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RURAL DEVELOPMENT AND RURAL-URBAN
MIGRATION: THE ELUSIVE RELATIONSHIP

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Discussion Paper No. 103

June 1983

Rural Development and Rural-Urban
Migration: The Elusive Relationship

by

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An earlier version of this paper was prepared for the 12th International Conference of the Institute for International Development and Co-operation of the University of Ottawa in October 1981. The preparation of the report benefited greatly from the facilities of the Center for Research on Economic Development, the Center for Population Planning, the Population Studies Center, and the University of Michigan Libraries. A number of current and former colleagues have offered helpful comments on earlier drafts.

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Discussion Paper No. 103, July 1983.
Published by the Center for Research on Economic Development,
University of Michigan, Ann Arbor, Michigan, 48109, U.S.A.

ABSTRACT

This paper recapitulates the debate over whether rural development policies can be expected to substantially reduce the rate at which people leave the countryside for the cities in developing countries. First, the evidence of household-level and aggregate migration studies is brought to bear on the issue. Contrary to conventional wisdom, cross-sectional migration studies in developing countries generally fail to support the idea that raising rural incomes will reliably reduce rural out-migration. A number of time-series and cross-national studies are found to offer some support for the potential of rural development to reduce rural-urban migration, but even these studies suggest that urban factors dominate the flow of rural-urban migration. Specific rural development programs are also reviewed, which are often found to be as likely to stimulate as to inhibit rural out-migration.

RESUME

Ce rapport récapitule le débat concernant l'hypothèse suivante: le développement rural réduit d'une manière significative la croissance du taux de migration vers les villes dans les pays en voie de développement. La première partie du rapport analyse les résultats de certaines enquêtes sur la migration. Contrairement à l'hypothèse conventionnelle, les études basées sur des échantillons des populations des pays en voie de développement ne soutiennent pas l'argument qu'une hausse des revenus ruraux freine l'exode rural. De nombreuses études basées sur des données temporelles recueillies dans de divers pays offrent un nombre restreint de preuves que le développement rural décourage la migration vers les villes. Cependant, ces études indiquent que des facteurs urbains ont la plus grande influence sur la migration des campagnes vers les villes. La deuxième partie du rapport présente une analyse de certains programmes de développement rural. L'analyse montre que ces programmes pourraient inciter aussi bien que décourager l'émigration rurale.

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INTRODUCTION

The overcrowding of cities in many areas of the Third World has led a number of governments to seek ways to stem the exodus from rural areas. Rural development programs are often suggested as means for retaining the population in rural areas. Those making such recommendations typically write as if there were conclusive evidence that rural development is indeed effective in slowing rural-urban migration. However, the conclusion drawn from the studies reviewed in this paper indicates there is no clear-cut relationship between the level of development in rural areas and the rate of migration to the cities. Indeed, many of these studies suggest that rural development programs are as likely to stimulate rural out-migration as to inhibit it. The evidence for this conclusion comes from Africa, Asia, and Latin America alike.

The recognition that rural development may be ineffective in slowing rural-urban migration is not new with this paper, but is found also in three recent reviews on rural development and migration (see Rhoda, 1979; Laquian, 1980; and Findley, 1981).¹ Even the World Bank now "doubts that rural development or industrial decentralization policies could solve the fundamental urbanization problems in the developing world..." (Ayres, 1983, p. 149). The issue is by no means settled yet, and some writers still hold to the conventional wisdom that rural development is efficacious in retaining the population in rural areas (e.g., Todaro and Stilkind, 1981). While the skeptical view adopted in this paper has only recently come to the fore, it seems to have always had its adherents. "It has been suggested that agricultural development may discourage migration to urban centres by raising the standard of living of the peasant and by offering him a more diversified range of services. There is clear evidence that this assumption is unjustified" (Israel, 1969, p. 4). According to Ellen Bussey (1973, p. 108), "even at best, programs intended to counter the trend toward severe population concentration can only be expected to pay very limited dividends in the foreseeable future." The late Adlai Stevenson, speaking to a UN audience, observed: "For too long we have proceeded on the false assumption that people would really rather live in villages than elsewhere and that it is better for society if they did. The trouble is they don't -- even when the village is modernized and sanitized and electrified, people move into larger towns and cities" (quoted in Ward, 1977, p. 28).

WAGES AND OUT-MIGRATION IN ECONOMIC MODELS

In most economic models of migration in developing countries, rural-urban migration is specified as a function of the size of the expected rural-urban income

differential. That is, rural-urban migration is presumed to be positively related to urban wages and inversely related to both the rate of urban unemployment and rural wages (Reder, 1963; Sahota, 1968; Todaro, 1969). Such models lead to the suggestion that governments should hold down urban wages and raise rural incomes if they want to slow the rate of rural-urban migration. In the words of Michael Todaro (1976a, p. 222): "Any real attempt to tackle the widespread problem of excessive rural-urban migration in the context of rising urban unemployment will of necessity require concentrated efforts at narrowing the ubiquitous and, in most cases, growing imbalances between urban and rural 'expected' incomes by holding the line on the growth of the former while focusing on rapidly raising the latter."

The usual assumption that higher rural incomes should necessarily lead to less out-migration does not follow directly from economic theory. A rise in wages in a particular location should definitely lead to more in-migration (other things held constant), so long as people, once they decide to move, prefer to move to places with higher incomes. But higher wages at the point of origin have an ambiguous effect on out-migration, as a positive income effect can be expected to offset in part or in whole a negative substitution effect. Hence, it is logical to expect that in-migration should be much more responsive to economic conditions than out-migration (Lowry, 1966).

A positive effect of income on rural-urban migration may be derived from a number of sources. For one, families with higher incomes have a greater ability to finance the move of a family member to a city (Bishop, 1961; O'Neill, 1970). Higher income families also typically enjoy better information about urban opportunities, which facilitates migration independent of actual income (Connell et al., 1976). Second, there may be a positive income elasticity of demand for urban goods and urban lifestyles (Khuri, 1967; Desmond, 1975; Ohashi, 1980). Third, migration is typically selective of more educated rural inhabitants while educational attainment generally rises with income level, so that in the long run, higher incomes should lead to more people becoming educated and leaving the rural areas (Yap, 1977; Preston, 1979; Rhoda, 1979; Laquian, 1980). Finally, "the rising aspirations that are triggered by improved levels of living in the rural areas may stimulate many to be attracted by what they see as even better opportunities to improve their lot in urban locations" (Goldstein, 1979, p. 24).

Household-level Migration Studies²

Widespread empirical support exists for a positive income effect on urban-bound migration. A large number of studies using household-level survey data find that urban migrants on the average come from better-off rural households, including studies from Lebanon, Peru, Ghana, Argentina, Colombia, Thailand, Nigeria, Taiwan, Bangladesh, Indonesia, Senegal, India, and Ecuador (Khuri, 1967; Doughty, 1968; Caldwell, 1969; Wilkie, 1971; Simmons and Cardona, 1972; Fuhs and Vingerhoets, 1972; Essang and Mabawonko, 1974; Speare, 1974; Chaudhury, 1978; Hugo, 1978; de Jonge, 1978; Mehta, 1982; Preston and Preston, 1983; respectively). Behrman and Wolfe (1982) find that among females in Nicaragua, there is a significantly positive association between rural earnings and rural-urban migration. On the other hand, Sovani (1966, p. 145), Hill (1972, p. 98), and Saint and Goldsmith (1980), find that urban-bound migrants in rural samples from India, Nigeria, and Brazil are more likely than nonmigrants to come from poor cultivator families. Hay (1980) and Wimberly, Flinn and Berry (1983) find significantly negative coefficients on income in individual-level regression analyses of out-migration in rural samples from Tunisia and Colombia.

In general, rural-urban migration in developing countries does not appear to be consistently selective of either relatively poor or relatively well-to-do rural residents. Harris and Steer (1968), D. Adams (1969), Udall (1981), Goddard (1974), Gallin and Gallin (1980), Stier (1983), and Yoo (1982) find no difference in their Jamaican, Colombian, Nigerian, Taiwanese, Panamanian, and Korean rural samples between migrants and nonmigrants in household landholdings or socioeconomic status. Byerlee, Tommy and Fattoo (1976) find that uneducated urban migrants in Sierra Leone tend to come from marginally below-average while educated migrants on the average come from very slightly better-off households. Bates (1976), Oberai and Singh (1980), and Maude (1981) find in their rural samples from Zambia, India, and Malaysia that migrant households are slightly poorer on the average before remittances are taken into account and slightly better-off afterwards. The problem of causality bedevils almost any comparison of migrant and nonmigrant household incomes.

One reason for the lack of a consistent association between economic status and out-migration is that migrant selectivity may decrease over time as migration becomes more widespread (Balan, 1969). As Browning and Feindt (1969, p. 353) note: "The more recent arrivals to Monterrey, in contrast, represent a 'mass' migration that does not differ substantially from the characteristics of the population of the communities of origin." Two Latin American studies (Romero and Flinn, 1976; Kemper, 1977) find positive selectivity by education and class only among those who

moved prior to 1960. Dipolo and Suarez (1974, p. 194) note that in their Venezuelan village sample, "migration to the city is not attributable to those families identified as the upper stratum. All families, regardless of their socioeconomic status, have some member who has migrated to the city." Likewise Hill (1977, p. 153) notes that "in parts of rural Fanteland in southern Ghana where land is very plentiful, fathers actively encourage all their sons to move when they are young -- some of whom return in their middle years." At the other extreme, Hill (1977, p. 143) cites a Hausa village in northern Nigeria where, in contrast to another village with an inverse association between status and out-migration, "there is no such relationship, rates of outward migration being low for all categories of father."

Another reason for the divergent findings regarding the association between socioeconomic status and urban-bound migration is the heterogeneity of migration streams. A number of studies find that rural out-migrants are composed of two distinct groups: one is relatively poor and tends to engage in temporary migration to other rural areas; the other is relatively affluent and well-educated and engages in permanent city-bound migration (Flinn and Cartano, 1970; Connell et al., 1976; Fuhs and Vingerhoets, 1977; Chaudhury, 1978; Roberts and Samaniego, 1978; Mazur, 1982).³ It would be unwise to make any hard and fast generalizations, though, for we observe almost every kind of migration pattern imaginable. A number of studies, including ones from India, Ivory Coast, and Indonesia, find that both types of migrants move to urban areas, with the chief difference being that the poorer migrants spend shorter periods in urban areas (Eames and Schwab, 1964; Joshi, 1973; Hugo, 1978). Nelson (1976) cautions against any such simplistic generalizations, noting that while sometimes permanent migrants are more affluent than temporary migrants, often the pattern is reversed. For example, Curtain (1975) argues that in Papua New Guinea it is the poorer migrants who develop a more permanent attachment to urban areas.

Regression Analyses of Migration and Urbanization

While many studies of migration rates use the ratio of rural and urban incomes as an explanatory variable, this presumes a symmetry of response to urban and rural wages or earnings. Since, as we have seen, there are compelling reasons for expecting a difference in the responses to the two variables, it is important to enter urban and rural wages or earnings separately in regression models of migration. It is possible for the rural-urban income differential to be significantly related to migration rates even without an association between rural incomes and rural out-migration -- as long as there is a strong association between urban wages and urban in-migration.⁴ Almost all empirical studies which enter both urban and rural wages separately find that urban

wages are indeed positively related to urban in-migration to a statistically significant degree; it is the relationship between rural incomes and rural out-migration which is in question. Even those studies which find the expected inverse association between wages at origin and out-migration typically find a much higher magnitude of response to the destination wage variable. For example, N. Adams' (1969) Jamaican study finds elasticities on destination wages approximately three times as high as on wages at origin.

Of those cross-sectional aggregate migration studies that include measures of wages or incomes at point of origin, some find a significant negative coefficient, other find a significant positive coefficient, while the largest number of studies find no significant association at all. Table 1 presents a summary of such findings (not necessarily complete) from Africa, Asia, and the Americas. Collectively, these results cast doubt on the idea that higher rural earnings can be expected in the long run to reliably inhibit rural out-migration to any major extent. This conclusion is in direct contrast to most previous surveys of migration studies in the developing world, which typically report that out-migration is consistently found to be significantly, inversely related to origin wage rates (Brigg, 1973; Connell et al., 1976; Simmons, Diaz-Briquets and Laquian, 1977; Yap, 1977; Berry and Sabot, 1978; Todaro, 1976b; 1980). The majority of the studies cited in Table 1 do not refer specifically to rural-urban migration, but rather to migration between states or provinces.

One of the best of the studies cited in Table 1 is that of Byerlee, Tommy and Fatoohi (1976). As part of a larger project, the researchers collected detailed information on incomes, wages, and employment in a number of locations in Sierra Leone. The data were aggregated for the purpose of estimating the determinants of migration rates. The researchers find that rural-urban migration responds significantly to urban wages, as expected, but not to either rural wages or urban unemployment rates. Interestingly, a separate analysis of rural-rural migration showed an equal response (of opposite sign) to rural wages at origin and destination, as one would expect in a world of costless information and mobility. This finding also defuses the criticism of some (Connell et al., 1976; Rempel, 1981) that observed rural wages are poor measures of the opportunity cost of rural workers. The finding of insignificance on the unemployment variable is a common one and may reflect poor measurement or misspecification. Barnum and Sabot (1977) calculate a measure of probability of securing an urban job, which they find to be significantly related to rural-urban migration in Tanzania.

A number of migration studies yield mixed results. Greenwood (1971) finds a negative coefficient on origin wages for out-migration from urban areas in India but a

TABLE 1
 CROSS-SECTIONAL REGRESSION RESULTS OF EFFECT OF WAGES
 OR EARNINGS AT ORIGIN ON OUT-MIGRATION RATES

Study	Country	Sign of coefficient (if significant)
<u>Africa</u>		
Beals et al. (1967)	Ghana	-
Greenwood (1969)	Egypt	-
*Byerlee et al. (1976)	Sierra leone	0
*Mertaugh (1976)	Morocco	+
*Barnum and Sabot (1977)	Tanzania	0
Knowles and Anker (1977)	Kenya	0
*Huntingdon (1977)	Kenya	-
*House and Rempel (1980)	Kenya	0
*Rempel (1981)	Kenya	0
<u>Asia</u>		
*Greenwood (1971)	India	+
Harris (1974)	Papua New Guinea	0
Munro (1974)	Turkey	0
Lithwick (1979)	Israel	+
*Mojtahed (1980)	Iran	0
*Dhar (1980)	India	-
*Banerjee and Kanbur (1981)	India	+
<u>Americas</u>		
Sahota (1968)	Brazil	-,0
N. Adams (1969)	Jamaica	-
*Schultz (1971)	Colombia	-,0
Levy and Wadycki (1972)	Venezuela	-,0
*Unikel et al. (1973)	Mexico	+
Eaton (1976)	Brazil	0
Greenwood (1978)	Mexico	0
King (1978)	Mexico	0
Falaris (1979)	Peru	0
*Silvers and Crosson (1980)	Mexico	0
Greenwood et al. (1981)	Mexico	+
Garrison (1982)	Mexico	+
Fields (1982)	Colombia	0
*Schultz (1982)	Venezuela	-

NOTE: Those studies marked with an asterisk (*) are studies of rural-urban migration and should be given greater weight.

positive coefficient on origin wages for out-migration from rural areas. Overall, Greenwood, Ladman and Siegel (1981) find a positive earnings coefficient regarding interstate out-migration in Mexico, but a negative coefficient with respect to short and medium distance moves. Sahota (1968), and Levy and Wadycki (1972) both find significant negative coefficients in certain cases, but very small and insignificant coefficients on origin wages for young adult males, ages 15-29 and 15-24 in Brazil and Venezuela, respectively. Curiously, with data from Colombia, which borders on both Venezuela and Brazil, Schultz (1971) finds that only young men up to age 26 appear to respond to rural-urban wage differentials. Fields (1982), also using Colombian data, finds a marginally significant negative coefficient on origin wages for only relatively well-educated individuals.

Two studies not included in Table 1 (because of evidence of apparent severe multicollinearity in the samples) are Shaw (1974), and Masser and Gould (1975, p. 83-90). Shaw finds a large and significantly positive correlation between agricultural income per worker and rural out-migration rates in Chile, but when a migrant stock variable is included in the regression equation, the other variables all fade in significance. Masser and Gould find a simple correlation of essentially zero between district income and out-migration rates in Uganda, and a large positive correlation between district income and in-migration rates, consistent with the findings of most other migration studies. The regression results indicate an opposing pattern, due to the confounding influence of district urbanization and educational attainment -- both of which are highly correlated with district income and have direct effects on migration in the same direction.

It is plausible that growth in earnings should be more closely related to migration flows than is the level of earnings. Cross-sectional relationships between income and migration may reflect long run adjustments to higher incomes, which in the aggregate can be either positive or negative. But short-term variations in income are probably associated with a smaller positive income effect on migration and hence are more likely to be negatively associated with out-migration. Sahota (1968), Greenwood (1978), and Silvers and Crosson (1980) find that growth in income is significantly negatively associated with out-migration, although Shaw (1974), and Banerjee and Kanbur (1981) do not.

Another possible reason for the lack of a consistent association between wage levels and out-migration is the confounding influence of income distribution. There are at least three possible explanations that can be given for why a more unequal distribution of income should be associated with greater out-migration. One suggestion is that real incomes do matter but that mean earnings or wage levels fail to

adequately reflect the situation of the poor (Rempel, 1981). A second suggestion is that "inequality tends to compel the poor (though not the poorest) to move, and to enable the better-off to do so also" (Connell et al., 1976, p. 196). Finally, extreme inequality of landholdings, as in the latifundia-minifundia system in much of Latin America may reflect an economic system which performs poorly in providing sufficient employment (Shaw, 1976).

The empirical evidence is scanty, but it appears that it is probably the employment consequences of polarized agrarian structures rather than income inequality per se which stimulates out-migration. Rempel (1981) finds that higher inequality of income is associated with greater out-migration in Kenya. But Banerjee and Kanbur (1981) find that greater inequality of income is associated with less out-migration in rural India, while greater inequality of operational landholdings is associated with higher rates of out-migration. Connell et al. (1976) report on the basis of Indian village data that out-migration rates are higher from villages with more unequal distributions of operational landholdings, but they report no significant association with either inequality of landownership or inequality of income, which vitiates their own conclusion. Fragmentation of landholdings appears to also be positively associated with rural out-migration in Kenya (Wasow, 1981). Shaw (1974; 1976) finds inequality of landholdings to be strongly associated with aggregate rates of rural out-migration in Latin America. On the other hand, while Lieberman (1980) finds that fragmentation of landholdings appears to be positively related to rural out-migration in Turkey, inequality of landholdings is inversely related to out-migration. Mojtahed (1980) finds rural out-migration in Iran to be weakly, positively related to inequality of rain-fed landholdings, but unrelated to inequality of irrigated landholdings.

A major obstacle to analyzing the relationship between changes in migration and wage gaps in developing countries over time is the absence of reliable annual data on migration or sectoral earnings. Table 2 reports results for time-series regression analyses of rural-urban migration (all use either the ratio of rural and urban wages or the ratio of agricultural and nonagricultural average productivities as predictor variables). The evidence from Mexico, Taiwan and Korea alike seems to indicate a consistent association between wage (or productivity) gaps and migration flows. However, these results may largely reflect the "pull" of urban conditions and offer uncertain support for the importance of "push" factors. Furthermore, while the three studies using Japanese data disagree on the situation in postwar Japan, they agree that between the two World Wars (when Japan was still a developing country) that there was no association between relative earnings and the rate of off-farm migration.

TABLE 2
TIME-SERIES ESTIMATES OF EFFECT OF RURAL-URBAN
EARNINGS RATIOS ON RURAL-URBAN MIGRATION

Study	Country	Sign of coefficient (if significant)
Gollas (1980)	Mexico	-
Burford (1970)	Taiwan	-
Renaud (1977)	South Korea	0
Rehnberg (1977)	South Korea	-
Park and Fullerton (1980)	South Korea	-
Grosse (1981)	South Korea	-
Minami (1967)	Japan	0,-
Misawa (1974)	Japan	0
Mundlak and Strauss (1978)	Japan	0,-

The author's own analysis of off-farm migration in the Republic of Korea (Grosse, 1981) finds that while the ratio of productivities between agriculture and nonagricultural sectors appears to be significantly, negatively related to the rate of off-farm migration, this association is relatively modest. The bulk of the explanatory power of the model is accounted for by measures of urban absorptive capacity as reflected in nonfarm output growth rates and the relative share of the urban population. These statistical results are supported by the fact that despite an extraordinarily successful program of integrated rural development in Korea during the 1970s (resulting in the near elimination of rural-urban income differentials according to official statistics), there has been no deceleration in rural-urban migration. "The fact is that average incomes (and even expected incomes) may differ widely between areas without inducing a mass movement from the lower income area, or there may be small income differences coexisting with a high rate of migration, or there may be an increase in migration after a fall in income differentials" (Peek and Standing, 1979, p. 747). One reason for the latter phenomenon is that there may be a state of disequilibrium: "because more people are willing to move than jobs are available, so that movement off farms follows the demand for labor even when farm incomes improve, relative to nonfarm incomes" (Bishop, 1961, p. 29).

The absence of annual migration data from Africa has led two authors to estimate migration-type models with annual data on change in urban unemployment. The argument made is that if one includes an index of employment creation, then variations in urban unemployment should be linked closely to rural-urban migration flows. Levi (1973) estimates a regression model for Sierra Leone with data from 1959 to 1970, in which the explanatory variables are urban real wages, rural real income per capita, urban employment, and lagged urban unemployment. All variables are significant at the .05 level except for agricultural income, which is of borderline statistical significance. Knight (1972) estimates a similar model with data from Ghana from 1956 to 1967. Knight finds all four of the explanatory variables in his model (net change in urban employment, average urban wage, rural supply price of labor, and number of school-leavers) have positive coefficients, although only the first two are statistically significant. Levi (1973) provides very weak support, at best, for the potential role of higher rural incomes in reducing urban unemployment by keeping individuals in rural areas while Knight (1972) suggests that the effect, if any, is in the opposite direction (that is, higher rural earnings stimulate migration and urban unemployment).

Several recent regression analyses of urbanization and rural-urban population shifts have used aggregate cross-national data. Mundlak (1978) finds the rate of transfer of labor out of agriculture to be negatively related to the ratio of productivities between agriculture and other sectors (a proxy for earnings ratios), but this association is dominated statistically by the positive effect of the nonagricultural labor force share on the rate of labor transfer out of agriculture. A study prepared for the United Nations (1980) finds rural-urban migration to be positively related to growth in agricultural output per rural resident, but this result probably derives at least in part from bias due to reverse causation. Kelley and Williamson (1981) conclude on the basis of a simulation model that productivity growth in agriculture slows urbanization. Pernia (1981) finds with a pooled cross-section time-series sample of Asian nations that the rate of urbanization is significantly negatively related to the rate of agricultural output growth. Bilborrow and Winegarden (1982) report a significant negative association across countries between agricultural incomes and rates of rural-urban migration.

Taken as a group, these cross-national studies suggest that higher levels of agricultural production should definitely lead to lower rates of rural-urban migration, other things held constant. The highly abstract nature of cross-national aggregates makes this finding of questionable comfort for national planners. One finding common to all methodologies is that the "pull" of urban economic conditions appears to

dominate the "push" of rural conditions in explaining variations in rural-urban migrations. This is consistent with the observation of Samuel Preston (1979, p. 197) that, "in general rural out-migration is fastest in countries where economic performance allows the best possibilities for accommodating the exodus. This view contrasts with one in which absolute deprivation in rural areas, associated in part with rapid rural natural increase, is seen as the motive force driving multitudes to the city."

RURAL DEVELOPMENT POLICIES AND RURAL-URBAN MIGRATION

As Lucie Colvin (1981, p. 335-36) notes, it is usual, for analysts to "conclude that the rural exodus stems primarily from lack of rural development. It has become common to assume the converse is also true: rural development will stem the tide of the rural exodus. There can be no quarrel with the general statement that the rural exodus comes in response to the faster development of urban areas, but the conclusion that rural development is a sufficient answer to the problem does not follow." Colvin (1981, p. 109) also notes, "it has become customary to list an effect on the rural exodus as a goal of virtually every rural development project." Unfortunately, such expectations are based mostly on speculation rather than empirical evidence. In this second half of the paper, specific types of rural development programs are considered as well as a broader perspective of what "development" entails in terms of modernization and structural change.

Modernization and Structural Change

A number of authors have suggested explanations for why rural development might increase the volume of rural out-migration which can be put under the rubric of modernization, institutional change, and social differentiation (Conning, 1972; Germani, 1973; Godfrey, 1979; Wagner and Ward, 1980). The introduction of new structures and practices from urban areas may encourage new orientations which make urban lifestyles appear more attractive (Fuguitt, 1979; Rhoda, 1979; Lauwagie, 1980). Rural youth may become increasingly unwilling to submit to the discipline of their elders (Hart, 1974; Yoo, 1982). This factor is frequently cited as stimulating migration in Africa in particular (Imoagene, 1974).

Commercialization of peasant agriculture can be expected to lead to a behavioral revolution in agriculture resulting in a lower use of family labor. This phenomenon can be approached from either a neoclassical economics perspective (Maruyama, 1967; Ward, 1977) or a political economy perspective (McGee, 1978), but in either the result is same: in market-oriented farm households, the amount of family

labor utilized will tend to be markedly lower than in farm households with a subsistence orientation. A recent study of several Mexican villages concludes that agricultural modernization tends to increase out-migration through the freeing of household labor while a higher standard of living within a traditional setting due to favorable ecological factors, appears to inhibit out-migration (Roberts, 1982).⁵ Wimberly, Flinn and Berry (1983) likewise find that in rural Colombia both stagnation and agricultural modernization are associated with high rates of out-migration. It is also suggested that as relations of production in low-income rural societies become capitalist (i.e., landowners begin to view workers as a factor of production), quasi-feudal restrictions on mobility disappear, resulting in a rapid increase in migration (Roberts, 1978; Peek and Standing, 1979; Standing, 1981). Barraclough and Domike (1966), and Deere (1978) discuss cases from Ecuador and Peru in which the transformation of backwards haciendas into modern capitalist farms resulted in the displacement and subsequent out-migration of much of the work force.

If rural development is successful in raising the incomes of most rural inhabitants, it may lead to less labor being demanded in farming by making labor more expensive to use. While this may seem paradoxical because increased output is in general associated with greater usage of inputs, the effect of successful development is to raise the opportunity cost or scarcity value of labor. This is particularly the case if governments intervene to try to raise rural wages directly. Policy experiments in Nigeria and Brazil designed to raise wage levels for farm workers are said to have had the effect of many farm workers being released from employment because of their higher cost (Eicher et al., 1970; Jones, 1975, p. 21). As labor becomes relatively more expensive with successful development, greater use of capital inputs tends to displace labor (Laquian, 1980, p. 41), regardless of whether the labor in question is wage labor or unpaid family labor.

Factor Price Policies and Mechanization

According to Findley (1981, p. 149), "The setting of low prices for agricultural commodities is one of the few policies for which there is uniform agreement among analysts on a direct relationship between policy and migration." Likewise, Colvin (1981, p. 276) states, "The greatest single step that could improve the situation of the rural resident and diminish his need to migrate is an increase in the price of his crops..." Rehnberg (1977) contends that the ratio of prices paid and received by farmers in Korea is an important determinant of the rate of off-farm migration, but this variable is highly correlated with relative sectoral productivities over time. The chief difficulty overlooked by advocates of improved terms of trade for farmers is that

higher crop prices are helpful only to those cultivators who market a major fraction of their crop; small peasants and landless laborers are not benefited and may even be hurt by such a policy (Rahman, 1981). Furthermore, as Gotsch (1974, p. 150) notes, "Less widely appreciated is the fact that in a number of countries, an output-pricing structure aimed at cereal self-sufficiency has had important detrimental effects on rural employment," because high grain prices discourage diversification into more labor-intensive cash crops. It is probable that in certain situations, particularly in a relatively egalitarian and traditional system, higher crop prices will lead to less out-migration while in other situations it may lead to more out-migration. Blair (1977) claims that a doubling the price of rice during the early 1970s led to a reversal of net migration flows in Sierra Leone, although he acknowledges that urban conditions may also have been responsible in part.

Farm mechanization is often said to stimulate rural out-migration by displacing farm labor (Ahmed, 1976; Greenwood, Ladman and Siegel, 1981; Wood, 1983). It is almost a truism that the rapid spread of tractors in many countries, and the alleged displacement of labor accompanying them, is encouraged by subsidized credit for large landowners and by subsidized tractor prices (Gotsch, 1974). However, Silvers and Crosson (1980; 1983), contend on the basis of multivariate regression results that farm mechanization in Mexico significantly reduces out-migration. Stoltman and Ball (1971) also note that mechanization and capital investment in agriculture are statistically associated with less net out-migration in Mexico. Others argue that selective mechanization may in some cases increase labor usage because of increased output and reduction of seasonal bottlenecks (Stout and Downing, 1976). William Cline's (1978) thorough survey of the literature on this topic reaches the conclusion that while many forms of mechanization are in fact labor-displacing, mechanization tends to coincide with the adoption of other cultivation practices which result in no net change in labor usage. Studies from India, Pakistan, and the Philippines reviewed in a monograph of the International Labour Organisation (1973) find no appreciable displacement of labor resulting from Green Revolution or tractorization. Lingard and Bagyo (1983) find that tractor-using farms in West Java use less labor per hectare, but this is entirely accounted for by differences in average farm size.

Agricultural Development

The effect of agricultural development on rural-urban migration depends upon its impacts on: a) incomes of rural small-holders, tenants, and workers; b) demand for agricultural labor; c) displacement of small-holders and tenants; and d) the linkages from increased agricultural incomes to demand for urban goods and services. The

Green Revolution connotes a package of increased inputs including irrigation, fertilizers, and new seed varieties leading in some cases to dramatic increases in the output of certain grains. This form of agricultural development is often said to lead to little or no improvement in the incomes of poorer cultivators and laborers, and in demand for rural labor. Despite frequent pessimistic pronouncements, there is quite a bit of evidence suggesting a major positive effect of high-yielding varieties on rural wages and employment (e.g., Aggarwal, 1974; Hayami, 1981). More seriously, any tendency toward reduction of out-migration through higher incomes may be offset by the possible displacement of small cultivators and by the increased demand for urban employment resulting from the forward linkages from agriculture to the urban sector. Hence, the expected effect of agricultural development on rural-urban migration is indeterminate (Rhoda, 1979; Chan, 1981; Findley, 1981). Summarizing several of the points mentioned above, Gerald Desmond (1975, p. 68) concludes that:

development in agriculture implies more efficient production methods, greater capital investment, more cash crops, changing ownership patterns, new marketing and transport mechanisms. The very process of change involved, as well as the changes themselves, opens up needs and opportunities for urban-oriented work while increasing the income of the populations engaged in primary production...Thus the goals of agricultural development, i.e., increased production for both domestic and export markets, if achieved, lead as surely to greater urbanization as does increased industrial production.

Empirical analyses of the impact of Green Revolution programs in South Asia on migration have yielded mixed findings. An early report on the consequences of a pilot project in the Comilla district of Bangladesh notes: "With the increased demand for labor the tendency of labor to move out of the village has been reduced, as is evidenced by the fact that no family has left during the past two years" (quoted in Owens and Shaw, 1972, p. 95). The Comilla Project was indeed successful on a number of counts, with rates of increase of agricultural production and employment in the Comilla district double those of other districts in Bangladesh. Nevertheless, the 1974 census showed Comilla to have the highest rate of net out-migration of any district in the country (Mueller and Anderson, 1982). Wyon and Gordon (1971, p. 302) calculate that net out-migration from their Punjabi study villages fell sharply between the late 1950s and the late 1960s, which they attribute to improved agricultural conditions. D'Souza (1976, p. 350) notes that Punjab went from having a rate of urbanization well above the national average during 1951-1961 to the lowest rate of any state in India during 1961-1971: "The rate of urbanization was lower because there was a relatively lower rate of rural to urban migration." However, much of this relatively low, net urbanization with the Punjab state may have been caused by the simultaneous influx of

agricultural laborers from other states and urban-bound migration of Punjabis to cities in other states, Punjab not having any major metropolitan area. In the Ludhiana district, the center of the Green Revolution (Aggarwal, 1974), the rate of out-migration appears to have more than doubled between the early 1960s and the early 1970s (Oberai and Singh, 1980). An indirect statistical analysis of net rural out-migration among districts in the state of Madhya Pradesh finds a significantly positive association with agricultural productivity and use of modern inputs (Mishra, 1981).

Despite numerous allegations of Green Revolution policies stimulating rural-urban migration because of displacement of small cultivators and landless laborers, there is little hard evidence.⁶ Havens and Flinn (1975) argue that the introduction of new varieties into a Colombian coffee farming community stimulated out-migration, as 11 of 48 cultivator families that failed to adopt the varieties lost their land through voluntary sales, six of whom then left for the cities. Considering the normal turnover of land among marginal landowners due to indebtedness, Havens and Flinn have failed to prove their thesis.⁷ Saint and Goldsmith (1980) provide a much more convincing example of technological change displacing the rural poor. The introduction of citrus cultivation into a rural area of northeastern Brazil, with a labor intensity of only one-third that of other crops (tobacco, cassava), appears to have led to a drastic decline in the number of tenants, most of whom are said to have moved to urban areas. According to Saint and Goldsmith (1980, p. 267), the culprit is the Brazilia government: "Stimulated by attractive citrus-specific credit programmes, citrus-focused technical assistance, and citrus-priority agricultural research, citrus production in the region is expanding rapidly." It would be a travesty, though, to compare this capital-intensive, land-extensive type of technological change with the intensification of cereal cultivation which constitutes "Green Revolution" per se.⁸

Numerous agricultural development schemes have been carried out in the developing nations; unfortunately, few have been studied explicitly for their impact on rural-urban migration. We will first consider "success" cases, where the projects are supposed to have had major beneficial impacts upon the participants. De Jonge (1978) discusses a banana cultivation project in Senegal which succeeded in raising incomes substantially, thereby enabling participants to afford to send more children to the city. Colvin (1981) notes that the population included in the Office du Niger project in Mali, one of the largest and most successful agricultural development schemes in Africa, only increased from 32,000 in 1960 to 42,000 in 1975, which implies substantial out-migration. In Malaysia, the West Johore Agricultural Development Project, which includes the provision of extension, credit, marketing, processing, and irrigation

services to participants, has not succeeded at all in curbing out-migration. Paul Chan (1981, p. 423) concludes, "in light of the experiences of other countries, in situ development is unlikely to be effective in retaining population in rural Malaysia unless it is supported by land reform."

Other agricultural development projects studied have failed to slow out-migration in part because they have failed to realize their other goals as well (Mabogunje, 1981). Standing and Sukedo (1977) discuss three types of rural development programs intended to reduce the rural exodus in Guyana: cooperatives, land colonization, and a paramilitary youth corps (also involving land settlement). All have largely been failures in slowing out-migration from rural areas. Bates and Bennett (1974) indicate that differences between districts in spending on agricultural development in Zambia are unrelated to the rate of rural out-migration, which they attribute to the ineffectiveness of official projects. Gregson (1974) estimates that in a rural area of northern Malawi the rate of labor migration fell from 62 percent in 1958 to 43 percent in 1960 after the colonial government abandoned attempts to transform agriculture by discouraging slash-and-burn cultivation.

In Africa during the colonial era, the introduction of small-holder cash cropping into an area frequently entailed a dramatic reduction in seasonal or circular labor out-migration (Read, 1942; Colson, 1960; Uchendu, 1975). One should not infer, as do Bates and Bennett (1974), that the introduction of cash cropping necessarily reduces rural-urban migration. For it is frequently reported that the prosperity resulting from cash cropping stimulates permanent rural-urban migration at the same time it reduces temporary rural-rural migration, in studies from Ghana, Senegal, Mali, Zambia, Malaysia, Papua New Guinea, and the New Hebrides (Hart, 1974; de Jonge, 1978; Mazur, 1982; Colson and Scudder, 1975; Maude, 1981; Ward, 1977; Bonnemaïson, 1977). Kuchiba, Tsubouchi, and Maeda (1979, p. 214) assert that in a village in Kelantan, Malaysia, "the introduction of tobacco cultivation has made it easier for young people to remain in the village and allowed migrants to other regions to return either permanently or temporarily." Sally Findley (1981, p. 164) notes that a typical consequence of successful agricultural development is to supplant rural-rural migration by rural-urban migration, with an indeterminate impact on net out-migration. In some cases, where seasonal labor migration is primarily to urban areas, increased agricultural employment results in decreased temporary rural-urban migration. Hugo (1978, p. 305) mentions the case of an irrigation project in West Java which led to a drastic reduction in circular migration to Jakarta of erstwhile becak drivers.

A number of statistical analyses of rural out-migration have included cash cropping variables; their findings indicate that some cash crops (in some situations)

lead to less net out-migration from a given rural area. Connell et al. (1976, p. 176) find for a sample of Indian villages that migration appears to be negatively related to the extent of cash cropping, while at the same time positively related to the degree of commercialization (percentage of output marketed). For a sample of eleven West Sumatran villages, Maude (1979) finds a correlation of -0.59 between the frequency of migration and the proportion of households selling part of their agricultural produce. Stoltman and Ball (1971), however, find that in Mexico the degree of commercialization appears unrelated to the rate of out-migration from rural communities. Harris (1974) finds that cash crop income per capita is unrelated to out-migration from districts in Papua New Guinea. Munro (1974) finds that in Turkey, lifetime out-migration is negatively associated with the proportion of land devoted to industrial crops (cotton and tobacco), but unrelated to the cultivation of fruit and nuts. Using a different model specification and data set, Lieberman (1980) finds out-migration in Turkey (as indicated by the adult sex ratio) to be inversely related to the cultivation of citrus fruits and tobacco, directly related to the cultivation of tea, and unrelated to the cultivation of cotton and hazelnuts. Wasow (1981) finds tea cultivation to be associated with net in-migration in rural Kenya (as proxied by the adult sex ratio), while no association is found for other cash crops. Unfortunately, none of these studies appears to distinguish between rural-rural and rural-urban migration.

Agrarian Structure and Reform

A small-farmer approach to agricultural development might be expected to lead to less out-migration than a large-scale capitalist strategy because of the greater labor absorptive capacity of the former. This statement is based on the universal finding in LDCs that small cultivators use significantly greater labor input per unit of land than is used on large holdings (Berry and Cline, 1979). The introduction of large-scale "agribusiness" in Iran during the late 1960s and early 1970s is said to have displaced large numbers of former cultivators; by 1973 such farms occupied 15 percent of all cultivated land in Iran while employing only 0.3 percent of the agricultural work force (Mohtadi, 1982). However, in both Malawi and Chile during the 1970s a rapid expansion of large-scale capitalist agriculture together with a contraction and apparent immiseration of peasant agriculture has been accompanied by low rates of rural-urban migration (Kydd and Christiansen, 1982; McKee and Hibler, 1981). In both cases, the responsible factor seems to have been depressed urban wages and employment conditions, together with relatively easy employment availability in the expanding rural capitalist sector.

Agrarian or land reform is often mentioned as a policy option for slowing rural out-migration. Tuma (1970, p. 175) asserts that agrarian reform must have reduced rural-urban migration in several Middle Eastern nations, but he is forced to acknowledge that "it is not clear how much agrarian reform policies have inhibited migration." The Iraqi land reform of 1958 is said to have led to an acceleration in migration to Baghdad, as the state was unable to maintain the standard of cultivation (Fernea, 1969). Reform in Iran seems to have spurred rural-urban migration in two different ways. First, according to Craig (1978, p. 153), "The irony of land reform is that it did away with the absentee landlord only to replace him with a new class of peasant proprietors, most of whom promptly left Nasrin for the cities." Second, landless laborers who did not obtain land were forced out by lack of employment (Connell, 1974). Mohtadi (1982) demonstrates via regression analysis how land reform in Iran was associated with greater volumes of rural-urban migration in both of these ways. Algeria has had two waves of agrarian reform, one in the 1960s with the conversion of colonial estates into collectives, and a second in the 1970s with the redistribution of medium-sized parcels into peasant cooperatives. While no direct information is available as to consequences for migration, the urban population share more than doubled between 1960 and 1980, from 30 to 61 percent, far outpacing neighboring Tunisia and Morocco (Cleaver, 1982, p. 12).

Agrarian reforms can be divided into two types: distributivist and collectivist, with the latter usually emphasized by socialist-leaning regimes (Lipton, 1974).⁹ Distributivist reforms rely on household cultivation, including peasant cooperatives, and frequently involve a change in title more than in agrarian structure. In practice distributivist land reforms usually exclude landless laborers and instead only benefit an already relatively advantaged group. "Land to the tiller" legislation, moreover, provides strong incentives for landowners to displace tenants and laborers (Herring, 1983). Examples of reforms which are said to have caused greater displacement of laborers and out-migration in these ways include Egypt, Iran, Kenya, Ecuador, and other Latin American countries (Warringer, 1969; Connell, 1974; Bezzababeh, 1981; Peek, 1980; Peek and Standing, 1979). On the other hand, the abolition of tenancy in a Peruvian mountain village is said to have led to a surge in return migration, as urban migrants sought to protect their landownership rights; David Guillet (1976, p. 301) suggests that "other agrarian reforms which include clauses prohibiting indirect usufruct can be expected to have the same demographic effect." Agrarian reform in revolutionary Ethiopia is said to have also resulted in the return of seasonal migrants who were anxious to claim land, so that the government has had to recruit urban residents to work on its own state farms (Bezzababeh, 1981, p. 40).

Collectivist land reforms, including those of Algeria, Bolivia, Chile, and Peru, have likewise failed to incorporate the bulk of the landless and near-landless rural populations. Reform beneficiaries on the new collectives or cooperatives have an incentive to restrict the use of outside labor (Berry, 1971). For example, members of Peruvian sugar-producing cooperatives have enjoyed increased consumption by refusing membership privileges to others, including the younger generation, thereby forcing the latter to leave the area (Simmons, Diaz-Briquets and Laquian, p. 104-05). In the case of the Chilean land reform, employment increased by 25 percent over prereform levels, but only a small minority of the rural population benefited (Cline, 1978). In the case of Peru's reform: "The agrarian reform did have some positive effect on employment, although far less than anticipated. The 0.9 percent yearly rate of employment growth achieved between 1969 and 1978 is almost three times the annual rate of male employment growth from 1961 to 1972. Owing to agriculture's still low rate of absorption of labour, its high rate of rural out-migration continued" (Kay, 1982, p. 161). The expropriation of certain haciendas in Bolivia during the 1950s is said to have led to net in-migration, albeit at the expense of a substantial reduction in labor productivity (Burke, 1970), but it is unclear to what extent this is generalizable even within Bolivia. More typically, the pre-1969 "agrarian reform" in the neighboring area of Peru, together with minimum wage legislation, led landowners to expel campesinos from the land.

The Mexican agrarian reform, with its unique blend of distributivist and collectivist elements, is often discussed in connection with rural out-migration: "There can be little doubt that the ejido program serves as a deterrent to rural-urban migration" (Bussey, 1973, p. 37). At present, at least, this is doubtful, as evidence indicates that rates of out-migration are equivalent from ejido and non-ejido areas alike (King, 1978). Ian Scott (1982, p. 46) notes that the share of crop-land held by the traditional peasant communities in Mexico rose from 13 percent in 1930 to 47 percent in 1940; he suggests, "One important aspect of the resurgence of the ejido system was that it helped slow migration from rural to urban areas, if only temporarily, and it caused many of those who had already migrated to cities to return to the countryside." Urban growth in Mexico was indeed considerably slower in the 1930s than it had been in the 1920s, or was to be in the 1940s (Scott, 1982, p. 50), but it is impossible to disentangle the effect of land reform from that of slowdown in urban economic activity.

Land Colonization

Another type of program which is often suggested as having an impact on rural-urban migration is land colonization. The idea is that people who might otherwise be

driven to cities by land hunger may be diverted to newly cultivated areas.¹⁰ Official land colonization in Malaysia is said by some to have had a major inhibiting effect on urbanization (Simmons, 1979; Chan, 1981), although it has been pointed out that the program has absorbed something on the order of only one-twentieth of the growth in the population (Peacock, 1981). Furthermore, it is pointed out that since participants are forbidden to divide their land among their children, the rate of out-migration in succeeding generations probably will exceed that of nonproject areas (Gosling, 1982). Similarly, the Dry Zone colonization schemes in Sri Lanka, among the most ambitious in Asia, have absorbed only 6-7 percent of the annual increment to the labor force, despite accounting for a very large proportion of total development expenditures (Richards and Gooneratne, 1980).¹¹ Oberai (1981) notes that both of these countries have had extraordinarily low rates of urban growth, which he attributes to official land colonization, but the limited numbers involved belie his contention. In the case of the Philippines, Laquian (1975) notes that there has been massive spontaneous resettlement stimulated in part by official schemes and their attendant infrastructure, even though the official program has been less successful.

The experiences of land settlement programs elsewhere are similar, although usually on a smaller scale. In Ethiopia and Paraguay, massive spontaneous rural resettlement has been associated with very low rates of urbanization (Wood, 1982; Gillespie, 1983), but in both cases this process coincided with almost total official neglect of rural development. In general, it is very difficult to find examples of official land colonization having appreciable impacts on slowing rural-urban migration (Findley, 1977; Peek and Standing, 1979). Despite totalling 40-60 percent of Egyptian public investment in agriculture since 1952, only 56,000 families had been settled in the various New Land schemes by 1978, with 1,500,000 rural landless families remaining (Voll, 1980). Land reclamation has been even less successful in Iraq (Fernea, 1969). In Brazil there have been some notable successes in privately-sponsored land development, but governmental colonization schemes largely appear to have been failures (Katzman, 1978). Provision of basic infrastructure by government is said to have attracted large numbers of migrants to frontier areas in a number of Latin American countries (Jones, 1980; Bahrin, 1981). In general, the assessment of Barraclough and Domike (1966, p. 410-11) appears to be still valid: "Attempts to colonize new areas have been slow and costly, leaving the agrarian problems unresolved...The evidence indicates that official colonization activities do not compare favorably with settlement which occurs spontaneously without governmental aid."

Land colonization schemes in Africa are said to have affected very few people, been extremely costly, and often been ineffective (Adepoju, 1982). Kabera (1982, p.

199), on the other hand, contends that in Uganda, "aided resettlement schemes had played a major role in acting as magnets attracting both aided and voluntary migrants." In Africa targeted youth settlement is often advocated as a means of stemming urban-bound migration. Hutton (1973) mentions a rural development project in western Uganda which was supposedly successful in holding some educated youth in agriculture. However, Kabera (1982, p. 119) notes that this scheme attracted barely 100 youths in five years; he concludes, "It is evident that youth settlement schemes have not had much impact on the flow of population to rural areas and have not solved the problem of school-leavers migrating to urban centres." Hyden (1980, p. 198-99) cites examples of youth settlement schemes in Benin and Nigeria which have also been costly failures.

Rural Amenities

We are frequently told that "in country after country, one of the incentives for rural out-migrants is the attraction of better education, health, water and sanitation, and communication facilities in urban areas" (Findley, 1977, p. 78). Todaro and Stilkind (1981, p. 36) conclude, "Far better are policies that encourage people to stay in rural areas because health, education, and incomes are improving faster there than in the cities." According to Sidney Goldstein (1979, p. 31), however, "although improved housing, sanitation, water supply, and access to health and educational facilities among many others, can in themselves be justified as essential, there is no strong evidence that such improvements in the rural way of life will actually result in less migration to cities." In fact, it is suggested that this may even stimulate further migration by inducing villagers to expect progressively higher quality amenities (World Bank, 1972, p. 26; Pryor, 1979, p. 25; Adepoju, 1982). Mojtahed (1980) and Sombutsiri (1980) find that the provision of public services is quantitatively unrelated to rates of rural-urban migration in Iran and Thailand, respectively.

The suggestion is frequently made that rural-oriented curricula and non-formal education should inhibit urban-bound migration. However, "no amount of formal technical, vocational, or agricultural instruction alone is going to check the movement from the rural areas...the crucial variables lie, instead in the structure of incentives within the economic system" (Foster, 1965, p. 153). Rural education projects in Uganda and Nigeria have failed to keep students in rural areas because of inadequate employment opportunities (de Wilde, 1971; Austin, 1976). According to Gould (1975, p. 262), "A physical separation of schools and urban areas would probably have a similar, negligible effect as attempts to have a rural-based rather than an urban-based curriculum have had, for the education system mirrors rather than engineers society."

Philip Foster (1965, p. 160) comments caustically, "Reciting rote formulas about new curricula, which will not detach children from the rural environment is merely an excuse for lack of reflection. The schools will detach children from the rural environment largely irrespective of what they teach." A decade and a half of research can add little to the following conclusion (United Nations, 1968, p. 40): "Programmes of formal and informal education, better housing, etc., with stress on self-help schemes, have been encouraged in many rural areas. However, the effect of raising the expectations of rural people, instead of keeping them where they are, has often resulted in stimulating a move to the cities."

Rural Infrastructure and Employment

Public works programs are often suggested as offering a palliate to rural economic pressures. In a true emergency situation, provision of public relief is indeed crucial in minimizing the uprooting of the rural population; public works employment appears to have served this function on occasions of drought in northeastern Brazil (Hirschman, 1973, p. 46). According to August Schumacher (1983, p. 142), in Mexico "the current government rural works strategy is a reasonable public policy to gain time until the organizational and technical research bottlenecks to a more vibrant small-holder based food system are dealt with." However, Burki et al. (1976, p. 17) observe that "slowing the rate of rural-urban migration is an explicit objective of Pakistan's Rural Works Program, Morocco's Promotion Nationale, and Indonesia's Kabupaten Program...While the evidence is not conclusive, it can be inferred that rural public works might increase migration flows." Michael Mertaugh (1976) finds no statistical association between the prevalence of public works employment and rates of rural-urban migration in Morocco. Upon completion of the project, workers may be likely to take their new skills to urban areas to seek employment (Rhoda, 1979). In the case of a Peruvian hydroelectric project, workers engaged in its construction were subsequently much more likely to migrate to urban areas (Doughty, 1972). Hashim (1978) notes that the introduction of major highway and dam construction projects into a rural area of Perak state has helped wean Malay peasants away from agriculture and contributed to a desire for further nonagricultural employment.

The impact of roads on migration is indeterminate. A typical consequence of improved transportation is a surge in migration because of greater ease of access to distant labor markets. Acting against this, however, is the increased opportunity for earning cash incomes because of access to urban markets, and the greater ability to utilize the services and amenities of nearby urban areas while retaining rural residence. Some studies report that villages close to major roads have higher out-

migration rates, including studies from Ghana and Sierra Leone (Caldwell, 1969; Blair, 1977). Other studies report the opposite, including studies from Nigeria, Bangladesh, Indonesia, and Papua New Guinea (Goddard, 1974; Chaudhury, 1978; Kano, 1981; Conroy, 1977), while Connell et al. (1976) and Udall (1981) report no association between distance from roads and out-migration from villages in India and Colombia.

An extensive road network together with compact settlement patterns can also lead to commuting from villages to urban centers. Areas in which commuting is particularly prevalent include Sri Lanka and Java (Oberai, 1981; Hugo, 1978). Mishra (1981) finds that in Madhya Pradesh the presence of infrastructural investment (e.g., road density, nonindustrial use of electricity) is associated with less rural out-migration, which the author attributes to the facilitation of commuting. Similarly, Mojtahed (1980) finds that high-speed roads in rural areas in Iran appear to be associated with less out-migration. A number of researchers have observed that rural areas in close proximity to urban centers frequently have lower rates of migration than more remote rural communities (Singh et al., 1980; Udall, 1981).

A key factor in the potential for infrastructural investment to slow out-migration is the responsiveness of new nonagricultural unemployment. Electricity generation in the Philippines does not appear to have inhibited rural-urban migration, except where it has led to new rural nonagricultural employment (Findley, 1981, p. 156). Sen (1982) concludes, on the basis of a number of project evaluations from India, that rural electrification has significantly increased employment in rural areas, by encouraging increased irrigation and by stimulating nonagricultural employment. In Indonesia, on the other hand, electricity usage in rural areas appears to be almost strictly for consumption purposes.

Using infrastructure to extend employment in rural areas may be beyond the control of planners. Doughty (1972, p. 32) relates that in the case of the electrification of a small rural town in the Peruvian Andes, in which local entrepreneurs quickly electrified flour mills and woodworking shops, the "net effect of their adventures was to drive some producers out of business, but not to develop any new sources of income or employment." Most of the mills and shops shut down, and workers lost employment. "Thus, paradoxically, the result of 'industrial' electrical usage was to reduce the number of persons employed in nonagricultural occupations." Similarly, while in the vicinity of Yogyakarta in Java, villages near trunk roads are expanding through new enterprises (Kano, 1981); this is not easily transferable to less well-situated areas. A USAID rural roads project in Western Kenya seems to have resulted in almost no new employment due to unpromising economic conditions there

(Roberts et al., 1982). If a rural area is close to urban markets and complementary inputs are made available, infrastructural investment can spur development, while in more remote areas it remains ineffectual (Sen, 1982).

Off-farm Employment and Decentralized Urbanization

Many suggest that nonfarm employment in general offers the best outlet for potential migrants (Anderson and Leiserson, 1980; Colvin, 1981; Todaro and Stilkind, 1981). Rural nonfarm employment is more important than is often realized. Chuta and Liedholm (1979) review evidence indicating that in Africa, Asia, and Latin America alike 20-30 percent of the rural labor force is dependent upon nonfarm employment, including manufacturing, commerce, services, construction, and transportation.¹² Manufacturing enterprises are chiefly artisanal and employ few workers, with clothing and woodworking the largest activities. Wilcock and Chuta (1982) note that 85 percent of the manufacturing employment in their rural Upper Volta study, is in traditional crafts or food processing which are rapidly declining in face of competition from factory goods. Likewise, in the Yogyakarta district of Java, where the 1971 census recorded almost 40 percent of the rural work force engaged in nonagricultural employment, there has been a sharp decline in traditional cottage industries (Kano, 1981). In rural Mexico, the practice of artisanal crafts and food processing is associated with significantly less out-migration from a village, but these industries are withering away due to changing tastes (Arizpe, 1981).

What is needed are modern small-scale, labor-intensive rural industries, but successful intervention programs are hard to find. A pilot project along these lines in Sri Lanka is described by Gunasekera and Codippily (1977). India has had a nation-wide Rural Industries Project for two decades now, but during its first decade it generated less than 100,000 jobs at best, most of which are located in towns of over 15,000, contrary to policy. A separate policy of locating industrial estates in rural areas has resulted in extremely low occupancy rates (de Haan, 1980). An attempt to induce new private industries in the Bicol River Basin Development Project in the Philippines has been almost a total failure, due in part to lack of local entrepreneurial drive and inadequate infrastructure (Sommer et al., 1982, p. 12). Examples of "spontaneous" forms of rural industrialization can sometimes be found. The introduction of carpet-weaving into rural areas of Khorassan province in Iran during the 1960s resulted in a reduction of rural out-migration, especially in villages with carpet-weaving cooperatives (Ehlers, 1977, p. 293). However, even modern cottage industries represent at best a transitional phase. In South Korea and Taiwan, nonfactory production in rural areas has steadily declines, while factories located in rural areas have become more important (Ho, 1982).

Some note that since perhaps a majority of "rural" off-farm employment is actually located in urban centers, this could not be considered an antidote to urbanization (Rhoda, 1979). It has been argued that the rapid increase in nonfarm employment by members of rural households in Taiwan has significantly held down the rate of rural-urban migration (Chinn, 1979; Ho, 1979). In the case of Taiwan, most "rural" nonfarm employment is in urban areas with commuting to urban areas taking place while rural residence is retained (Wu, 1976); this result is akin to that obtained through conscious actions by socialist governments in Eastern Europe (Fallenbuchl, 1977). The Ludhiana district of the Indian Punjab has developed a dense network of small-scale hosiery and engineering goods industries, with the workers commuting by bus from surrounding villages. As a result (Aggarwal, 1974, p. 380), "In the villages of our study nearly half of the traditionally labor households have completely abandoned agricultural work. Even in the families that still do farm labor, many younger men have taken up nonagricultural employment." A recent statistical analysis of migration from cantons in Costa Rica finds that rural nonfarm employment is associated with less out-migration (Schneider-Sliwa, 1982).

Decentralized industrialization is unfortunately rare among developing countries; typically one or two metropolitan areas account for the majority of modern manufacturing employment. Puerto Rico, Taiwan, and Japan have been singled out as having successfully dispersed manufacturing industries (Owens and Shaw, 1972, p. 117). Similarly, Israel appears to have achieved an unusual degree of urban and industrial deconcentration (Israel, 1969). Large-scale industry needs a critical mass of infrastructure and support services. According to Shaw (1978), there is an international consensus that the minimum size for a city to act as a counter magnet is 200,000+. Shaw (1978) argues for the creation of distinct regional poles; Simmons (1979) and Sternstein (1979) recommend the creation of new industrial centers in proximity to existing urban centers. It should be noted that others emphasize instead rural "market towns" of 20,000-50,000 intended to exploit backward and forward linkages with agriculture (Johnson, 1970; Brutzkus, 1975; Ruddle and Rondinelli, 1979; Anderson and Leiserson, 1980). While any discussion of decentralized urbanization lies largely outside the scope of this paper, it should be noted that there is little quantitative evidence on these issues. According to one study, the Khon Kaen "growth pole" of northeastern Thailand, despite heavy central government investment, appears to have resulted in increased out-migration (Sternstein, 1979).

CONCLUSION

Both the theoretical arguments and the empirical evidence on the impact of rural development on rural-urban migration and urbanization yield a mixed picture. Plausible arguments can be advanced for why rural development either should or should not be associated with reduced rates of rural-urban migration, and some evidence can be adduced to support either position. The results of cross-sectional migration studies, by and large, suggest that rural development may be relatively ineffective in slowing the rural exodus. The time-series literature on rural-urban migration is still sparse, for obvious reasons, but a number of studies support the existence of an association between agricultural development and reduced rural-urban migration. The majority of cross-national models which have been estimated conclude that agricultural development slows rural-urban migration. However, the specific policy interventions reviewed in the second half of this paper do not offer much hope of appreciable impacts on rural emigration. Land colonization appears fairly promising, but only if it is largely spontaneous and only under certain special conditions (e.g., abundant land not requiring extensive preparation for cultivation). Decentralized industrialization offers the most promise, but this may be considered more in the domain of regional and urban planning; unfortunately, there is little evidence that industrial decentralization policies have had any more impact on rural-urban migration than have rural development policies per se (Ayres, 1983).

While the present study offers some very limited and mixed support for those who argue that one of the merits of rural development may be to inhibit rural-urban migration, the dominant note is one of skepticism. At best we have some evidence that in the short run, higher growth in rural earnings may reduce net rural-urban migration. Even those statistical studies cited as supporting the potential importance of rural development find urban earnings, employment, or population share to dominate as determinants of rural-urban migration flows. The experience of a number of countries indicates that successful rural development and a reduction in rural-urban disparities may go hand-in-hand with acceleration in rural-urban migration. Hence, while rural development is certainly worthwhile in its own right, I concur with Ernesto Pernia (1977, p. 143) "that rural development may not and should not be considered as an antidote to urbanization." Or, as Sally Findley (1981, p. 164) concludes, "It appears that keeping rural population on the farm is an inappropriate goal for integrated rural development schemes."

NOTES

¹This paper (revised June 1983), while reaching some conclusions similar to those found in the excellent surveys by Rhoda and Findley, is substantially different in a number of respects, particularly in its focus on quantitative analyses of economic determinants of migration. A deliberate attempt has been made in the second half of the paper to avoid overlap with previous studies, and only rarely have references been taken over without being consulted directly. Any errors of interpretation are thus those of the present author.

Since this paper was prepared, it has come to the author's attention that a summarized version of Richard Rhoda's survey has been published in the International Migration Review (Spring 1983 issue).

²This report does not refer to the innumerable migration studies which ask migrants why they chose to move. Almost invariably, it is found that the majority of adults report moving for economic reasons (see Brigg, 1973; Findley, 1977). The attempt to use these findings to distinguish between "push" and "pull" motives is pointless, for poor and affluent migrants alike cite negative conditions in their places of origin and positive conditions in their places of destination as reasons for moving (Haq and Rehman, 1975).

³Connell et al. (1976) have become famous for their emphasis on income inequality as a determinant of out-migration. According to Michael Lipton (1980, p. 4), the most prominent and prolific author of the group, "the deficit farmers and landless labourers -- though seldom the very poorest, who cannot afford the initial cost of movement -- tend to be pushed out, as they would not if inequality in the village were less. The sons of the bigger farmers -- though seldom the biggest, who must guard their assets, and who have enough for all their sons to prosper rurally -- tend to be pulled out, assisted in bearing the costs of urban education or urban job search by the bigger rural surpluses generated by village inequality." To put the statement in testable form, (Lipton, 1982, p. 20), "if we ranked villagers into ten equally sized groups by income per person, migrants would probably be likeliest to come from the second poorest and third poorest groups -- and from the second richest and third richest groups." Readers should be advised that these statements are not generally valid, even for South Asia which provided the bulk of the data used in their study. For example, Connell et al. (1976, p. 23) cite Sovani (1966) as one of their sources for this generalization, yet he fails to corroborate their claims. In one case (p. 71), the percentage of households with out-migrants is 59 percent for the bottom 80 percent of households ranked by income, 71 percent for the net 15 percent of households and 65 percent for the most affluent 5 percent. In another case (p. 145) there is a consistently negative association, with the proportion of households having out-migrants declining monotonically from 30 percent among the poorest 9 percent of households to 16, 11, 9, and 8 percent among successively higher income classes. In the third study (p. 145) 40 percent of the bottom 5 percent and the top 1 percent of households have out-migrants, while the proportions for other income classes ranges from 2.4 to 6.5 percent, being highest in the middle of the income distribution!

Other studies from South Asia also fail to corroborate Lipton's assertions. Chaudhury (1978) finds that in rural Bangladesh out-migration is highest from the two extremes of the income distribution, not intermediate strata, while among cultivator households there is a monotonically positive association between size of landholding

and probability of out-migration. Singh et al. (1980) observe on the basis of data from nineteen villages in Uttar Pradesh that there is a very strong and monotonically positive association between economic status and out-migration.

⁴However, a number of studies which use earnings ratios or differentials to predict interarea migration find statistically insignificant coefficients, including studies from Zimbabwe, Thailand, Iran, and Mexico (Mitchell, 1975; Thavornjit, 1977; Mojtahed, 1980; Gordon and Theobald, 1981). Alternatively, it is possible to estimate models of net in-migration using data on income for only the area in question. Carvajal and Geithman (1974), and Fields (1979) demonstrate that higher incomes are associated with higher rates of net in-migration to communities in Costa Rica and Colombia. Fields notes in his sample that, average income is almost perfectly correlated ($r = +0.92$) with the percentage of white-collar workers.

⁵A number of other studies (e.g., Curtain, 1975; Mitchell, 1975) find that within traditional agricultural systems more ecologically favored zones tend to have significantly lower rates of out-migration. Unfortunately, this offers no policy interventions for rural development planners.

⁶Brown and Sanders (1981, p. 171) infer that Gotsch (1972) found that "in the Bangladesh study area, the tubewell's impacts were more evenly distributed, the egalitarian nature of social organization was strengthened, and out-migration was minimal, whereas in the Pakistan study area social class disparities in both income and power were aggravated leading to extensive out-migration." Gotsch himself makes no such claims regarding migration in his article; ironically, his Bangladesh sample was from the Comilla area, the area of highest rural out-migration in all of Bangladesh.

⁷Ironically, Wimberly, Flinn and Berry, (1983) note that in this Colombian coffee farming community, out-migration is significantly greater from those households adopting the new varieties than from nonadopting households. Moreover, this community had a lower out-migration rate than either of the other two communities studied.

⁸Goldstein (1979) and Findley (1981, p. 144) unfortunately lump both together as examples of "the capital-intensive agricultural development strategy that characterized most rural development programmes designed before the mid-1970s." They claim that there has been a shift to "integrated rural development programmes" which "emphasize human resource development, employment and equity concerns." While there has indeed been a change in rhetoric, with the latter being a fair sample of the "catch words" current among development experts in the late 1970s, there is little evidence of any actual change in rural development programs.

⁹This report does not attempt to cover the experiments of developing nations with totalitarian socialist regimes. First of all, as Richard Curtain (1975, p. 290) puts it, "the Maoist and Cuban strategies of decentralization can be seen only in their totality; any attempt to abstract and apply their policies in a piecemeal fashion elsewhere will be unsuccessful." More fundamentally, it is almost impossible to disentangle the effects of increased rural-urban balance from restrictions on individual mobility, employment, and housing. Interested readers are referred to Simmons (1981) for a highly favorable account of the Cuban experience.

¹⁰However, it is not clear that the same kind of migrants are attracted to rural settlement areas as to cities; the former tend to be whole households while the latter tend to be single, young people (Goldstein, 1979).

¹¹However, "village expansion" schemes apparently have had a greater impact than Dry Zone colonization and at lower cost. By 1969 both types of land reclamation together accounted for one-fourth of all agricultural land in Sri Lanka and nearly a fifth of the rural population (Herring, 1983, p. 150).

¹²A United Nations report (1980) suggests that rural nonagricultural employment generally increases with level of development, but that in Latin America an unexpectedly small fraction of rural employment is in nonagricultural activities, which may be related to the much higher rates of urbanization in Latin America.

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