrd and Lin (1990; Chandrasekhar (1993); Haggblade, *et.al.* (1989); Hossain (1987); Islam (1987); Milimo and Fisseha (1986); Ranis and Stewart (1993); Reardon, *et.al.* (1992); Weijland (1989); Government of India (1991).

Table 2a

Factor Productivities and Factor Intensity
in the Manufacturing Sector, Thailand

(Thousands of Baht)

Number of Hired Workers	Y/L	K/L	Y/K
0 - 9	22.5	85.6	0.26
10 - 49	29.2	67.7	0.43
50 - 99	46.6	77.6	0.60
100 - 199	51.9	87.6	0.59
> 199	80.1	216.1	0.37

Notes: See Table 2b.

Table 2b
Factor Productivities and Factor Intensities by Employment Size and Capital Size
India - 1977
(Thousands of Rupees)

	Y/L	K/L	Y/K	W	(Y-WL)/K
Size by Original Value of Plant & Equipment					
< 1	2.0	2.5	0.97	1.32	0.34
1-10	2.7	4.7	0.69	1.69	0.26
10-20	3.8	7.6	0.60	2.13	0.26
20-50	4.4	10.1	0.49	2.45	0.22
50-100	4.9	11.0	0.48	2.64	0.22
100-200	5.5	15.4	0.38	3.13	0.17
200-500	6.0	16.7	0.36	3.36	0.16
500-1,000	5.4	17.2	0.31	3.47	0.11
> 1,000	7.2	21.6	0.26	5.08	0.08
Size by Number of Hired Workers					
0	2.5	4.3	0.59		
1	2.0	4.1	0.48		
2	1.9	4.9	0.39		
3	2.3	7.2	0.32		
4	1.6	6.2	0.26		
5	2.3	7.1	0.33		
6-10	4.6	10.2	0.45		
11-15	5.4	10.0	0.54		
16-20	6.2	9.5	0.66		
> 20	4.9	5.8	0.85		

Notes: Y is net value added, defined as output minus purchased materials and services. K is the market value of fixed assets and inventories. L is hired workers plus 1.5 persons per plant to allow for working owners and unpaid family labour.
Source: Little, *et. al.* (1987)

Table 3

Social Benefit Cost Ratios

Industry	Less than 50 Employees	More than 50 Employees
Sierra Leone (1974/75)		
Bakery	3.43 (3.30)	1.03 (0.68)
Wearing Apparel	1.93 (1.52)	0.53 (-.30)
Shoes	2.73 (1.89)	2.00 (1.40)
Furniture	1.83 (1.18)	0.87 (0.48)
Metal Products	1.75 (1.25)	1.61 (0.90)
Honduras (1979)		
Wearing Apparel	0.82	0.89
Shoes	1.27	0.54
Furniture	1.44	0.84
Metal Products	1.21	0.74
Jamaica (1979)		
Wearing Apparel	1.13	1.79
Furniture	2.74	1.36
Metal Products	1.92	1.58
Tanzania (1988)		
Grain Milling	2.67	0.77

Notes: Gross output and purchased inputs to calculate value added are in domestic prices except for the figures for Tanzania and for Sierra Leone in parentheses which are valued at world prices (i.e. domestic prices adjusted for nominal tariffs). For the first three countries, hired labour is valued at actual wages for small-scale firms and .8 of wages for large. Unpaid labour is valued at skilled wage in small-scale firms. Capital is valued at a 20% rate of interest. The shadow values used for Tanzania were not reported - probably they follow Leidholm and Mead.

Source: Leidholm and Mead, 1987; Bagachwa and Stewart, 1992 (Tanzania).

Table 4

Labour Productivity, Capital Intensity and Female Participation

(1979/80)

Industry	Capital per Worker (Tk)	Value Added per Labour Day (Tk)	Percentage of Female Workers
Tailoring	4,982	27.51	20.4
Dairy Products	3,076	23.42	9.8
Gur Making	711	20.02	nil
Carpentry	3,009	19.88	4.4
Jewelry	1,283	18.67	2.1
Blacksmithy	760	15.77	2.4
Handloom Weaving	1,594	15.07	37.6
Oil Pressing	1,006	12.58	42.5
Pottery	799	11.76	47.0
Paddy Husking	303	7.38	56.0
Bamboo Products	313	5.22	49.0
Mat Making	465	5.21	62.8
Fishing Nets	265	4.78	63.3
Coir Rope	145	4.07	64.3

Source: Hossain (1987).

Table 5

Average Net Value Added per Hour Worked in Cottage Industries

(1980/81 - Baht)

Province

Industry	Khon Kaen	Roi Et	Chiang Mai
Thai Noodles	7.63	8.27	6.98
Ox Carts	-	6.96	-
Silk Weaving	3.20	< 0	1.74
Cotton Weaving	< 0	0.38	1.10
Woodcrafts	2.72	3.75	10.59
Bamboo Products	1.44	2.48	3.29
Mats	1.42	1.00	4.57
Pottery	6.50	-	3.25
Bricks	-	-	2.07
Handtools	4.36	1.88	2.75
All Major Industries	2.44	2.53	5.76

Source: Romijn (1987)

Table 6

The Distribution of Farm Household Income Sources

Farm Size	Income		
Hectares	Agriculture	Non-Farm	Total
Japan (1978)		*Million Yen*	
> 2.0	3.49	1.45	4.95
1.5 - 1.99	2.26	2.13	4.39
1.0 - 1.49	1.63	2.58	4.21
0.5 - 0.99	0.80	3.34	4.14
0.1 - 0.49	0.24	3.79	4.02
Java (1981)		*Million Rupiah*	
> 1.0	1.22	0.92	2.14
0.5 - 0.99	0.30	0.41	0.71
0.25 - 0.49	0.24	0.36	0.60
< 0.25	0.15	0.18	0.33

Source: White (1991).

Table 7

The Distribution of Working Time for
Workers in Various Cottage Industries in Bangladesh, 1980

Industry	Percentage of Working Days Employed in		Estimated Weekly Working Hours	% Devoted to Industry
	Industry	Agriculture		
Rice Husking	60.4	40.7	30.3	48.8
Male	43.3	56.9	40.6	32.8
Female	93.5	9.5	17.6	94.1
Jute Products	36.3	29.9	33.5	29.4
Male	6.8	53.1	41.3	4.6
Female	90.7	9.3	22.5	93.6
Bamboo Products	46.9	32.5	35.3	29.6
Male	39.4	35.6	39.2	23.4
Female	99.0	15.1	17.5	94.1
Pottery	76.2	15.9	45.0	69.0
Male	68.9	20.7	46.5	59.5
Female	100.0	0.0	40.7	100.0
Handloom Weaving	94.4	3.1	38.3	91.8
Male	90.1	4.9	43.5	87.6
Female	99.1	1.0	32.1	98.7

Source: Hossain (1987)

Table 8

Marginal Budget Expenditure Shares

	Gusau N. Nigeria (1976/77)	Rural Sierra Leone (1977)	Muda Malaysia (1972/73)	North Arcot, S. India (1982/83)
By Commodity Group				
Food, alcohol & tobacco	76.1%	67.9%	37.7%	63.0%
Clothing & footwear	8.9	7.4	8.1	7.7
Consumer expendables	4.4	10.0	3.7	2.4
Housing	0.4	-	12.4	0.0
Transport	2.7	3.0	3.1	3.4
Durables	1.4	1.9	7.1	1.9
Education & health	1.6	0.8	5.2	2.4
Services, & social & religious	4.4	9.0	22.7	19.3
By Location				
Locally Produced				
Foods	70.3%	66.1%	24.6%	48.5%
Nonfoods	11.3	17.8	36.9	30.8
Regional Imports				
Foods	5.8%	1.1%	13.1%	12.0%
Nonfoods	12.6	15.0	25.4	8.6

Source: Haggblade, *et.al.* (1989)

Table 9

Value-added and Hired Labour Multipliers
for Kutus Region, Kenya, 1988

Production Activity	Value-added		Hired Labour	
	Fixed price Multiplier	Mixed Multiplier	Fixed price Multiplier	Mixed Multiplier
Livestock	1.46	1.24*	0.10	0.08*
Coffee	1.44	1.12*	0.11	0.08*
Foodcrops	1.43	1.10*	0.11	0.08*
Coffee processing	1.26	0.07	0.10	0.01
Farm-based non-farm	1.26	1.04	0.17	0.15
Services	1.07	0.90	0.19	0.18
Manufacturing	0.84	0.69	0.12	0.11
Transport	0.58	0.46	0.06	0.06
Retail	0.58	0.40	0.05	0.04

Notes: The fixed price multiplier assumes perfect elasticity of supplies of all goods while the mixed multiplier assumes perfect inelasticity of supplies of agricultural products (identified by *. The multipliers give the amount that value-added or the wage bill would increase with a 1.00 Ksh increase in the supply (°) or demand for a given commodity/service listed on the left.

Source: Lewis and Thorbecke, 1992.

Table 10
Costs of Small Enterprise Credit Projects

Organization	Country	Type	Average Loan Value	Administrative Cost (% of Loan)	Arrears (% of Loans Outstanding)
Credit Only					
Krishi	Bangladesh	GO-CB	$126	4.0%	10.5%
Agrani	Bangladesh	GO-CB	101	5.2	4.3
BKK	Indonesia	G	44	5.3	6.0
Janata	Bangladesh	GO-CB	125	5.3	14.5
Rupali	Bangladesh	GO-CB	119	6.2	6.2
FDR/Peru	Peru	DB	5961	9.0	8.0
Banco de Pacifico	Ecuador	CB	1100	13.0	7.0
DB Mauritius	Mauritius	DB	830	13.0	N/A
Uttara	Bangladesh	GO-CB	122	25.6	12.1
Bank Money Shops	Philippines	CB	687	28.0	N/A
SEDCO	Jamaica	DB	280	275.0	N/A
Credit plus Technical Assistance					
DDF/Solidarity	Dominican Republic	NGO	$1267	19.1	33.0
IDH	Honduras	NGO	1724	32.5	42.0
DDF/"Micro"	Dominican Republic	NGO	1680	44.0	42.0
UNO	Brazil	NGO	200	85.0	8.0
PfP/BF	Burkina	NGO	670	185.0	23.0

Notes: GO = Government owned; CB = Commercial bank; DB = Development bank; NGO = non-governmental organization. The information here is derived from studies done in the early 1980's so refers to that period.
Source: Leidholm and Mead, 1987.

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