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Economic-Demographic Interactions in Agricultural Development: The Case of Rural-to-Urban Migration

Population and Agricultural Development: Selected Relationships and Possible Planning Uses, No. 6

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POPULATION AND AGRICULTURAL DEVELOPMENT:

Selected Relationships and Possible Planning Uses

6.

Economic-Demographic Interactions in Agricultural Development: the Case of Rural-to-Urban Migration

prepared with the assistance of the

UNITED NATIONS FUND FOR POPULATION ACTIVITIES

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

This is one of a series of contributions to the Final Report: "Population and Agricultural Development: Selected Relationships and Possible Planning Uses", which has been prepared with the financial assistance of the United Nations Fund for Population Activities (UNFPA) under the Project: Methodological Research and Country Case Studies on the Effects of Different Rates of Population Growth on Agricultural Development (INT/73/PO2).

- Paper No. 1: Population and Socio-Economic Change in Peasant Societies: The Historical Record of Hungary - 1700 to the Present. By Rudolf Andorka, Central Statistical Office, Budapest, Hungary.
- Paper No. 2: The Population Problem and the Development Solution. By Pan A. Yotopoulos Stanford University, USA.
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- Paper No. 6: Economic-Demographic Interactions in Agricultural Development: The Case of Rural-to-Urban Migration - Selected Issues and Some Evidence. By Oded Stark, Bar-Ilan University, Ramat-Gan, Israel.
- Paper No. 7: Productivity, Wages and Nutrition in the Context of Less Developed Countries. By Christopher Bliss, Nuffield College, University of Oxford and Nicholas Stern, University of Warwick.
- Paper No. 8: Development in Dual Economies. By Constantino Lluich, World Bank and Jelle Bruinsma, FAO, Rome.
- Paper No. 9: Demographic Variables in Relation to Planning for Agricultural Development. By L. Naiken, FAO, Rome.

These contributions can be made available on request, and only in English, by the Development Policy Studies and Training Service, Policy Analysis Division, FAO. Outlines can be found at the end of the paper.

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Rome 1978

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PREFACE

This monograph reports on an attempt to construct a new conceptual framework for the analysis of rural-urban migration and to examine the interaction between this migration and some other key variables pertinent to the rural areas from where the transfer of population takes place. This work was produced as a contribution to the project INT/73/P02: "Methodological Research and Country Case Studies on Effects of Different Rates of Population Growth on Agricultural Development", carried out by the Policy Analysis Division of FAO with the financial support of the United Nations Fund for Population Activities (UNFPA). The objective of the project was to take stock of the issues raised by the population-development debate, with particular reference to the agricultural sector, and to assess their relevance for agricultural planning. ^{1/}

The author is responsible for both the basic conceptual work and the derivation of the relevant policy indications. Some of these are rather critical of the recommendations formulated in the past with a view to reduce or eliminate rural to urban migration. As such, they are likely to raise interest and provoke a debate which the author, FAO and UNFPA would welcome.

^{1/} For a synthesis of all the contributions produced under the project, including outlines of the individual contributions, see FAO, Population and Agricultural Development: Selected Relationships and Possible Planning Uses, Rome, 1977.

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S U M M A R Y

The purpose of this study is to present a new piece of conceptual work which analyzes rural-to-urban migration and, in the light of this conceptual work, to examine: (a) some of the migration-related evidence; (b) interactions between rural-to-urban migration and some other key variables; (c) relevant policy implications.

The main focus of the study is the interactions between rural-to-urban migration of labour and a number of development variables - namely technological change in agricultural production, income distribution by size, distribution and level of unemployment, fertility behaviour - as well as some other variables. The study concludes by referring to the policy implications emanating from the analysis of these interactions. Perhaps the most striking conclusion emerging from the analysis is that in light of the various benefits and the not unfavourable side (net) effects (both private and social) generated by rural-to-urban migration, some of the most frequently expressed concerns accompanying it are groundless. Moreover, many of the policy recommendations prescribed to reduce or eliminate it are unnecessary, irrelevant and unlikely to be effective.

The study is organized around an explicit (and novel) analytical construct which is, in particular, a less-developed-economy agriculture-specific construct.

It will be useful to present here an outline of the main features of this piece of conceptual work. Over a specific time span of its life-cycle the "net utility maximizing family unit" - a family enterprise which is an agricultural producer on its own small holding - observes a continuous reduction in its welfare as measured in "net utility" terms. This reduction is due to

"compositional changes" - changes in family size and in age structure. An incentive to change production technology is generated, the intensity of which continuously increases. However first, the change of technology is hindered by the very characteristics of the new technology - its surplus requirements and its (subjective) risk-increasing nature. Secondly, at the same time, it is subjected to a set of internal and external constraining conditions. The absence of smoothly functioning market structures and appropriate institutional (as well as non-institutional) arrangements (especially credit and insurance arrangements) implies that the internal constraints arising from the prevalence of production risks and aversion to them, and the low level of (absolute and relative) surplus, cannot be alleviated through the (highly fragmented) markets. The easing of these constraints becomes a critical condition (and indeed, under a fairly general set of postulations - a necessary and sufficient condition) for carrying out the technological change. It is rural-to-urban migration of a family member (i.e. a son or a daughter) which, by bypassing the credit and insurance markets that bias against the small farmers, facilitates the change. This is achieved by migration via its dual role in the accumulation of surplus (acting as an intermediate investment) and - through diversification of sources of income - in the control of the level of risk.

Firm evidence bearing on this analytical construct as a whole is as yet unavailable but some critical links in it are substantiated by existing, fragmentary data: rural-to-urban migration is performed chiefly by the young, the single, the better educated, family members; the migrants are fairly quickly absorbed into urban employment as evidenced in a relatively short duration of urban unemployment, and in a lower unemployment rate of rural-to-urban migrants than the average urban unemployment rate; there are substantial flows of remittances from the migrant to

his parental rural family; technological change is consequent, with a lag, upon migration.

The incorporation of the analytical construct outlined above into the study of the interactions between rural-to-urban migration and some other variables sheds a new light on: (a) the role of rural-to-urban migration with respect to these variables, and (b) the causality mechanism generating them. Point (a) is illustrated by the size distribution of income and point (b) by education and fertility. When income recipient units are properly identified and classified and when both first and second round effects are considered, rural-to-urban migration is shown to improve the overall distribution of income by size. As to (b), a new element - facilitating technological change - enters the utility vector from children (that is, in addition to the various income, consumption, status, security and insurance utilities). With the market segmentation giving rise to this element changing only slowly, this element is likely to be less receptive to the impact of general economic development than the other elements, at least in the short and medium runs. Since access to education is relatively easy and cheap, and since educating one's children is expected to enhance their possibilities of success as urban migrants, education is utilized to improve the effectiveness of rural-to-urban migration as a channel bypassing the fragmented credit and insurance markets.

Two of the major policy conclusions of the study are that, from a social point of view, the replacement of rural-to-urban migration (chiefly, via institutional credit and insurance arrangements) without hindering its beneficial consequences, is likely to be very costly and that the efficacy of the usual remedies aimed at reducing rural-to-urban migration can be expected to be very low.

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CHAPTER I

INTRODUCTION

The writing of a migration study within the framework of a project on "The economic-demographic interactions in the process of agricultural development" provides a good opportunity to study some of the more important interrelationships between labour migration and a number of key developmental phenomena generated or influenced by it.

The "legitimization" by development economists, mainly over the last decade, of migration as a respectable research topic has enriched knowledge and increased awareness. However, the pattern of concentration of research efforts has rapidly endowed them with diminishing usefulness. This pattern has also introduced a bias since, more often than not, it has implied repeated reference to and unwarranted expansion of conventional circles of thought radiating around a theoretically weak centre.

One objective of the present study is to identify, and concentrate on issues, hitherto largely ignored, which are both highly relevant to policy formulation committed to agricultural development and pivotal in realizing the complex interactions between labour migration on the one hand and key phenomena such as technological change in agricultural production, income distribution by size, distribution and level of unemployment and fertility behaviour, on the other.

An important characteristic of this study is that unlike nearly all existing studies reviewing migration,^{1/} it is organized around an explicit (new) analytical construct. This differs from the one currently popular, a deviation originating not for the sake of non-conformity, but simply in the belief that the latter

^{1/} For example, Brigg [1973], Carrynyk-Sinclair [1974], Yap [1975], Connell et al. [1976], Rempel & Lobdell [1976], Gaude [1976].

construct has gone somewhat too far in sacrificing realism and essential specificity for the sake of elegance and generality. Indeed, for some time it has been difficult to see why so many researchers, and planners, have accepted as an axiomatic proposition the notion of rural-to-urban migration as a straightforward consequence of individuals' decision to maximize their expected income. A logical implication of the complex of interactions characterising migration is that any useful theory^{1/} dealing with its causality has to be partial. An attempt to capture in one model (though necessarily an oversimplified one) the migration behaviour of units of different types at various stages of development is likely to exemplify once again why "the best" is a fierce enemy of "the good"; and, specifically, to produce general propositions which do not go much beyond stating that "X migrates ("voluntarily") from A to B because B is, in some sense, better for X than A".^{2/}

Vis-à-vis the notion mentioned in the last paragraph, it is clearly not less sensible to expect, for example, that in one context (e.g. a stage in economic development?) rational migration decisions of individuals will ensue from minimization of risk subject to an income constraint, and in another from maximization of expected income subject to a non-linear risk constraint. It is even more reasonable to found an explanation on familial net utility maximization. Indeed, much of the present author's uneasiness is due to the current disregard of the fact that migration is generated by families (multiperson units) which

^{1/} "Useful" when it is endowed with predictive capacity arising out of explanatory capacity.

^{2/} Recently, some attempts have been made to break the rural reservoir of potential migrants into distinct categories. However and surprisingly, much of this grouping effort has been in vain; the different groups assumed to produce migration have been fitted by precisely the same migration function - size of parameters notwithstanding. (For a representative example of such an exercise see Adelman & Robinson [1977]).

cannot be studied as if they were individuals (except, of course, on extreme simplifying assumptions). The migrating agent and the decision-making unit are best seen as different entities, a factor which both complicates and enriches current explanations of the rural-to-urban migration phenomenon.

Before proceeding with a direct examination of rural-to-urban migration and the associated factors mentioned earlier, it would be useful to incorporate in this introduction a concise, summary presentation of the state of the arts. It is possible to present in a precise and simple manner the main features of the dominant migration modelling efforts - both orthodox^{1/} (often implicit) and recent^{2/} - in a single diagram.^{3/} (As it happens, the former efforts are in the classical tradition, the latter in the neoclassical one).

Utilizing a comparative static approach the following simplifying assumptions are made: neoclassical production functions for the outputs of both rural - agricultural and urban - manufacturing sectors; sectoral specificity of capital stocks (and of land in agriculture) so that output in each sector depends only on labour; fixed total supply of labour; externally given output prices (an "international trade, small country" assumption).

^{1/} Notable examples of works incorporating these efforts are Lewis [1954], Fei & Ranis [1961, 1964, 1966].

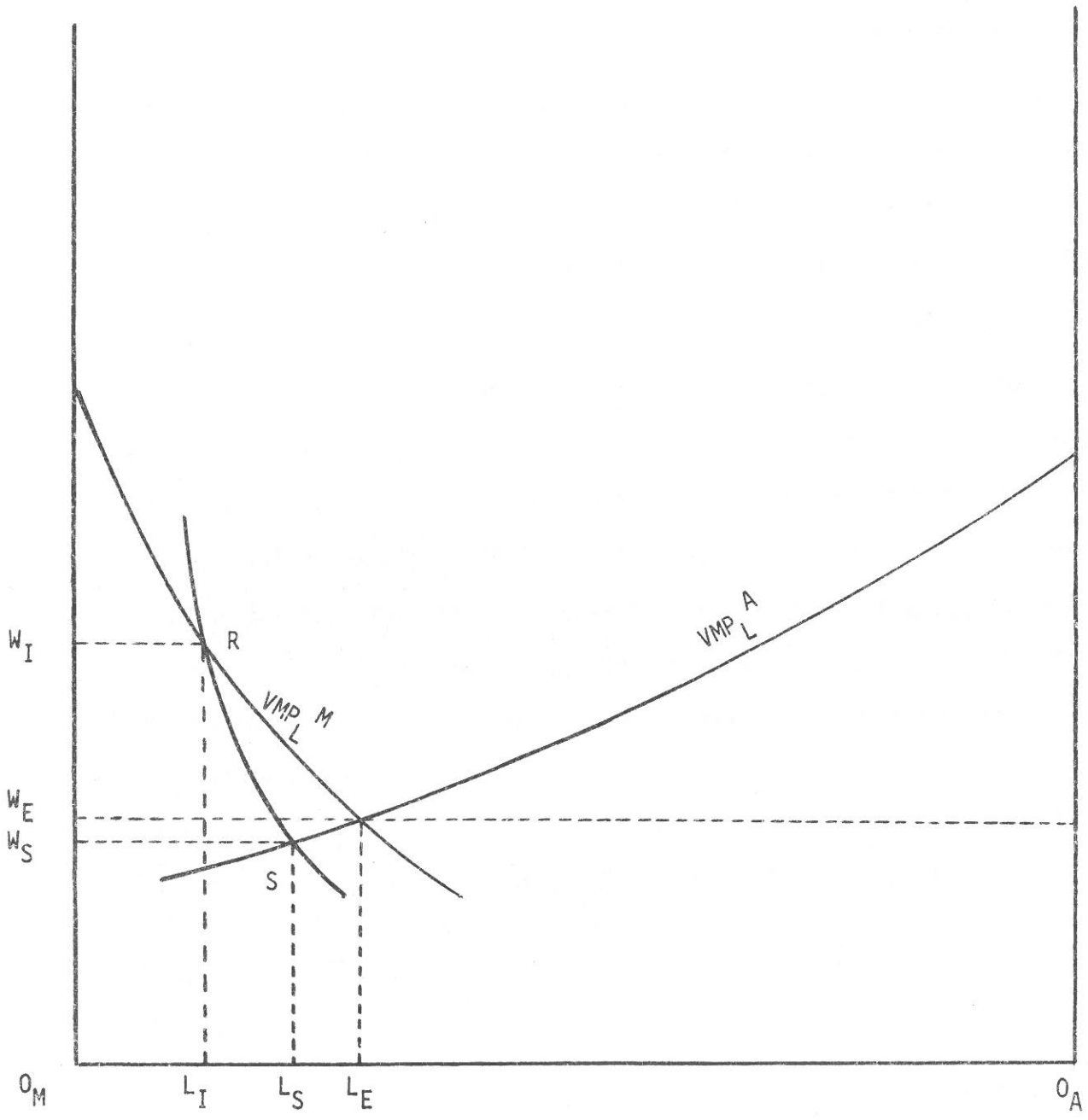
^{2/} Notable examples are Wellisz [1968], Todaro [1969, September 1976, 1976], Harris & Todaro [1970], Harberger [1973], Stiglitz [1974].

^{3/} This diagrammatic presentation has been suggested by the author in a Research in Progress Seminar Paper, Economic Division, University of Sussex, 1972. Different versions of it have also been developed and utilized in Stiglitz [1974], Corden & Findley [1975] and in Mehmet [1976].

In the diagram, labour is $O_A O_M$ so that every ordinate $L(O_A < L < O_M)$ represents a specific labour allocation with $O_A L$ in agriculture and $L O_M$ in urban manufacturing. If VMP_L^A and VMP_L^M are the corresponding value of marginal product curves, orthodox reasoning implies that equilibrium labour distribution is given by L_E , the uniform wage by W_E . This reasoning is based on the assumption that labourers act in accordance with a simple rational set of preferences and that in each sector profit maximizing employers pay, and utility maximizing employees receive, the value of the marginal product. Thus, rural-to-urban migration would have taken place if the initial allocation of labour had been anywhere between L_E and O_M . In the usual case of inflexible manufacturing wages, "institutionally determined" (resulting in particular from government or unions imposition) say at W_I , there will be $O_M L_I$ urban labourers (all employed) with $O_A L_I$ labourers in agriculture. Here, rural-to-urban migration would have taken place if the initial allocation of labour had been anywhere between L_I and O_M .

The chief innovation of the recent models is the suggestion that rural-to-urban migration will proceed even if urban unemployment prevails since the equalizing operator is the expected wage defined as the sum of 0 (zero) and W_I weighted each by the proportion of those earning these wages. A rectangular hyperbola (to O_M) passing through R has the useful property that the product of its co-ordinates at R ($L_I W_I$) equals the product of its coordinates at $S(L_S W_S)$, S being the point of intersection of the hyperbola with VMP_L^A . Consequently, migration will be pursued unless $W_S = W_I \frac{L_I}{L_S} + 0 \cdot \frac{L_S - L_I}{L_S}$ i.e. unless the agricultural wage is equal to the "expected urban wage".

Figure 1



The equilibrium distribution of the urban labour force is readily seen: $O_M L_I$ are employed, $L_I L_S$ are unemployed. $O_A L_S$, the remainder of the labour force, are in agriculture. An initial distribution of labour anywhere to the left of L_S will entail rural-to-urban migration. Hence, one of the dominant implications of the recent models is to predict a volume of migration in excess^{1/} of that anticipated by orthodox models.

This same diagram can be easily utilized to study (even though within a comparative static framework) the difference, under the different groups of models, of the effects of various policy interventions e.g. provision (explicit or implicit, that is via trade policies) of wage subsidies in agriculture or in manufacturing, etc.^{2/}

The diagram can also be utilized to study the implications of some key assumptions of the models. For example, a frequent criticism relates to the relationship between the identity of the migration decision-making unit and the relevant rural wage. If this unit is the individual, the relevant rural wage is the average product (hence, his minimum supply price of labour to the urban sector) which, by reasonable assumptions, is higher than the marginal product. Consequently, the relevant curve for agriculture would not be VMP_L^A but a curve lying above it, with the obvious implication that rural-to-urban migration and the urban level of unemployment are now lower (i.e., lower than the levels anticipated by the "recent models" in their original form presented above).

1/ The excess is $L_I L_S$.

2/ For example, the impact of wage subsidy in manufacturing on sectoral outputs and on the rate of urban unemployment can be uniquely determined (and on total output and employment - at least studied) by shifting upwards the "RS" curve at a distance equal to the wage subsidy.

Clearly, this study is not meant to be a survey of modelling efforts in the area of rural-to-urban migration. It is, however, worth noting that the great majority of attempts following the development of what has been termed "recent models" have concentrated on further refinement and improvement of these very models (e.g. development and further specification of dual or multi-segment urban labour markets and of search and hiring procedures)^{1/}. Econometric efforts have concentrated on testing these models' major manifestations (e.g. on estimating the elasticity of the propensity to migrate with respect to urban income, urban job probabilities, etc.^{2/}).

It is also of interest to note that the migration function utilized by some recent attempts to study the impacts of rural-to-urban migration within the framework of economy-wide macro-economic simulation models is precisely the one which forms the basis of the "recent models".^{3/}

Utilizations of this nature are a cause of some uneasiness; not only is the theoretical base for such usage weak, at best, but, from the point of view of their effects on migration, the policy prescriptions arrived at are, to say the least, highly ambiguous.^{4/}

^{1/} See, as examples, Johnson [1971]; Fields [1974, 1976]; Bhagwati & Srinivasan [1974]; Stiglitz [1975]; Collier [1975].

^{2/} Some notable examples are Levy & Wadycki [1972]; Hay [1974]; Huntington [1974]; Schultz [1975]; Knowles & Anker [1975]; Barnum & Sabot [1975, 1976].

^{3/} For example, see Byerlee [1973], Mertaugh [1976], Adelman & Robinson [1976, 1977].

^{4/} Thus, in Adelman & Robinson [1977], the impact exerted by land reform on rural-to-urban migration is an accelerating one! (This odd nexus derives precisely from the automatic operation of the recent models' migration function; land reform leading to increased production, which, in turn, leads to deterioration of agriculture's terms of trade and hence to an increase in the urban-to-rural wage differential).

The plan of this study is as follows: Chapter II presents a micro-economic analytical construct around which much of the rest of the paper is organized. Chapter III offers evidence bearing on this construct. Chapter IV argues that the overall impact of rural-to-urban migration on the size distribution of income is an equalizing one. Chapter V examines briefly another relationship - that between rural-to-urban migration and fertility behaviour. The implication of the argument of the final Chapter VI, as indeed the study as a whole, is that it is very difficult to offer a convincing argument why intervention to stem or even manipulate the rural-to-urban migration flow should not be kept to a minimum.

CHAPTER II

UTILITY, TECHNOLOGICAL CHANGE, SURPLUS AND RISK: AN
OUTLINE OF A NEW ANALYTICAL CONSTRUCT FOR STUDYING
AND EVALUATING RURAL-TO-URBAN MIGRATION

The analysis which follows concentrates on the small farmer's family unit. This is so for four main reasons: (a) in most less developed economies, when grouping is done according to certain broad economic characteristics, the largest single group, usually in a sense of majority too, is that of small self-employed farmers having access to sufficient land to provide subsistence income to their families, but very limited access to productive services; (b) the bulk of the poor in these economies is concentrated in rural areas; (c) small farmers constitute the largest component of these poor; (d) it is members of such families (rather than landless labourers for example) who dominate the rural-to-urban migration flow.^{1/}

It is useful to scrutinize the small farmer family at subsequent stages of the life cycle. Looking first at the individual small farmer and assuming decomposition of his additively separable, ordinal utility function into utility from food and disutility from effort, it is easy to show^{2/} that if the individual's desire is to maximize net utility - that is the difference,

^{1/} For (a) to (c) - see Chenery [1974, pp. 19-20]; for (d) see the survey by Connell et al. [1976].

^{2/} The assumptions are that utility monotonically increases with food, but at a decreasing rate, that disutility monotonically increases with labour, but at an increasing rate, and that the production function of food which depends on labour and technology is strictly concave. It is also necessary to assume that the appropriate boundary conditions exist.

given the level of labour input, between the utility and disutility, then a stable equilibrium will exist, of which the respective labour input will properly be designated the "equilibrium labour input".

Secondly, it is useful to look at the individual as the head of a family unit in which he is, initially, the only member to work, to refer to a "young family", a family in the earlier phases of its existence. It can be shown that in this case also, on certain simplifying, reasonable assumptions, with the disutility function remaining as before and with the aggregate^{1/} utility function maintaining similar properties as above, a stable equilibrium will exist.

Thirdly, the introduction of dynamics renders it necessary to consider two processes amounting to "compositional changes" in the family unit. Firstly, given the family size, the change in the family's age structure results in greater food requirements.^{2/} This, in itself, raises the marginal utility from

^{1/} Assuming that the utility functions of all other family members are also of the ordinal type and are monotonic transformations of the utility function of the head of the family (as well as of each other's), when, for any level of food $F_2 > F_1$, all family members obtain at least the same quota as under F_1 so that under whatever measure of their utilities the sum total of family utility which corresponds to F_2 is at least as large as that corresponding to F_1 , a pre (or quasi-) ordering of aggregation is easily achieved. Ruling out individual externalities - thus equalizing all members' cross marginal utilities to zero - the head of the family is confronted with an aggregate utility function, drawn from a family of utility functions (all, say, positive monotonic transformations of a single utility function), which is sufficiently specific for the analysis which follows.

^{2/} Taking as a "reference family" a family which includes few young children, its food requirements grow with time since, other things being equal, the extra food requirements of the growing children are greater than the diminished (if any) food requirements of the aging adults. (For example, for a family whose age structure is (30, 25, 6, 4, 2), FAO data indicate an increase by forty percent of energy requirements by the time its age structure is (35, 30, 11, 9, 7). (FAO [1973]).

food throughout. Secondly, family size itself changes over time as additional children are brought into the world. (In the present analysis, fertility decisions are exogenous - an assumption which can fairly easily be justified.) Since the total utility to be derived by a family unit from any given quantity of food cannot be determined independently of the number of its members and since the appropriate assumption is that the relationship between the two is an inverse one, an increase in family size thus brings about a downward shift of the utility function. The combined impact of the two compositional changes is thus "a downward projection and twist" - a change in level (intercept) and a change in the rate of change of level (slope). The obvious implication, in a utility - disutility plane, is the achievement of a new "labour equilibrium input" (lying to the right of the original one) with a lower net utility.

Fourthly, it is particularly useful to consider at this stage, from the perspective of the "reference family", the net utility implications of an induced land-augmenting technological change in food production. Obviously, on a utility (and disutility) - labour input plane, the utility corresponding to a production function subjected to this technological change will lie above that corresponding to the original production function. The incentive to adopt the new technology, given the compositional changes referred to above, will increase over time. It is not easy to quantify the intensity of this incentive but it is not too difficult to suggest a measure of intuitive appeal. Given the labour equilibrium input, the intensity of the incentive will relate monotonically to the following ratio: the difference between the utility level attached to the production function subjected to the technological change and the utility level attached to the original production function will compose the nominator.

The difference between the utility function attached to the original production function and the disutility function (again, given the labour equilibrium input) will constitute the denominator. For a given technological change, the nominator is fixed but since the denominator decreases with time (owing to the compositional changes), there will be an increase in the ratio and hence in the incentive to incur the technological change.

Fifthly, it is now necessary to identify two sets of factors (a) those characterizing the abovementioned technological transfer, and (b) those characterizing the institutional and the non-institutional "surplus-risk state" confronting the small farmer's family.

Of the factors characterizing the technological transformation, the two most critical ones ("critical" - in its connotation in physics: "marking a transition from one state to another") are: (a) its surplus requirement; and (b) its risk-increasing nature.

Referring first and briefly to (a), it is usefully illustrated by the transition from traditional varieties to High Yielding Varieties of crops. It is well known that owing to strong interactions and complementarities, the new composite input intensive varieties are High Yielding only under the optimal input package which necessitates an a priori availability of surplus.

A presence such as this of strong complementarities is probably a general phenomenon characterizing most relevant technological transformations. Consequently, a sharp distinction between transformations which critically depend on really indivisible factors and those depending on divisible ("pseudo-indivisible") ones is somewhat misconceived. The replacement of a light wooden plough also requires the provision of draught animals of a superior breed; the

installation of a tubewell requires a pump set). Of course, it is always possible to argue that, prima facie, some components in a "package" can be hired (draught animals) or purchased (tubewell water) from, say, neighbouring farmers. This may or may not be possible (synchronization of the use of draught animals is dictated by the seasonality factor) or relevant (structures which are an integral part of the land, e.g. a canal, may still be required). But perhaps an equally important consideration here is that a meaningful change (that is, of the potential of increasing output by more than a small, marginal magnitude) implies that even if arrangements of the above nature reduce, though clearly not eliminate the need for an a priori availability of surplus, they manifestly introduce an additional element of risk. As will be pointed out shortly, the "surplus insufficiency" and the degree of risk, each enhance the severity of the other.

A great many (and possibly most of the)"relevant technological transformations" of recent times, particularly of the last two decades or so, depend on new factors and inputs -elements in which the technological change is "embodied". This in itself, independently of the factor of complementarity, creates strong, discrete needs for a "sufficient surplus", and produces a new pattern of technological change which differs from a "traditional technological change" - a continuous technological change involving a gradual increment to the quantities of existing factors which is facilitated, in turn, by a continuous, if sporadic, accumulation of surplus.^{1/}

^{1/} That the availability of surplus is a critical precondition of technological change is emphasized in a large number of the "Country" as well as the "Analytical" papers, Agency for International Development [1973]. For another example see de Wilde [1967]. A telling illustration is given by the following passage in another work: "Although recent experiments in Maragoli [Kenya] have shown that hybrid seed, fertilizer, a sufficient labour force and good husbandry can more than double most current maize yields, farmers complain that they cannot find the few hundred shillings with which to make this investment in their land." [Moock 1973, p. 306].

As regards the risk-increasing nature of the technological transfer, there is little doubt that the new technology involves certain risks. Its novelty as such (to some extent risk is inherent in any kind of innovation) and its adoption entailing a commitment (often, an irreversible one) over time, which hence subjects it to imperfect knowledge, generate risks. (If the commitment involved is more irreversible, the ensuing state is, ceteris paribus, riskier).

The probably riskier property of the new technology is, however, a result of the presence of specific categories of risks. Risks which belong to specific existing categories of risks are magnified by the new technology, and risks which belong to categories of risks hitherto not experienced are also introduced by it. On the one hand, there is some ambiguity as to how the new technology will match the various environmental conditions - both the general ones and, in particular, those specific to the adopter's farm. (Key factors here are micro-climatic variations, local soil conditions and localized pests and diseases). On the other hand, factors and inputs previously irrelevant to, or not incorporated in, the production process could, under the new technology, become critical and their as yet unexperienced efficiency and reliability - a major source of risk. (The performance and the quality of the various services rendered by central administration and government agencies is a case in point.^{1/}

The factor which perhaps assumes particular importance is that the technological transfer embodies an increased risk when it becomes impossible to continue

^{1/} Actions of other agents (which are also subject to the uncertainty generated by human behaviour and the "fundamental random nature of human decisions") may, for example, be responsible for the production process being interrupted owing to the non-availability (or the non-availability at the proper time) of key inputs.

to utilize risk reducing practices which were used under the old technology. Clearly, under conditions of imperfect control over the environment, food output can be envisaged as containing a random component distributed independently of the adopter's actions. But, given the technology, the range and effectiveness of these actions which, in turn, determine the characteristics of the distribution of the random component (e.g. its spread), depend directly, more than anything else, on the time span for which the technology has been in use.^{1/}

Built-in risk-reducing devices are provided by many traditional practices such as the staggered planting whereby deviations from optimal planting time (reduction in expected yields) are traded in for a minimization of the effects of e.g. randomly incurred periods of water stress, and the interplanting of one crop with another (intercropping) where the various crops differ substantially in their "environmental resistance" (to a stochastic environmental variability) e.g. to drought, local pests and bird damage. (The mixture of staple grains with legumes and roots or with each other are usual practices, e.g. sorghum with millet or maize in parts of Africa, or barley, peas, gram and oil seeds with wheat, bean-sprouts with millet in parts of the Indian sub-continent.^{2/}

^{1/} Past operations along the "old" technology have undoubtedly generated some direct relationship between given actions and preferred consequences; ignorance about the environment and the future has been reduced through the lengthy, time proportional, processes of collection of information and gaining of experience. However, these "assets" may become largely obsolete once a new production technology is incorporated.

^{2/} It should not be deduced from this that mixed cropping (in its different versions) is practiced exclusively for the sake of depressing risks. For example, manuring or the application of certain chemical fertilizers can, to some extent, be replaced (or complemented) by a simultaneous planting of, say, staple grains with nitrogen-producing legumes.

However, in connection, for example, with this latter practice, under the new technology - e.g. where a new variety is involved - the same intercropping may be either useless or even harmful (e.g., when the mixed crops, directly or indirectly, interact negatively), or may simply be out of question, e.g., when considerations of future use demand the preservation of the purity of the seed. Though it may be possible for other husbandry practices to supplant the traditional, (subjective) risk lessening ones, this approach is likely to require production experience and thus time.^{1/}

It is also important to note that, when a structural feature of the new technology is a higher working capital-output ratio because of the increased use of intermediate inputs, then, a given objective probability of output failure implies, considering the absolute quantity involved, a higher level of risk under this technology than under the old one.^{2/} This implicitly assumes a given degree of farm management efficiency but, if this degree is inversely related to the absolute quantity of the working capital, the risk embodied in the new technology could a fortiori be greater, even if the intermediate inputs-output ratio is not higher, but the quantity of these inputs is larger.

^{1/} If, following the anthropologists' views, it is accepted that, in the agrarian sector of a developing economy, economic and social variables strongly interact, exhibit high cross elasticities, it is also possible that the adoption of a new technology will give rise to such social repercussions that some of the previous interactions between the economic and the social factors will be weakened - these being precisely risk reducing ones. By the same token, the new technology may also render it impossible to continue to maintain some "strictly economic" arrangements, a characteristic of which is the sharing and elimination of risks, e.g. a shift from a wooden to an iron plough severs the reciprocal relationship between a small farmer and the village carpenter. For an interesting discussion of this direction, see Adelman [1973]. See also Hagen [1962], especially Chapter 4.

^{2/} In a footnote in Chapter VI below, the adopter of the new technology is shown - given his utility function - to be more sensitive to a relative change in the magnitude of a production failure than to an equal relative change in the probability of the failure.

Of course the - "more advanced" - new technology is fairly likely to embody some features which increase the adopter's control over the environment. This implies a certain lessening of objective risk which, in turn, can be expected to depress the subjective risk. However, ex ante, the impact of this - and other elements - does not seem to diminish significantly the accumulated weight of the above set of factors - most certainly not to such an extent as to render the subjective risk embodied in the new technology less than that of the old technology.

As to the "surplus-risk state" confronting the small farmer, two characteristics are assumed to prevail. On the one hand, the farmer possesses no surplus or only an "insufficient surplus" and no capacity for engagement in "sufficient" self-insurance. On the other hand, he faces malfunctioning, highly fragmented capital markets with neither institutional nor non-institutional credit supply and insurance coverage ^{1/} - except perhaps at a prohibitive price.

"Sufficiency" is, of course, a relative term used in a dynamic sense, sufficient surplus being that minimal surplus necessary for carrying out the relevant technological transfer. An extreme example is provided by the case of some indivisible "key" inputs critical to the adoption of a number of new technologies such as tubewells and minor irrigation works. Likewise, the suf-

^{1/} There are a number of possible reasons why insurance markets do not come into existence. Certain of these reasons may directly relate to the nature of the economic system (the degree of integration) which may not only hinder specialization by insurers in given classes of risks (and thus limit their capacity to make use of the law of large numbers) but also generate situations whereby occurrences cannot be said to bear little or no causal relation to one another. Other explanations may stem from the reason of the "moral hazard" (a situation where the very provision of insurance might alter behavioural patterns which in turn, to some extent, would determine the occurrence of the "undesirable event").

iciency of an insurance coverage could be interpreted (but see below) as being that minimum which, considering the risk aversion profile of the head of the family and the (subjective) risk-increasing nature of the new technology (other factors being kept constant), will render food production under the new technology no riskier than food production under the "old" one.

This state of affairs - the likely absence, or insufficiency, of the existing surplus, and the likely absence or insufficiency of exogenous mechanisms and arrangements for overcoming this shortage, requires little elaboration here.

As the family is initially endowed with the "cruel parameter" of only a small holding, and an average capacity to generate surplus which is directly proportional to the farm food production, but inversely proportional to the (standardized) number of family consuming members, the prevailing surplus and the expected surplus are likely to be low. The far from smoothly functioning financial markets, often dominated by oligopolistic or even monopolistic elements, are largely responsible for the prevalence of a state whereby the surplus and insurance requirements of the new technology must be met from "within" the family unit.^{1/}, ^{2/}

^{1/} It is worth noting here that, even given smoothly functioning financial markets and money-lending institutions, borrowing vis-a-vis self-finance is not risk neutral. The risk element embodied in taking a loan (a claim on subject-to-risk future production) would, moreover, be imposed on a risk averter already exposed to a high level of subjective risk. Unless loan-taking is neutralized by some concurrent "counter-measures" (e.g. backed by an appropriately linked and rated insurance coverage - see Chapter VI below), the strong aversion of the head of the family to incur debts should be expected to hold him back from doing so.

^{2/} There is now a substantial body of evidence on the mal-functioning of rural financial markets in general, and on the characteristics of the credit supply curve confronting small farmers in particular. See, inter alia, Dantwala [1966]; Vasthoff [1968]; Reserve Bank of India [1969], especially Chapter 18; Oweis [1972]; Pandey [1972]; Dell'Amore [1973]; Agency for International Development [1973]; Jaiswal & Srivastava [1976]; Perrin & Winkelmann [1976]. Note that in this situation the new technology generally believed to be scale neutral ceases to be so. When the market price of credit, as well as the price of modern inputs, are biased against the small farmers, the new technology is associated with financial diseconomies of scale discriminating against these farmers. Economic bias is superimposed on technical neutrality.

Sixthly, given the impetus to incur technological change on the one hand, and the constraints imposed upon it on the other, a migration strategy, and only that, will provide a solution.

Methodologically, it is easier to show first that "the elder child", say the son, on reaching maturity (henceforth the maturing son) will be the migrating agent ^{1/} and then, by successive relaxation of various assumptions, to show that another son, and at a later date, could act as the family's migrant.^{2/} Since to fully proceed along these lines would require too much space it will be more useful to confine the attention to the case of the eldest son's migration. To simplify the argument even further, assume for the moment that the only factor

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- ^{1/} The possibility of seasonal rural-to-urban migration by the head of the family prior to the maturing of his eldest son can be shown to be of limited plausibility. This is demonstrated in Appendix 1.
- ^{2/} A useful illustration is provided by the case where the availability of some surplus which, in a fairly short period of time can be generated on the farm with the application of the labour of the maturing son, is a necessary precondition for successful migration - given the structure and tightness of the urban labour markets. In such a case, the prevalence of a specific point of time before which rural-to-urban migration is not feasible but at which it becomes mandatory and is performed is blurred when migration is constrained by the twofold requirement of reaching maturity and the availability of some surplus. If the ensuing, newly defined point of time happens to coincide with the attainment of maturity by the next son, that son may become the family's migrant (the incorporation of the eldest son's labour on the farm thus paving the way for rural-to-urban migration by the successive son); but, if the necessary surplus is accumulated before that, the eldest son may still be the family's migrant. Note that, in both cases, migration is a lagged execution of a past decision; the conditions which prevail when the phenomenon is observed are not, strictly speaking, the ones responsible for the taking of the decision to incur it.

inhibiting a shift of technology is the inadequacy of the family's surplus. Given the net utility implications of such a shift, the criterion for choosing between migration and labouring-the-farm strategies is, *ceteris paribus*, the sign of the surplus accumulation differential between them. Consequently, contrary to a frequently made assumption, the average level of consumption of the farm family members which, through the institution of sharing the migrant son is assumed to enjoy, cannot act as his urban supply price (i.e. cannot appear as an argument in the migration function).

This does not imply, though, that the migrant son's consumption level is immaterial. Designating the (food equivalent) of the expected urban income - net of non-optional urban incurred costs - by F_U , the alternative food output on the farm imputed to derive from the maturing son's labour by F_R and his urban and farm real (food) consumption levels by F_{CU} and F_{CR} respectively, the migration strategy will be chosen when $F_U - F_{CU} > F_R - F_{CR}$. In the special case when the real consumption level is constant over sectors, $F_{CU} = F_{CR} = F_C$, migration will still be pursued as the inequality which converges to $F_U > F_R$ is still held. This same result holds if both $F_U, F_R < F_C$! (including the special case where $F_R = 0$). In other words migration is pursued because of the positive net effect which it has on the accumulation of surplus.

Interestingly enough, it is not true that the surplus is necessarily, partly or wholly, directly accumulated by the migrant son in the urban sector. When the consumption level is constant over sectors and $F_U > F_R$ but $F_U, F_R < F_C$, surplus is accumulated on the family farm (some farm-produced food which would have had to feed the maturing son had he stayed on the farm is now "freed"). When $F_R = F_C$

but $F_U > F_C$ surplus is, certainly at the margin, directly urban produced. Similarly, other states whereby surplus is, directly, partly farm-produced and partly urban-produced can easily be constructed.

On these assumptions, will migration take place if the migrating son's assured level of consumption in the urban sector falls short of that prevailing on the farm? In utility terms, any sacrifice is clearly smaller when shared by all family members. There may be little reason to accept such a sacrifice when the expected impact, from the point of view of the accumulation of surplus, is minute (hence, too, from the point of view of facilitating the technological transfer). However, the situation could be radically altered when a probable award for the same endurance is accumulation, via migration, of a sufficient surplus. The maturing son would then migrate in spite of $F_{CU} < F_{CR}$, with the difference being maintained at a relative minimum owing to the equal sharing of the drop in the consumption level and, possibly too, owing to the allocation of some surplus already possessed by the family to support the migrant son (hence substitution of holding some surplus with a zero probability and having the sufficient surplus with a non zero, smaller than one probability, for having some surplus with a unit probability but sufficient surplus with a zero probability).

Assume now that the only factor inhibiting a shift of technology is the riskier nature of the new technology. The explicit attitude of the head of the family towards risk-bearing is rendered by the characteristics of the utility function; thus he is a risk-averter.^{1/}, ^{2/}

^{1/} Starting from a position of certainty, he refuses to take an actuarially fair bet. It is easy to show that the negativity of the second derivative of the utility function is a necessary and sufficient condition for risk aversion thus defined.

^{2/} See following page.

It is reasonable to postulate that, when the decision to shift the production technology is taken, the degree of risk aversion is at least as great as that which had prevailed before.^{1/} However, even this postulation is somewhat stronger than necessary. The argument which follows will equally hold if the decision-maker

2/ From p. 21

In the past, non-economists have discernibly, though not rigorously, observed that risk aversion of the head of the family impinges critically on his choice of technology. "... the Asian villager ... like any other careful person, is unwilling to exchange something that works, even poorly, for something that he is not sure will work at all. This villager, schooled by experience, taught by his father and his father's father, cannot be expected to experiment with new and unproven things" Holmes, [1959, p. 191]. A similar point has been made by Brewster. [1967, pp. 67-68]: "So close is life to the bone that [people's] impulse to take a chance on gaining a whole loaf from new and untried techniques is inhibited by anxiety over losing the crumb they feel sure of getting from their old practices."

1/ The degree of risk aversion is measured by the second derivative of the utility function standardized by the first derivative in order to escape the unwarranted variation with monotonic transformations. Given this, the postulation in the text requires to examine the impact of the main "risk-aversion variables". When the new technology is introduced, with the necessary surplus (already accumulated or otherwise available) embodied in the food production process, an increase in "terminal assets" or "terminal wealth" (= "initial wealth" plus the algebraic magnitude of the current period's income) to which risk aversion is inversely related can hardly be assumed to have occurred. (When the ratio between a given period's expected level of income and the increment to terminal wealth is low - that is, significantly lower than one-risk aversion can, other things being equal, safely be assumed to have decreased. However, such is not the case in the present context where the ratio is anything but low). Secondly, when the relationship between the degree of risk aversion and the (standardized) number of family consuming members is an increasing one (or at least non-decreasing), an increase in this number over the relevant time span will also imply that the decision-maker has (at least) not become less risk averse.

is, to some extent, less risk averse, the new technology being to a large extent riskier. (From the point of view of the direction of a behavioural response, a given degree of risk aversion combined with a given risky prospect and a lesser (greater) risk aversion combined with a riskier (less risky) prospect are equivalent, although in general there is no reason to assume that the "elasticity of substitution" between risk aversion and the riskiness of the marginal prospect is constant).

Given, therefore, that without any loss of generality, the head of the family can be envisaged as a constant-risk-averse decision-maker who confronts a riskier situation, the following proposition will be put forward. The imposition of an increased risk on a (consistent) risk averse decision-maker who maintains (at least) a constant degree of risk aversion will induce him, in the face of the riskier situation, to adopt a strategy of a risk-reducing nature. The introduction of a new risk-increasing technology in the production of food will be synchronized with the adoption of a risk-depressing strategy. With the strategies' space being the allocation of the maturing son's labour in the urban sector or on the family farm, the former will be chosen.

To support this proposition, a general diversification rule, in a portfolio selection theory sense, is of use in indicating the sort of response in portfolio allocation terms and hence, which of the alternative strategies is the optimal choice. Given the utility function as of present, on the basis of the independence assumption supplemented by alternative sets of fairly general postulations, it is possible to prove alternative theorems which state that, in order to achieve the optimal portfolio, it is compulsory to diversify.^{1/}

^{1/} Some of these theorems are presented in Samuelson [1967].

More specifically, if a given investment (security) which, like the other investments, is of finite (non-zero) variance and of a mean at least as great as of any other investment, is distributed independently of all other investments, it must enter positively into the optimal portfolio. Consequently, it is possible to show that, if one of two alternative investments is of a mean at least as great as the other's and if each of these investments is distributed independently of all "other investments" then - if all investments are of finite (non-zero) variance - the portfolio into which, in addition to these "other investments", the first investment enters, is the optimal portfolio.^{1/}

That the application of this theorem implies the choice of the migration strategy requires but little elucidation. On the general assumption of interpersonal independence of labour rewards (food output produced by the family unit excluding the elder son, being indifferent to the sectoral allocation of his labour, i.e., externalities are ruled out), assume first that the surplus necessary to facilitate the technological shift has been accumulated through "successful migration", e.g., owing to the migrant son obtaining a secure urban job. Given the theorem, the comparison is then between the expected reward from the utilization of the maturing son's labour on the farm (the mean of the second investment) and the one expected to derive from his continued stay in the urban sector (the mean of the first investment). It is easy to see why, in such a situation, the subjective probabilities which determine the magnitude of the expected rewards will produce a higher urban mean than the one consequent upon the application of the labour of the maturing son on the family farm for the first time under the new technology.

^{1/} For a proof, see Appendix II.

Assume, secondly, that the migration strategy is considered when the available surplus only just suffices to meet the direct surplus requirements of the new technology. Again, comparison at the margin - from the point of view of the allocation of the maturing son's labour - of the expected urban income with the income expected to accrue from applying the new technology on the farm for the first time is likely to render the former not smaller than the latter. Consequently, with the "spreading of risks being the great way of diminishing uncertainty"^{1/}, migration will be pursued.

In concluding this reference to the strategy choice it is useful to examine the impact on the migration decision exerted jointly by the two factors hitherto considered separately. As has been pointed out earlier, surplus insufficiency and risk aversion prevail simultaneously. The impact which they exert jointly on the choice of strategy is greater than "the sum" of the two impacts considered separately. This results from and implies the prevalence of a positive interaction between surplus insufficiency and aversion to risk. On the one hand, the degree of risk aversion is related directly to the degree of surplus insufficiency; a larger surplus diminishes the degree of risk aversion paired with a given risky prospect. On the other hand, a higher degree of risk aversion paired with a given risky prospect (i.e., a prospect which requires a given surplus) magnifies the overall surplus requirements since (given the absence assumed throughout of insurance markets), part of the surplus has to be earmarked as an insurance fund.

The prevalence of these interdependencies is again touched upon when the choice and effectiveness of policy measures is examined in Chapter VI.

^{1/} Hicks [1967, p. 29].

Finally, it is obviously necessary to explain why the maturing son (or a maturing son) is the migrating member, whereas the head of the family is the one who stays behind to till the family farm. In brief, the reason for this allocation lies in comparative advantage considerations and in their consequent imposition of specialization. These, in turn, derive from the relationship between the magnitudes of three main variables: efficiency (productivity) in on-the-farm food production; the probability of securing urban employment; the urban wage rate (in particular, urban income in general) once employment has been secured.

Compared with his maturing son, who either did not participate in agricultural production or did so only for a short period, the head of the family is most probably the better farmer. He is more likely to command a good level of husbandry which presumably depends most on both tradition and personal past experience, the first being fully grasped through the latter.^{1/} His choice of enterprises and practices, timing of operations and general management of farm production can be expected to be nearer to the optimum levels (that is, given the overall set of production constraints).^{2/}

The reverse seems to hold with regard to production efficiency in the urban sector. More than any other single characteristic, and as compared with experience in agricultural production, some form of (general) education (e.g. basic skills of communication and computation, sometimes enriched by

^{1/} Embodied in these factors there is frequently the only basis for the crucially important capacity of environmental predictions, however limited.

^{2/} Note that, throughout the analysis, the head of the family is taken to be a decision-maker who is both aware of the new technology and strongly desires to adopt it.

vocational training is a prerequisite of the capacity to perform a wide range of urban jobs; it is the maturing son who is more likely to possess a given (or often, any) level of education.^{1/}, ^{2/}

This supply feature, apart from endowing him with a necessary capacity and a higher productivity in the performance of some jobs, also implies that more urban labour markets are accessible to him. Lack of given educational qualifications palpably excludes job-seekers from any skilled labour markets. (Filtering and displacement, if they prevail, are in the downward direction). To the extent that education is a critical determinant of employability, in the demand for labour of many urban industries - either from the point of view of employers because the knowledge embodied in the education of potential employees directly enhances their productivity, or because educational attainment is the employer's best single indicator of the desirable characteristics of potential employees - the maturing son should be the potentially more successful job seeker. Moreover, it is this factor which is likely to furnish him with more job information (as it is scarce) and better job information (as it is not of a uniform quality.)

If education can be used as a satisfactory proxy for "labour quality", (general knowledge, skills, capacity for on-the-job training, initiative, motivation) and if urban wage structure is such that wage differentials are

1/ For evidence on the inter-generational education differential (particularly in recent decades) including the rural sectors of developing economies see, for example, Unesco [1973, Tables 1.5, pp. 49-64 and 2.7, pp. 92-114] and Myrdal [1968 pp. 1666-1685].

2 At least one recent study has concluded that formal education does not appear to increase peasant productivity [Barnum & Sabot 1976].

positively and closely associated with labour quality (whether directly or indirectly through the occupational structure of urban wages) then, comparison in terms of the third variable - the urban wage rate - would also favour migration of the maturing son.^{1/} Imperfections, rigidities and frictions, though weakening this association, are unlikely to nullify it. The migrant labourer who possesses more "human capital" can expect a positive probability of employment in more urban markets where wage levels, as compared with those pertaining in the other markets, are generally higher.

Since, if at all, the three variables are positively correlated, their combined implication would a fortiori be that the maturing son should be selected as the family migrant.

^{1/} As hinted in the text, the positive relationship between labour quality (in particular - educational attainment) and the wage rate may, but need not, be direct. Wages can be job-specific and invariant with the characteristics of those filling them. But, in such a case, given plausible assumptions on the demand side (employers' preferences), a high rank correlation coefficient is likely to prevail between jobs ordered by their wage rates and the level of qualifications which are essential (or at least are desirable) to secure them. Alternatively, wage rates, may, at least partially, vary directly with the qualification level of job seekers who offer themselves for a given job.

CHAPTER III
SOME EVIDENCE

A natural utilization of the analytical construct presented in Chapter II is to organize the data presentation around this construct's main implications. From the point of view of the frame of reference within which the present study is written, i.e. "the economic-demographic interactions in the process of agricultural development", the most striking mechanism which rural-to-urban migration of labour activates is technological change in agricultural production. The conditions postulated to facilitate this change i.e. the accumulation of surplus, and, through diversification of sources of income, control of the level of risk, are obviously easier to reconcile with a fairly quick absorption in employment of family migrants on their arrival in the urban sector and with an explicit, net urban-to-rural flow of remittances from the migrant sibling to his family. Evidence bearing on each of these topics, viz. technological change, remittances and urban employment, is presented in the first three sections below. The relative neglect of these issues and their crucial role in policy formulation justifies a somewhat detailed presentation of the scanty information available.

Another implication of the analytical construct of Chapter II are the particular characteristics of the typical migrant: he is young, single and relatively more educated and skilled than his fellow family members. Since abundant evidence bearing on these characteristics is both available and well summarized in the literature, it will be treated only briefly in the fourth section below.

1. Rural-to-Urban Migration as a Catalyst of Technological Change
In Agricultural Production

Unfortunately, though not surprisingly, the great majority of studies on migration as well as the technological change at the family farm level shed no light on the relationship between rural-to-urban migration of labour and technological change in agricultural production. Four main factors explain this neglect. First, the technological implications of rural-to-urban migration in the rural sector have not been incorporated into most migration models and consequently evidence bearing on this issue has not been collected. Second, too many migration studies are based on information supplied solely by the migrants. Clearly, it is not the migrant himself, located in the urban sector, who is in the best position to inform a researcher of an ensuing rural-end technological change. Third, there is a probable time gap between migration and a shift of technology. Scrutinizing migrants, or even their rural families, too soon after migration will most probably fail to reveal the existence of the postulated sequence. Fourth, too often, data are aggregated at the rural community level rather than available for the individual family farms, with the result (decomposition back to farm level data being impossible) that it is not possible to infer that those families within the community who have experienced migration are also the very ones who have incurred the change in production technology. Striking examples are given by hundreds of Indian village studies conducted in the early sixties.^{1/}

^{1/} These and other village studies have been collected within the framework of the Village Studies Programme of the Institute of Development Studies, University of Sussex.

However, search for the relevant information produced some interesting evidence. Some examples are presented below.

A study of Senapur, Kerakat Tahsil, Jaunpur District, Uttar Pradesh, based on surveys carried out during 1964-65^{1/}, found that over the decade preceding the survey date, an increase in the number of men working outside the village - in the urban sector and in the flow of remittances from these migrants has facilitated a shift in the cropping pattern to risk-enhancing, investment-demanding sugar cane and vegetables, mostly potatoes.

In a study which draws heavily on "practical experience of a decade and a half of economic work in Africa"^{2/}, an examination of African agriculture in general points to the key role played by labour migration in the "transition from subsistence to market agriculture". On identifying and scaling different stages in this transition, it is pointed out that it is the acquisition of the required capital which enables African farmers to become "progressive farmers"; "work experience outside the traditional environment very often serves as a means to accumulate capital to invest in farming by the purchase of better farm tools and equipment".^{3/}

A comprehensive study of tropical Africa which draws heavily on field investigations in thirteen areas chosen to constitute a "reasonably representative sample" (according to preselected criteria of variability)^{4/} concludes that "surprising^[1y] ... much development has taken place in tropical Africa with

1 Simon [1966, Chapter 5].

2 Kamarck [1967].

3 Op. cit., p. 105.

4 de Wilde [1967].

comparatively little or no credit". Granted that the availability of surplus is a critical precondition of such a development, the generation of "savings for investment in agriculture" must thus account for this development. It is in this context that the following point is made: "... the migrant labourer often saves a surprisingly large proportion of his meagre pay to take back or transmit to his native locality ... cash which can be devoted to productive purposes provided there is a sufficiently strong interest in, and opportunities for, development".^{1/}

In a paper which draws on "the author's experience selling agricultural chemicals to small farmers in Uganda and Kenya"^{2/} the nature of the key argument is more categorical. "Remittances from migrants in the high wage sector ... are a significant source of working capital for the smallholder sector". Working capital, being "both a constraint and the source of the ability to increase output and adopt new techniques", is necessary "to take advantage of productive opportunities in the smallholder agricultural sector". (Emphasis added. From here only a short step is required to facilitate an argument that the very intensity of the incentive to migrate is directly related to the "net return" which can be obtained "through the use of remittances as working capital on the farm".)

^{1/} Op. cit., pp. 198-199. However, it should be noted that migration of labour refers here to "migration of labour not only between rural areas and town but also from one agricultural area to another". Op. cit., p. 51.

^{2/} Waters [1973].

A study of rural-to-urban migration from Kharga Oasis^{1/} (which lies in a low depression west of the Nile, Egypt) to the Nile Valley, argues - as regards that "migration type" which is "the norm" - that "it is not the mere concern of the individual who migrates. It is rather the whole family who decides on who among its members should migrate, ... how long a migrant should stay away...". Once migration takes place, with the resulting "increase of cash in the hands of the people, new projects are contemplated for drilling new wells or rather cleaning the long neglected Roman wells". "Investment in such projects" by these families thus facilitates a major change in the nature of the cropping pattern (of millet, wheat and rice) by way of reducing the "sense of insecurity" which arises out of "the erratic nature of the water supplies".

The nexus between labour migration, though not only rural-to-urban migration of labour, accumulation of surplus ("cash") by the migrants and a shift from "subsistence sweet-potato cropping" to "cash producing" (of coffee as well as of cattle) is reported to have prevailed in the case of Koroba and Pangia (sub-districts in the Southern Highlands district) of Papua New Guinea.^{2/} Such has been the case in the late sixties, but this is also expected to continue with rural-to-urban migration of labour being "a means of providing funds for investment projects".

In a study based on "empirical investigations" into two "representative villages" (Vijvaharia and Surdahpur Raja in the district of Gorakhpur, East Uttar Pradesh) in North India conducted in 1961^{3/}, a major "economic consequence" is

1/ Abou-Zeid [1963].

2/ Harris [1972].

3/ Gaur and Nepal [1962].

reported to derive from the fact that "emigrants continually send money to their relatives left behind in the villages." The ensuing "significant ... influence on village society" is "the effect of technology" with farmers investing "more money than before on the purchase of mechanical implements, fertilizers", as well as other agricultural implements and oxen of a superior breed. (Emphasis added.)^{1/}

The econometric study of rural-to-urban migration of labour from the rural North West Frontier Province of Pakistan to the urban centres of the Punjab and Sind^{2/} stresses the crucial role of remittances for "rural investment in physical capital and education" ("physical capital" standing for "physical capital and productive inputs" - "seeds, fertilizers, minor agricultural apparatus, construction and repair of farm buildings, a pair of bullocks"). Nearly half of the "total investment in physical capital" and practically all expenditures on education are accounted for by remittances.

In spite of diverse methodologies and orientations, these studies seem to tell a story, the general recurrent theme of which appears to be the a priori awareness of a superior technology, combined with the removal, via rural-to-urban migration, of the constraints hindering the adoption of that technology.

2. The Flow of Remittances

An important (although, as already indicated, not a necessary) test of the methodological framework of Chapter II is whether or not it is possible to

^{1/} A similar "impact", i.e. "introducing technology" through the purchase-facilitated by migration - of "agricultural implements such as chaff-cutters, hand pumps and improved types of plough" is reported in the case of Rampur, another village located in Gorakhpur district. See Srivastava [1968].

^{2/} Mohammad et al. [1973].

discern a significant urban-to-rural transfer of resources, consequent upon rural-to-urban migration resulting in urban employment. As in the case of technological change in agricultural production - and largely for similar reasons (see the preceding section), empirical analysis is gravely hampered by data paucity.

Thus utilizing whatever evidence is available (sometimes stretching it beyond ends for which it was intended) renders it necessary to consider, at the outset, two conceptual caveats. The first refers to the problem of distinguishing between gross and net flows, whilst the second relates to the impact of the time dimension.

The majority of the few studies which, in one way or another, address themselves to the issue of rural-to-urban remittances ignore initial flows in the reverse direction (flows aimed chiefly at enhancing the success of a family member migrant in the urban labour markets). Analytically, this omission results in an overestimation of the real magnitude of the urban-to-rural flow. However, given the order of magnitude of some parameters and on the basis of some simplifying, though reasonable, assumptions it can be shown that the magnitude of this bias is small. Consequently, the urban-to-rural net flow does not deviate greatly from the gross flow and thus, for all practical purposes, the distinction between the two can safely be ignored.

In general, the rural-to-urban flow consists mainly of the cost of fares and the support to the migrant family member in the urban sector until he finds employment.

If urban employment is found and retained for a number of years - a concomitant prevalence of urban-rural flow of remittances indicates that such is the case - the initial costs of travel can be assumed to constitute a minute proportion

of total (gross) urban-to-rural remittances, and hence can be ignored. An effort has then to be directed to evaluate the magnitude of the probable support over the time lag between arrival and employment. If most migrants obtain employment within a relatively short period of time (say half a year or less) but remit substantially for a number of years, net remittances can be assumed to be positive, particularly if allowance is made for the fact that over the initial period migrants are not supported fully by remittances from their families at the rural end, but also by urban located relatives and friends to whom, most probably, repayment is made though obviously such repayment is not reflected in the inter-sectoral flows of remittances.

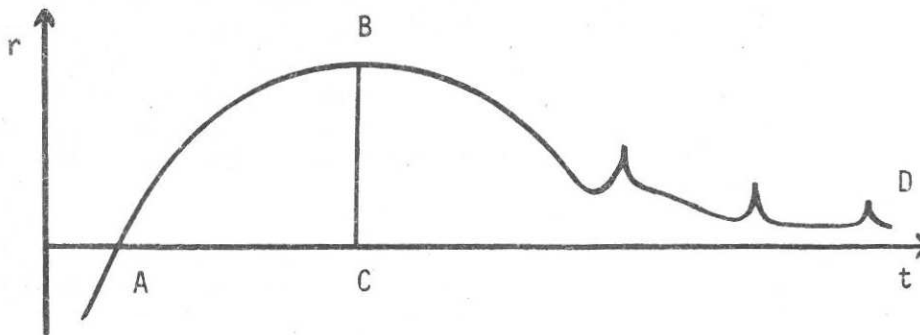
In order to place this point in a sharper perspective, it is useful to consider a hypothetical profile of a migrant labourer over the first few, say three, years following his arrival in the urban sector. Assume that, in the first half year of his stay, he is totally unemployed (i.e., earns no income) and is wholly supported by his family at the rural end. To ease exposition, accept a linear approximation implying that, for the next two and a half years in which he is employed, he remits, on average, one-third of his yearly urban income - say, in regular monthly instalments. Assume that the two-thirds of his income which are not remitted exactly exhaust his urban costs of subsistence, which, like his income, are assumed constant. (Ignore the interest rate factor as well as all other factors, many of which probably neutralize each other.) In these conditions, net remittances are nullified eighteen months after arrival in the urban sector. The continuation of remittances beyond that period indicates, then, that net remittances are definitely positive and their persistence over the first two and a half years of urban employment produces a ratio of two and a half to one between urban-to-rural remittances and rural-to-urban remittances. (If

the cost of travel to the urban sector is considered and assumed equal to a full monthly urban income, net remittances are definitely positive if remittances are continued beyond the twenty-first month from the date of the migrant's arrival.) It should be pointed out that, far from being arbitrary, the parameters used in this example are (at least) fair reflections of the orders of magnitude revealed by much of the evidence referred to in the rest of this section and in the following one.

A second methodological proviso involved in interpreting available evidence on remittances relates, in several ways, to the time factor. Remittances vary with time, both because of the impact of the intensity and nature of kinship relationships, cohesion and social control and because of the changeable economic status of the migrant. These two factors perhaps produce an inverse, bell type functional relationship between remittances and time.^{1/} Their full and real

^{1/} Of the studies mentioned below all those which explicitly refer to the time element in remittance flows indicate that sizeable transfers do indeed extend over a number of years. For example, see below the studies by Caldwell [1969] (and also Caldwell [1967, p. 142]) and Adepoju [1973].

The probable general relationship between net urban-to-rural remittances (measured in absolute terms at fixed prices) r and time t is schematically portrayed below: ABC- mainly when the migrant returns (or is joined by his family).



ABD - when he does not return; the sporadic pattern BD reflects remittances in response to acute needs or special events at the rural end (e.g., marriage of a sibling, a festival). Evidence contained in some of the studies referred to below, e.g. those by Caldwell [1969], Adepoju [1973], Sabot [September 1972],

impact can only be established if summed for a number of time periods. What is needed is their (changeable!) magnitude, not during the n-th or the m-th year after the act of labour migration, but throughout a given time horizon - say the first k years.^{1/}

(continued footnote of previous page)

and Johnson and Whitelaw [1974], largely validates this pattern. The latter study, based on a sample survey carried out in Nairobi in 1971, concludes that nine-tenths of those who "had some income" (in a given surveyed month) were remitting "regularly" (presumably monthly), their remittances representing, on the average, more than one-fifth of their total urban income. (It is implicit in the study that, for all practical purposes, these persons can be assumed to be rural migrants.)

The study ascertains that the proportion remitted out of total income was falling as income was increasing. This proportion was found to be higher for the low income earners. Both these findings can be indicative of the effect of duration of stay (low income earners being probably the late arrivals), and indeed a linear regression analysis suggests that this proportion was significantly and positively related to the (calendar) year of arrival.

^{1/} Failure to take this point fully into consideration may result in quite odd conclusions. In a study based on a sample survey of 480 migrants in Lagos and in urban areas in the Western State and of 180 rural households (Essang and Mabawonku [1974]) the concluding argument is that rural-to-urban migration results in "a net loss..... in financial terms to the rural areas", (p. 30). This conclusion is based on an analysis of educational expenditures on migrants and of amounts remitted per migrant in each direction. In view of the second proviso in the text, the procedure utilized is questionable. For rural-to-urban migration to represent a loss of human capital to the rural sector, educational expenditures which have been incurred over the period preceding migration must be compared, assuming away a spreading of risks and related considerations, with the discounted flow of urban-to-rural remittances over the whole migration period. There is strong, though implicit, evidence in the analysis suggesting that migration is of recent origin (high expenditures on education of the migrants in the period just preceding rural-to-urban migration, engagement of migrants in low paying urban jobs, transfer of funds to the migrants for purposes of meeting the costs of accomodation and clothing). This renders the period of the first year or so after migration largely meaningless (that is, from the point of view of establishing the true magnitude of the intersectoral transfers). Moreover, rural-to-urban migration cannot be regarded as a net loss of human capital, not only because of the various consumption elements involved in allocating resources to education (satisfaction from seeing one's own children becoming educated, enhanced prestige within the local rural community), but also and in particular, because of the open issue of the permanency of migration. Furthermore, the very presence of educated children in the urban sector may alter the patterns of economic behaviour of the rural household (increase propensity to take production risks) such change being itself a necessary condition for technological change and enhanced agricultural production.

With these caveats in mind, it is useful now to review several studies which, even if only partially, address themselves to the remittances issue in some detail. Because of its bearing on the issues of technological change and the size distribution of income referred to above and below respectively, an attempt will be made, wherever possible, to ascertain the kinship relationship between the remitting migrant and the rural recipients of the remittances, especially whether the pattern is of "remitting sons".

An account of migrants from Aralikottai, a village in Ramanathapuram district, Madras (now Tamil Nadu) based on a survey carried out in 1963^{1/} reveals that most of them were recent arrivals (i.e. had migrated during the four years preceding the survey), young (three-fifths were in the age group 15-24) and from farmers' families. Their urban destination can be inferred from occupational data. In particular, none worked in agriculture. Almost all were males. The study refers to a regular flow of remittances from these migrants amounting to more than one-eighth of the village income. Unfortunately, remittances are given as an aggregate for the whole village and the number of migrants is far below the number of households. It therefore becomes impossible to determine the significance of remittances for those families who had despatched migrants and were in receipt of remittances.

Data for as many as 16 North Indian villages (in the states of Punjab, Uttar Pradesh and Himachal Pradesh) based on surveys carried out in the 1957-1961 period^{2/} reveal that (aggregated for all villages together) the majority of

1/ University of Madras [1969].

2/ The data were originally collected by the University of Delhi, Agricultural Economic Research Centre, under its Continuous Village Surveys programme.

migrants were working males^{1/} coming from farmers' families (self-employed agricultural households)^{2/} and urban^{3/} (indirect evidence, as only a negligible minority were employed in agriculture, as well as some direct evidence). Nearly two-thirds of the working migrants were young (in the age group 15-24)^{4/} although a very high proportion - indeed most of them - were married. (It should be noted that this finding refers to present marital status and not to marital status at the time of migration.) In spite of this latter characteristic - many working migrants reside with their nuclear families in the urban sector - the evidence suggests^{5/} that, in the case of most villages, the majority of migrants were remitting, and that the amounts remitted (village averages) ranged from 26 percent to 69 percent of migrants' income. (In two villages, migrants remitted, on average, about two-thirds of their income, in three about half, and in five others about a third of their income.)

A comprehensive study of rural-to-urban migration in Ghana, based on a detailed survey carried out at both rural and urban ends in 1963,^{6/} which concluded that the rural-to-urban migrants were predominantly young males (15-29 years of age) and single,^{7/} found that migration was accompanied by a "significant"

1/ Connell, et al. [1976, Chapter 8, Table 8.11].

2/ Op. cit., Chapter 8, Table 8.12.

3/ Op. cit., op. cit. and op. cit., p. 207.

4/ Op. cit., Table 8.13.

5/ Op. cit., Chapter 5, Table 5.1.

6/ Caldwell [1969]. (See also Caldwell [1967].)

7/ Op. cit., pp. 84-85.

(see below) reverse flow of remitted money and goods.^{1/} Excluding the rural Ashanti - a region which is at a far more advanced stage of development than the rest of rural Ghana - two-fifths to two-thirds of all rural families known to have urban migrant members were in receipt of remittances.^{2/} These figures most probably understate the true proportions, since many families are included from whom migrants left just prior to the survey date, and it is clear that "migrants are least likely to remit money during the initial settling-in period when they are still unemployed or perhaps working for very low wages"^{3/}. (The study also points out that five-sixths of the flow of remittances took place without any request being made by the recipient rural families).^{4/} There is explicit evidence that nearly four-fifths of the remitting migrants have sent the money to their parents,^{5/} most of them at least monthly.^{6/} The clear pattern then is of rural-to-urban migrant sons remitting to their fathers' families.

^{1/} Evidence concerning absolute magnitude refers only to "average per year" which is clearly of limited significance given the hypothesized pattern of the remittances curve depicted earlier and the absence of information concerning the rank order of the year and the number of years over which remittances were made. Evidence referring merely to the relative size of remittances - they constituted between one-twentieth and three-quarters of the stated income of the remitting migrants (op. cit., p. 169) - is also of very limited significance. As to the intra-year frequency (regularity) of remittances and the magnitude of a given transfer, here, as in other cases (see below), the two were inversely related and were affected by considerations such as effective distance, frequency of home visits and availability and capacity to use postal and banking facilities. At least to some extent, frequency is determined, then, by "technical considerations" and not by "substantive considerations".

^{2/} Op. cit., p. 153.

^{3/} Op. cit., pp. 153-154.

^{4/} Op. cit., pp. 154-156.

^{5/} Op. cit., p. 159. Both these findings may be interpreted to indicate maximization of family net utility.

^{6/} Op. cit., p. 154.

A study, conducted in 1972, of the FraFra^{1/} - the most migratory of all ethnic groups in Northern Ghana - based on a sample survey of 1416 individual migrants at their destination (1364 of which were in urban areas) and 607 residents of the homeland, refers, though very cursorily, to the prevalence of remittances. Whilst most recent migrants (included in the 0-5 years of migration duration) do not remit, a majority of migrants with a longer duration do.^{2/} Rural-to-urban remittances, judged by the proportion of people in the home areas who make them, are negligible.^{3/}

The 1972 study of migrants from Testour to Tunis^{4/} indicates that 47 percent of the migrants sent money on a regular basis ranging from 2 to 20 dinars, or more, a month. It was apparent, however, that money sent constituted only part of the flows and that substantial amounts were brought back by visiting migrants in cash and consumption goods from the city. To gain perspective, note that the average rural income which migrants could have had by remaining to work in Testour was 17.2 dinars compared with an average urban income of 26.6 dinars per month.^{5/}

From a study based primarily on a sample survey carried out in 1971,^{6/} it is possible to conclude that the overwhelming majority of "recent" migrants

^{1/} Nabila [1974].

^{2/} Op. cit., p. 294. "The major reason... given for failing [to remit or to send gifts] was either insufficient income or lack of a job". (p. 237).

^{3/} Op. cit., p. 299.

^{4/} Hay [1974, p. 88].

^{5/} Op. cit., p. 99.

^{6/} Galal-El-Din [1973].

to Khartoum (that is, migrants who arrived in the four years preceding the survey) came from rural areas (three-quarters),^{1/} were young (three-quarters were below 24 years of age at their arrival - but see below)^{2/} and male.^{3/} Data on marital status are not given for recent migrants only but for all those who were born outside Khartoum. The respective proportion of single males is nearly half,^{4/} implying that, a fortiori, most recent migrants were most probably single.

"Special questionnaires" were used to survey all those male migrants who had arrived in Khartoum when they were 14 years of age and over. Evidence concerning remittances refers only to these. Hence the presence of a built-in downward bias in all estimates of urban-to-rural remittances, given that the relevant "remittances" question was related to the survey year. (These migrants clearly include both those who had remitted heavily in the past, but who were not doing so any longer, and the very recent arrivals who had not, as yet, started to remit.)^{5/} Even so, most migrants were found to remit "regularly"^{6/} and of these the number of those remitting to their parents' family was two and a half times that of those

^{1/} Op. cit., p. 137.

^{2/} Op. cit., p. 151.

^{3/} Op. cit., pp. 153-154.

^{4/} Op. cit., p. 157.

^{5/} The respective question (see op. cit., p. 233) seems to be somewhat misleading. "Do you send regular money back to your place of origin?" (Emphasis added). Clearly, those whose response was "no" should not be - though they were - classified as non-remitting migrants. This introduces a further downward bias.

^{6/} Op. cit., p. 233.

remitting to their nuclear family.^{1/} Add to this that "in many cases money is taken by migrants on their re-visits or is sent with relatives who visit the capital" and the case for the "typical" migrant being a remitting son seems, therefore, to be fairly strong here as well.

A study which examined migration from the rural North West Frontier Province of Pakistan to the urban centres of the Punjab and Sind during 1971-72^{2/} utilized simple least-square regression models to investigate explicitly a number of remittance variables related to the question under review. Based mainly on interviews with both migrants and migrants' families in the rural sending areas, the study found that, during the survey year, remittances were sent by 91 percent of the migrants. On the average, migrants remitted 37 percent of their monthly income. Explicit evidence concerning the characteristics of the migrants is absent, and it is therefore not possible to know with certainty what the respective kinship relationships were. However, the evidence that the remittances were utilized for technological change (see section 1 above) while the migrants were still away suggests that other males were present in the rural families receiving the remittances. (The positive relationship between urban income and the educational level of the migrants suggests that the migrants were the better educated family members which probably means that they were the sons rather than the fathers).

An urban based study drawing on a detailed analysis of more than 5000 questionnaires of a survey made in Tanzania in 1971 of urban migrants (born

^{1/} Op. cit., op. cit.

^{2/} Mohammad et al. [1973].

outside the city in which they were enumerated and to which they came after reaching the age of thirteen)^{1/} reveals that, although less than half of the migrants made remittances on a regular basis,^{2/} most of them sent or took money or gifts home.^{3/} Alternatively, most of those remitting, did so regularly and for nearly two-thirds of them, their most recent remittance had amounted to more than 50 shillings.^{4/} To the extent that the value of the last remittance can represent the average remittance, it is possible, given the number of the transfers for the preceding year, to calculate the yearly flow which, in the case of 30 percent of the remitting migrants, was 400 shillings, and in the case of another 32 percent was 170 shillings. It is useful to compare these figures with the earnings of the minority of the migrants who grew cash crops during the year prior to migration. Out of these migrants, only 8 percent earned more than 500 shillings;^{5/} average earnings from cash crops for this group of migrants were 239 shillings.^{6/}

On the basis of a study of migration to the town of Oshogbo, South-West Nigeria, based in turn on a sample survey carried out in 1971-72,^{7/} it can be concluded that in the year preceding the survey date, most migrants were remitt-

^{1/} Sabot [September 1972].

^{2/} Op. cit., Table 9.4.

^{3/} Op. cit., Table 9.3.

^{4/} Op. cit., Table 9.5.

^{5/} Op. cit., p. 133.

^{6/} Calculated from op. cit., Table 6.5.

^{7/} Adepoju [1974, pp. 127-137].

ing, and that nine-tenths did so regularly (3-13 times a year).^{1/} If the fact that young, unmarried men predominate among the migrants^{2/} (much more so at the time of their migration, not at the survey point of time) is also considered, the

1/ It is worth pointing out that a close look at the evidence seems to indicate that there is usually an inverse relationship between frequency of transfers and their magnitude - Adepoju [1973, p. 188]. A similar pattern seems to be suggested by the Ghanaian evidence referred to above (Caldwell [1969] and Caldwell [1967]). The Tanzanian study (Sabot [September 1972]) checked only the magnitude of the last remittance. Since a similar figure was found for those remitting more frequently and less frequently (Table 9.5), more regular transfers would imply, *ceteris paribus*, a greater total value for a given year. However, with regard to the question of who are the ones who remit more regularly, the available evidence seems to be somewhat conflicting. The Nigerian study suggests that those whose incomes were higher - including the wage earners - tended to remit infrequently, but, when they remitted, the absolute sums involved were substantial. The low-income earners (including the self-employed) remitted more frequently, the sums each time being small. The Ghanaian study seems to suggest that it is the wage-earners who tend to remit more frequently. (Of the probable explanations, stability and regularity of income stream, easier access to postal facilities - literacy - are but a few). Evidence for Dar es Salaam, Tanzania (based on the 1971 survey), seems to support the latter pattern in which migrants, who are non-wage earners, are less likely to make regular remittances vis-a-vis wage earning migrants - Bienefeld [1974] (and also Sabot [September 1972].) This finding can be explained not only (as is indeed suggested) by lower incomes - Bienefeld [1974, p. 33] but also (if less frequent transfers imply, *ceteris paribus*, smaller total transfers) by the surprising finding of the survey that the non-wage earners were the earlier arrivals and were older (op. cit., pp. 21 and 1 respectively). Hence they probably had weaker ties with their rural families. An alternative explanation is a somewhat greater frequency of home visits by them (op. cit., p. 33). In that case, transfers were probably made by the migrants themselves, being deferred until their home visit. Interestingly enough, it is possible to infer from the data - Sabot [September 1972, Tables 9.12 and 9.13] that the distribution of income of the non-wage earners, unlike that of the wage earners, is bimodal - the former being significantly more concentrated in the lowest and highest income groups. Combined with the inverse U relationship between the level of urban income and the propensity to remit (generated via the operation of the duration of stay in the urban sector and the employment experience factors) and with the finding that the proportion of the non-wage earners who do not have access to land in their home areas is more than twice that of the wage earners, the relationship indicated seems to be largely explained. (See op. cit., Tables 9.8 and 9.9 and Table 9.25). Then main implication, from the point of view of the present interest, is that the regularity aspect *per se* is of limited significance. Aggregation of all sums of remittances, say, over a number of years, is essential.

2/ Adepoju [1973], e.g. p. 64.

evidence (considering both the 1973 and the 1974 studies) again suggests reference to them as "remitting sons". There is some quantitative evidence to suggest that, in the survey year, the proportion of income remitted was around one-tenth across all groups of urban income earners.^{1/} This, however, cannot be taken to reflect accurately the true proportion since it omits money and gifts taken home at visits which, as stressed in this study, were particularly frequent in the case of the young migrants.^{2/} It is also possible to infer^{3/} that about a quarter of the migrants remitted, on average, as much as the national per capita income or that, on average, a migrant remitted as much as three-quarters of the national per capita income.

3. Urban Unemployment of Rural-to-Urban Migrants

Long duration of urban unemployment (high probability of labour unemployment) consequent upon rural-to-urban migration of a family member will probably deplete the family's partial surplus, and will for long postpone the technological shift in agriculture. Such an eventuality will thus cast doubt on the validity of the methodological framework of Chapter II. Rural-to-urban migration is unlikely to be pursued if employment prospects are poor. Thus, the prediction of the analysis above is rural-to-urban migration concomitant with a low level of urban unemployment of rural-to-urban migrants, and with an average short duration of urban unemployment of rural migrants.

Does this prediction tally with the distressing evidence on the extent of urban unemployment or with the widely accepted and frequently expressed view

^{1/} Op. cit., p. 189.

^{2/} Op. cit., p. 173.

^{3/} See op. cit., pp. 189-191.

that "chronic urban unemployment has emerged" as a result of "high rate of rural-urban migration",^{1/} that "rural-urban migration is inextricably entwined... with the urban employment problems that have accompanied it"^{2/}, that "rural-urban migration was proceeding at a rapid rate in most [developing] countries around the world, only to pile up in the large cities as unemployed or under-employed masses"^{3/}

The obvious answer is that it does not. The reason for this, however, lies with a misreading of the evidence, and not with a misspecification of the analytical construct of Chapter II.

The easiest way of demonstrating the fallacy of the hypothesized relationship of rural-to-urban migration as the cause of urban unemployment, as well as of verifying the above prediction, is to subdivide unemployment data into data relating to migrants and to non-migrants. A systematic scrutiny of the available studies which either directly present such data groups or, using acceptable approximations and manipulations, lend themselves to such disaggregation suggests that as a rule (with but few exceptions) the urban unemployment rate of rural-to-urban migrants is lower than the average urban unemployment rate and that, fairly shortly after their entry into the urban labour markets, rural migrants secure urban employment. One of the more immediate corollaries of this rule is that migrants in general, and rural migrants in particular, can not be held chiefly responsible - and definitely not directly - for urban unemployment levels. This corollary holds, since very rarely do migrants in general, and rural migrants in particular, constitute more than half of the urban population and in spite of some evidence that migrants' rate of

1/ ILO [1975, p. 27].

2/ Barnum & Sabot [1976].

3/ Schuh [1976].

participation in the labour force is somewhat higher than that of the urban native population.^{1/} "In spite" - since the impact of the latter factor does not suffice to offset that of the substantial difference between the unemployment rates of these groups.^{2/}

Migrants' higher participation rate in the labour force (compared with that of the urban native population) is probably related to the "urgent need for income". E.g., children may be required to work "to support a migrant parent's job search", although their higher participation rate vis-a-vis that of native children could also result from unequal access to urban education and training institutions,^{3/} implying, in turn, an earlier entry into the labour force.

Perhaps a more important determinant is the age factor. When a migrant-native difference is controlled for this factor, migrant status appears a much

^{1/} See Herrick [1965], Zachariah [1968], Mascisco et al. [1970], Bartch [1971], Merrick [1974], Schaefer [1976].

^{2/} In Sao Paulo (Brazil's industrial centre as well as its largest urban area), an extreme case illustrating this point, migrants in 1970 (defined as those who had been residing in Greater Sao Paulo for ten years or less) accounted for nearly 35 percent of the labour force. Their participation rate in the labour force was approximately 44 percent, whereas among non-migrants the corresponding rate was 33 percent. Hence, the non-migrants' contribution to the urban labour force is 39 percent higher than that of the migrants. There is no evidence suggesting higher unemployment rates for migrants, although, vis-a-vis the non-migrants, they were consistently found in greater proportions among those earning less than the minimum wages in all the subsectors of the urban economy which employ a significant quantity of unskilled and semi-skilled labour. (The above data are based on the 1970 census returns and on the National Household Sample Survey (PNAD). See Schaefer [1976, Chapter 3].)

^{3/} See, for example, Perlman [1976].

less important determinant of an individual's forming part of the labour force.^{1/}, ^{2/}.

It will be useful to present now evidence, from a number of studies, on urban unemployment of migrants, especially rural migrants, compared with the urban unemployment rates of the non-migrants.

An analysis of the 1960 census data for Jamaica^{3/} reveals that, for nearly all parishes (the administrative units of the country), the unemployment rate among migrants was lower than among non-migrants. This holds true even if migrants with a duration of residence of less than one year are compared with the non-migrants.^{4/} Although no breakdown by origin of the migrants is available, the above relationships hold particularly for the urbanized parishes of Kingston and St. Andrew. For the economy as a whole, the unemployment rates of non-migrants, migrants with a duration of stay of less than one year, and migrants with a duration of stay of one to three years were 12.9, 10.7 and 8.4 respectively.

A study referring to Kingston alone^{5/} found that migrants (those who had resided in the urban sector for less than five years) as compared to the non-migrants (those who had resided in the urban sector for more than five years)

^{1/} Referring to the difference for males, taking all ages as 100, the difference for the 15 year olds and above, in the case of Bombay (1961) is 38, for the 15-34 age group 49, and for the 35-39 age group, 6. (Calculated from Zachariah [1968, Table 10.1].

^{2/} In some cases, part of the difference can be explained by a higher participation rate of migrants' wives; and in others not, where it is lower for migrants than for the non-migrants. These situations are illustrated, respectively, by rural-to-urban migration in San Juan, Puerto Rico, in 1960 - see Macisco, et al. [1970] and by the study referred to earlier in Bombay - Zachariah [1968]; note Table 10.1 and Chapter 7.

^{3/} Tekse [1967].

^{4/} See, in particular, op. cit., Table 22.

^{5/} Standing [1975].

were characterized by a lower supply price (aspiration wages) and a greater willingness to work long work-weeks. The analysis, based on a sample survey of registered unemployed carried out in August 1974, also indicates that these differences were particularly visible in the case of the recent migrants vis-a-vis the non-migrants. The low aspiration wage and the greater willingness to work long hours is largely accounted for by the sex composition of the migrants; a great number were unmarried working-class women who had illegitimate children and were "desperately in need of an income". But the differences in question hold (and are significant) for males too. On the assumption of perfect labour homogeneity and rational behaviour of employers, these findings could suggest lower expected unemployment rates for migrants than for non-migrants.

In a study based on a sample survey conducted in 1972 in Testour, Haut Tell, Northern Tunisia, of 144 male migrants who had migrated primarily to the capital, Tunis, and on other data,^{1/} it was found that, in most age groups, unemployment rates were lower for the migrants - compared with the "permanent urban labour force" - "after an initial adjustment period". The overall unemployment rate for migrants since 1962 was 5.3 percent - a significantly lower figure than the 14.3 percent rate for natives.^{2/}

In a study of Lima,^{3/} the authors quote the 1960 survey of 154 barrios (squatter colonies) in the city (conducted for the Fondo Nacional de Salud y

1/ Hay [1974].

2/ Op. cit., p. 82.

3/ Clother and Laquian [1971].

Bienestar) and the 1967 "governmental figures" as indicators that unemployment rates among migrants are both low in themselves and lower than for the non-migrants. The survey found that only "4.7 percent of the economically active members of the population in the 154 barrios were unemployed"; the 1967 figures gave unemployment rates among migrants and non-migrants of 3 and 7 percent respectively. ("Under-employment" rates were, however, somewhat higher for migrants - 28 percent as compared to 22 percent for the non-migrants).

In a study based on data collected in 1967 for the eight major cities of Colombia,^{1/} unemployment rates for natives of the cities were found to be significantly higher than for migrants (from elsewhere in the department or other departments) in all the cities; in most cases the order of magnitude of the difference was 50 percent or more. The difference also holds when a crude age controlling procedure is utilized.

Data drawn from a 1963 employment survey conducted by the Institute of Economics, Santiago,^{2/} indicate that, in Greater Santiago, unemployment rates for migrants were substantially lower than for natives. This holds true when either sex or age is controlled. For example, for migrant males the unemployment rate was 4.6 percent, compared with 7.2 percent for natives; for those aged 15-19, the rates were 8.8 and 14.0 percent respectively. The data also indicate that unemployment rates for migrants in Greater Santiago were significantly lower than for those who they left behind.

^{1/} Berry [1975].

^{2/} Cited in Herrick [1965]. No details concerning the survey are given.

A survey of 200 households in Greater Santiago^{1/} also reveals that, in spite of higher participation rates (the rate for migrants as a whole was higher by 5.8 percent than that of the non-migrants), the migrants' "full time employment rate" was higher (88 as against 84 percent).

A study conducted in 1970^{2/} based on a sample survey of about 650 male migrants in Mexico City - nearly all of rural origin - found that "even though fewer than one percent of the migrants had arranged for jobs in Mexico City before moving there, 46 percent had found work within a week after arriving in the city and another 30 percent found jobs within a month." 85 percent of the migrants were reported to have no difficulty or "only a little difficulty" in finding their first job. Only 4 percent remained unemployed for more than 6 months. Two-thirds of the migrants had experienced a significant improvement in "income level" since arrival to Mexico City. Moreover, two-thirds of the migrants stated explicitly that "greater employment opportunities" (emphasis added) were the most attractive aspect of residence in the city.^{3/}

In a study of migrants to the Bangkok Metropolis conducted in mid-1974, migrants were interviewed in about 6500 households who had moved into the city during the November 1972 - June 1974 period.^{4/} Nearly three-fourths of the migrants were farmers before they moved from their villages. During the survey period, only 2.4 percent were unemployed. The participation rates of migrants in the labour force were higher than those of the total population (except for

1/ These data are for 1962. See Elizaga [1966, p. 374].

2/ Cornelius [1975].

3/ Op. cit., pp. 24-25.

4/ Thailand [1976].

females in the oldest age group). The unemployment rate for all male migrants was lower than for the total population, and the unemployment rate for males under 30 years of age was significantly lower for migrants than for the total population.^{1/}

An analysis of unemployment in urban Ceylon based mainly on the 1963 census, as well as on some surveys (in particular a 1968 unpublished labour force survey by the Ministry of Planning and Employment) fails to provide direct comparative evidence on the unemployment rates of rural migrants and non-migrants.^{2/} However, the conclusion based on available data is that "migration..... cannot overall be a major cause of high unemployment in Ceylon".^{3/}

In a carefully documented study of Calcutta, an analysis of the evidence from a number of household surveys for the 1950's, a 1971 sample survey of registrants at the employment exchange offices, as well as other sources of evidence,^{4/} concludes that "open unemployment has generally been lower among the immigrants than among normal residents."^{5/} An interesting finding of the 1971 survey is that in Calcutta "the dominant group among job-seekers and unemployed consisted of persons who had taken a certificate course in engineering."^{6/}

^{1/} Consult op. cit., p. 23 and tables 2 & 3.

^{2/} Richards [1971].

^{3/} Op. cit., p. 122.

^{4/} Lubell [1974].

^{5/} Op. cit., p. 63.

^{6/} Op. cit., pp. 59-60.

(They accounted for about a third of the job-seekers and for more than a third of the unemployed among them.)^{1/}

In Karachi, a sample survey of about 16500 households reveals that, in comparison to the non-migrant population, migrants (from other areas of Pakistan into Karachi) were characterized by a lower rate of unemployment (3.2 as against 3.8 percent) in spite of their unusually higher labour force participation rate (46.2 as against 29 percent).^{2/}

A study of 23000 individual wage- or salary-earning heads of households in the Dominican Republic (1960)^{3/} lends itself to breakdown into four migration (rural/urban) categories plus urban and rural non-migrants. With respect to rates of unemployment, urban non-migrants possess rate of unemployment which statistically is significantly higher (by 28 percent) than the unemployment rate of the rural-to-urban migrants (and, incidentally, also significantly higher than the unemployment rate of the urban-to-urban migrants). It has, though, to be pointed out that the occupational difference between rural-to-urban migrants and the urban-born suggests that the lower unemployment rate of the former is achieved "through their willingness to accept urban society's least attractive and lowest paying jobs".^{4/}

1/ The data analysis has led the author to conclude that "most of the immigrants to metropolitan Calcutta have taken what jobs they could find or have eventually given up and gone home... The target group for employment policy for metropolitan Calcutta need not be the new arrivals, or potential arrivals of unskilled manpower from the countryside. As in the past, either they will fit into the lower productivity and the lower paid employment opportunities that Calcutta has to offer ... or they will drift away." (Op. cit., pp. 63-64).

2/ Note that, though published much later, these data are for 1959. See Hashmi, et al. [1964] and Farooq [1966, pp. 19-22].

3/ Carvajal & Geithman [1976].

4/ Op. cit., p. 211.

The findings mentioned so far are indirectly supported by studies focusing on the educational profile of the urban unemployed. A number of studies (in, e.g., Ceylon, Peru, Sudan, Tanzania, India) clearly show that a major component of the unemployed is the group of the educated or of the relatively highly educated persons only a few of which are migrants of rural origin.

There is evidence that the educated are inflexible (as students they do not revise their income expectations as they approach the moment when they will start working),^{1/} that the educated unemployed (elementary and secondary completers) are twice as numerous as the illiterates,^{2/} and that a refusal of job offers rises with the level of education,^{3/} the reasons given by completers of secondary education being "that they thought the offered jobs were below their qualifications" and those by university graduates - "inconvenient job location or some other reasons". There is also a strong suspicion that the educated "prolong their unemployment duration, not because jobs are unavailable but, because they choose not to lower their job and pay expectations".^{4/} The Sudan study stresses that "in relative terms, the unemployment problem is observed to be more serious among [completers of secondary school than among other groups."^{5/} (Note the explicit evidence which indicates that very few of the migrants - 9.4 percent - belong to this category.)^{6/}

^{1/} Versluis [1974, p. 33].

^{2/} Mulat [1975, p. 14].

^{3/} Op. cit., p. 33.

^{4/} Op. cit., p. 20.

^{5/} Op. cit., p. 41.

^{6/} See Oberai [1975, Table 3].

In Ceylon, most (74 percent) urban unemployed were aged 15-24, and the absolute majority of these were holders of at least an "0 plus" qualification^{1/} - largely the products of urban schools. In Tanzania,^{2/} estimated urban unemployment rates by education (1970) rank Standards 5-8 higher than Standards 1-4, and these, in turn, higher than those with no education. (The estimated unemployment rate for the first group is 44 percent higher than for the third group). An overview of evidence for seven countries indicates that the highest unemployment rates are found among persons with 6-11 years of education (higher than for the illiterates or for those with 1-5 years of schooling).^{3/} The study of Calcutta already referred to revealed that construction work in the city was carried out by contractors who brought in unskilled rural labourers; the unemployed, especially the educated unemployed in Calcutta, were not available for construction jobs.^{4/}

A number of studies have attempted to generate explicit data relating both to the employment status of migrants before and after their arrival in the urban sector, as well as on their unemployment rate in the urban sector vis-a-vis the urban natives. It should be noted that, the virtually universal finding that most migrants are young (in the 15-24 age bracket) often renders it inadvisable to refer to their employment status prior to migration. (For example, in the case of Nairobi the great majority were not labour force participants before their migration to the city^{5/}). It is more meaningful to attempt to estimate what their employment prospects would have been had they stayed behind.

1/ ILO [1971, pp. 26-27].

2/ Barnum & Sabot [1976].

3/ Bairoch [1973, p. 59].

4/ Lubell [1974].

5/ Collier and Rempel (forthcoming).

A migration survey in May 1965 in Ciudad Guayana (which draws most of its migrants from eastern Venezuela)^{1/} reveals that, after the first "difficult months", (recent) migrants had the same unemployment experience as "the whole population". The study stresses that, in the early 1960's, half of the migrants had been unemployed before moving to Ciudad Guayana, but only one-tenth were unemployed in the city after the first six months of their arrival.

Data derived from the 1968 National Demographic Survey of the Philippines^{2/} referring to migrants - not necessarily, although probably, mostly rural-to-urban migrants - indicate that most male migrants in 1968 aged 15-24 had been unemployed prior to their migration in 1960. (The breakdown for the 15-19 and 20-24 sub-age-groups is 88.9 and 54.1 percent and 88.1 and 70.8 percent for the two periods respectively.) In comparison with non-migrants in this same age group, migrants can be seen to have been systematically more unemployed at the beginning of each of the respective periods. The data permit, however, to draw certain conclusions regarding the changing "work status" of migrants over the above two periods. It appears^{3/} that migrant males nearly halved their "non activity" rate between 1965 and 1968 (among the non-migrants 75 percent remained "non-active"), although the change in "work status" over the 1960-65 period was smaller (a fall by 27 percent), yet still greater than for non-migrants (a fall by only 15 percent).

1/ MacDonald [1969] see also MacDonald [1967]; no details concerning the methodology or the coverage of the survey are given.

2/ Wery [1974].

3/ Op. cit., p. 22.

In an analysis of migration based on the 1971 census, a 1972 and a 1973 national migration survey (the structure and coverage of these surveys have not been specified) as well as on some other sources (inter alia, a 1972 urban unemployment survey)^{1/} the main conclusions are that migration to Jakarta is concomitant with a substantial diminution in the rate of unemployment for the rural migrants - and that this is so in spite of the fact^{2/} that the labour force participation rate for male migrants increased substantially after migration. Rural migrants from West Java (the major source area) to Jakarta (in 1971) left a region where the unemployment rate for the 10-29 age group was 17.9 percent,^{3/} for all rural migrants age 10+ - 13.85 percent.^{4/} The unpublished results of the 1973 migration survey indicate that "over 90 percent of migrants who arrived in Jakarta recently reported themselves to be at least as well off as before migration"^{5/} (emphasis added). The 1972 urban unemployment survey referring to recent migrants (those who came to the city during the preceding year) found that the rate of unemployment for the migrant group - especially for those coming from rural areas - was only slightly higher than that of the natives,^{6/} (13.85 and 10.72 percent respectively) - and this, in spite of the fact that some of the migrants "may have arrived only a few weeks/months before the date of the interview."^{7/}

1/ Sethuraman [1974].

2/ See op. cit., p. 6.34.

3/ Op. cit., p. 6.49.

4/ Op. cit., p. 6.40.

5/ Op. cit., p. 6.31.

6/ Op. cit., p. 6.39.

7/ Op. cit., op. cit..

The study also points out that, based on a number of alternative measures^{1/}, the difference between the relevant urban and rural wage rates for migrants is slight, and hence, that "the most important factor contributing to migration to urban areas" is the employment differential. Summarizing the evidence the study concludes^{2/} that "unemployment in Jakarta cannot be attributed wholly or even mostly to inflow of migrants.... The evidence warrants rejection of the ... hypothesis that migrants come to the city in search of well paid urban industrial jobs and choose to remain voluntarily unemployed for long periods of time".

An analysis based on a sub-sample of adult migrants, from a survey carried out in 1974 in three towns - Khartoum, Khartoum North, Omdurman i.e., Greater Khartoum,^{3/} revealed that, for migrants with less than five years duration of settlement, the rate of unemployment was 5 percent (the respective figure for migrants who had been in the three towns for more than five years was 2.1 percent). Coupled with the "almost non-existence" of underemployment (defined pragmatically in the study as working less than 35 hours per week) and with average earnings of 314 Sudanese pounds for migrants with a residence of less than 5 years^{4/}, the survey indicates a relatively quick and full absorption of migrants in comparatively well paid employment (even if, within the urban sector, their occupations are the lower paid ones). The above earnings should be compared with figures obtained

^{1/} See op. cit., pp. 6.43 - 6.50.

^{2/} Op. cit., p. 6.43.

^{3/} Oberai [1975]. Not all migrants are rural-to-urban migrants, although the majority probably are (73.2 percent of migrants with less than 5 years of residence who were working prior to the move were in agriculture). Allowing for those who moved from the rural area to the nearest urban area prior to the move to Khartoum (see p. 4) would strengthen such an assertion.

^{4/} Calculated from op. cit., Table 17.

from a survey covering seventy villages, in the majority of which more than half of all households had yearly income of less than 50 Sudanese pounds.^{1/} It is worth mentioning here that most employed migrants with a stay of less than 5 years were in wage employment (rather than self-employed), and that the respective percentage - 85.4 - is even larger than that of migrants with a stay of more than 5 years or of natives. (The percentages for these two latter groups were 79.3 and 77.8 respectively).^{2/}, ^{3/}

Even a 1974 survey of pavement dwellers - "the most informal amongst the informal sector activities" in Calcutta^{4/} - reveals that about half of the migrant pavement dwellers were "agricultural labourers who came to the city because of lack of work in the agricultural sector" but that unemployment in Calcutta within this group was much lower than 50 percent, and that the level of their earnings in Calcutta even as pavement dwellers was higher. For example, nearly two-thirds of the families had at least two meals in the reference day - compared with an average of less than a third for India as a whole.

The utilisation of the evidence contained in the studies mentioned above in order to determine unequivocally the urban employment success of migrants is hampered by a probable methodological bias. Being based usually on data collected in the urban areas, studies do not incorporate the employment status of migrants who failed to secure urban employment, and consequently left the urban sector.

1/ See ILO [October 1975, Technical Paper No. 10].

2/ Calculated from data presented in Oberai [1975, p. 30].

3/ This interesting finding resembles that of at least one other study. Evidence for Dar es Salaam based on a survey carried out in 1971 - see Bienefeld [1974], section 2 above - revealed that the non-wage earners - the self-employed - were the earlier arrivals and were older, whereas the recent arrivals were predominantly wage-earners.

4/ Bose [1974]. See, especially, pp. 4.14 - 4.17.

However, two factors considerably mitigate this potential bias. First, assuming that both arrival in the urban area and departures from it are random, the prevalence of a significant proportion of unsuccessful migrant job-seekers - i.e. migrants who are unemployed - would push up the conventionally measured unemployment rate of this group. A low rate is thus incompatible with a high proportion. The second mitigating factor is the duration of job search prior to obtaining the urban job. Unless there are strong empirical grounds for assuming that the unsuccessful job-seekers who left the urban sector, systematically differ from the ones who did not, a relatively short duration should indicate that their proportion is low. Thus it is useful to examine at this point a number of studies bearing on this issue of job search duration.

In the parishes of Kingston and St. Andrew, 89.5 percent and 99.5 percent respectively of those aged 14 and over were employed within the first year of their arrival. (Allowance has been made for those who moved out).^{1/}

Calculations based on a 1971 random sample of 5500 respondents covering seven urban areas in Tanzania reveal an average time spent in job search of four months for males born in the countryside who moved to town after the age of thirteen.^{2/}

Data drawn from the returns of a 1968 "representative sample in Nairobi and Nairobi Extra-Provincial District" of male migrants indicate that "migrants were unemployed for an average of three and a half months before obtaining their first job or before engaging in self-employment".^{3/}

1/ Tekse [1967]. Calculated from Table 22.

2/ Barnum & Sabot [1975].

3/ Collier and Rempel [forthcoming].

Data for migrants from Testour to Tunis (based on a 1972 sample survey) indicate that the average duration of unemployment was 14 weeks.^{1/}

The Ciudad Guayana migration survey referred to above reveals that two-thirds of the migrants found a job within the first month of their stay in the city, and two-thirds of the remainder within the next five months.^{2/}

An analysis based on 310 returns from a 1964 "sample survey of recent migrants" who were active in the labour force reveals that in the case of 40 percent of them, the lag between arrival in Santiago and "employment in the first permanent job" was two days; nearly two-thirds were so employed within the first month of their arrival.^{3/}

According to a 1968 study, "in the main cities in Brazil the lapse of time between the immigrants' arrival in the city and their first remunerative job amounts to one month or less in 80-85 percent of the cases for men".^{4/}

In a 1963 survey, 500 migrants who were engaged in wage earning activities were interviewed in Bangkok.^{5/} Seventy-three percent reported having found work within two weeks of their arrival. Although, like others, an enquiry of this type excludes the ones who failed to secure employment and left, "the majority [of all migrants] asked about the employment opportunities in Bangkok answered that finding a job is not a serious problem for those willing to do any kind of work"^{6/}. The conclusion can therefore be drawn that the great majority of

1/ Hay [1974, p. 80].

2/ MacDonald [1969].

3/ Herrick [1965].

4/ The study, by M. Santos, is quoted in Sabolo [1975, p. 28].

5/ ILO [1965], p. 73.

6/ Op. cit., p. 117.

migrants find jobs quickly, and that those few who do not - "do not remain for long in the metropolitan area".

A study based on a survey of 750 favelados (nearly all rural-to-urban migrants) in three types of squatter settlements in Greater Metropolitan Rio de Janeiro carried out in 1968-1969 (and supplemented by further empirical research in 1973)^{1/}, reveals that "jobs are found relatively quickly by those migrants who look for jobs, even though they are not the most desirable or best-paying jobs." 68 percent of these migrants found jobs within one month of arrival, another 18 percent within three months. Interestingly enough, those who spent three months or more looking for their first job appear to be "more privileged migrants" - more skilled and with friends and relatives, waiting for highly "desirable" public and other jobs.

4. Further Related Evidence Bearing on the Analytical Construct of Chapter II

Some straightforward empirical implications of the conceptual work advanced in Chapter II concern the age, the marital status and the educational level of the migrants.

A son (or a daughter) who has reached maturity, who is relatively more educated than the other family members and who is as yet unmarried is the family's best choice of a rural-to-urban migrant. This is amply borne out by the available evidence. Since this evidence is fairly systematically summarized in many existing surveys repetition is unnecessary.^{2/}

1/ Perlman [1976, Chapter III].

2/ Some relevant, more recent surveys are those by Brigg [1973], Carrynyk-Sinclair [1974], Todaro [1976], Connell et al. [1976], Yap [1975], Rempel & Lobdell [1976], Lipton [1976].

What is useful, though, is to touch on interpretations of the evidence concerning the educational factor based upon the specific behavioral and causal relationships between this factor and rural-to-urban migration - relationships implied by the analytical construct of Chapter II.

But first, it might be of some interest to note that the idea that the migrants are the relatively more educated members of the rural population is an integral part of many migration models and seems to be supported by consistent evidence. In particular the recent models referred to in Chapter I as well as a number of variants of the human capital model predict the greater tendency of educated persons to migrate. (This happy conformity with a number of alternative causal relationships is clearly a sure source of difficulty in policy formulation). There are, however, some specific, alternative possible reasonings based upon the conceptualization (rejected in the present study) of the individual migrant being the decision-making unit. For example, since risk aversion is inversely related to wealth (see Chapter II), the more educated individual who commands more (human) capital is, vis-a-vis the rest of the rural population, more willing to accept a given risky prospect i.e. probable urban income. Yet another example is provided by focusing, in a non-neoclassical world, on the role of education in improving and enhancing the capacity to perceive, evaluate and respond to economic opportunities. Given the urban and rural job openings and wage structures, it is the more educated whose greater acquired allocative efficiency turns them into migrants. Thus, education has two distinct though simultaneous "migrative impacts"; migration is pursued by the more educated because of the prevalence of an urban association between occupation and education which generates a positive relationship between education and urban income, and because of their capacity to perceive this relationship and allocate themselves accordingly.

Especially with respect to the education factor, the analytical construct of Chapter II generates some interesting new hypotheses based partly on the apparent complementarity between education and migration, when both of them are viewed as human capital investments.

Assuming that the head of the family is not too myopic, he might be taken to be the one who bears the present and near future costs of investment in his child's education and who reaps the future benefits from it through the mechanisms of rural-to-urban migration and urban-to-rural remittances.^{1/} (In principle, the relevant costs include all sorts of direct costs as well as the child's forgone labour input on the family farm). As argued in Chapter II, education enhances urban success and hence the expected returns i.e., remittances from migration.^{2/} The combination of education and migration is thus viewed as a means (investment) to an end (returns); consequently, the testing of this hypothesis requires the use of one of the standard investment criteria so that the optimality of this combination can be ascertained by confronting it with alternative investments open to the head of the family. The evidence concerning the age and marital status of migrants can also be incorporated in this hypothesis. For example, the probability that the migrant will keep the economic ("instrumental") ties with his (or her) parents' family, although depending on the strength and intensity of some general social mores and cohesion, is also and naturally inversely related to the probability of the migrant establishing a nuclear family of his (her) own. To the extent that family formation is partly determined by a customary marital age, the persistence of an urban-to-rural remittances flow from the migrant to his (her) parents' family is bound

^{1/} And/or a consequent on-the-farm surplus accumulation (see Chapter II).

^{2/} And/or the consequent on-the-farm surplus accumulation.

from above, and subject to this bound is inversely related to (the migrants') age.^{1/}

A richer hypothesis, which is also more closely entwined with the analytical construct of Chapter II, views both the education of and migration by a maturing child as an indirect, substitute means facilitating technological change in agricultural production on the family farm. Chapter II has dealt in some detail with the risk and credit constraints impinging on this change. Considering, for example, the latter constraint, it has been argued that the probable structure of the credit markets is such that the small farmer has no effective access to institutional or to non-institutional credit supply - a state of affairs which he can hardly expect to see changed. However, the situation concerning access to education for one's children is totally different. Access to (some) universal education, which to a large extent is financed by governmental subsidies^{2/} and not directly by those small farmers whose children are enrolled, is significantly easier and definitely more equal. Thus, the small farmer's entrance into the market in which he is less discriminated against can be viewed as a surrogate to participation in the market entrance into which is effectively barred to him. Building on the expectation of a high cross-rate of return to the joint decisions to educate (say) the maturing son and then "expel" him - assuming him to remit back - to the urban sector,^{3/} migration and the education preceding it thus substitute for the credit deficiency the alleviation of which is mandatory in facilitating the technological change on the family farm.

A similar argument holds with respect to the risk factor.

^{1/} Since, age-wise, rural-to-urban labour migration is also bounded from below, this latter relationship holds within these bounds.

^{2/} Financed in turn, perhaps, by income taxes levied on medium and high income classes, and not on small farmers.

^{3/} Or to facilitate on-the-farm accumulation of surplus.

CHAPTER IV

THE IMPACT OF RURAL-TO-URBAN MIGRATION ON THE DISTRIBUTION
OF INCOME BY SIZE

To an important extent, evaluation of the impact of rural-to-urban migration on the inequality of the distribution of income by size depends on the choice of the basic income recipient unit. The choice of the basic recipient unit - individual, household, family - depends on the general criteria of choice utilized. To ensure relevancy (and a proper actual choice) the criterion applied must be sufficiently sensitive to comprehend the type and nature of rural-to-urban migration as analyzed and depicted in the foregoing chapters.

Explicitly and particularly, a critical requirement of an appropriate choice is that it should fully reflect the identity of the decision-making unit with respect to income plans - (long term) income earning as well as income disposition. Being the locus of major decisions on income (including the means of obtaining it - inter alia via rural-to-urban migration of one of its members) the family and not the household (nor, for that matter, the individual) is clearly the relevant income recipient unit; choice of a multiperson urban household (common residence, housekeeping sharing) in which the migrant happens to stay appends the migrant, for example, to a family with whom economic ties are short-term, in whose income decisions he does not really participate and by whose income decisions he is not really affected. Considerations of similar nature render it equally inappropriate to refer to the individual rural-to-urban migrant family member as an independent income recipient unit. Although living separately from his family, the migrant's participation in the family's common decisions (which affect him too), his involvement in familial pooling of resources and income (e.g. pooling

aimed at facilitating migration, remittances transferred to facilitate the rural-end technological change) and the general prevalence of intensive - at least medium term-economic ties between himself and his family, all imply that analytically, it makes little sense to refer to the migrant as an independent income recipient unit and in any meaningful evaluation both his and his family's incomes (shares) should be combined.

Within a fairly general, welfare-oriented, approach the implication for the analysis which follows is that, at least for a considerable period of time, in evaluating the impact of rural-to-urban migration on the distribution of income by size (a) an a priori classification is in order viz. the criterion for defining income as rural or urban should depend on the recipient's initial location - not his current location nor, for that matter, the locality in which that income has actually been generated; and (b) the income recipient unit to whom incomes are attributed has to be the rural based family inclusive of its "urban extension" - the migrant member.

Failure to observe these simple implications could produce untenable conclusions. Whereas observing the family as a whole some short while after migration is likely to imply reduction in overall income inequality, observing each of its two components separately may imply a widening inequality. Further, whereas looking at the rural family inclusive of its urban member migrant could promptly indicate an improvement in its income position, looking at the rural family independently of its migrant member could (absurdly) indicate deterioration in its income (and welfare) position.^{1/}

^{1/} Consider a position whereby prior to migration the migrant's income and consumption were 100 and 80 units respectively, whereas following migration his income is 200 of which 50 are remitted to his family.

With this preliminary proviso in mind, some general income distributive connotations of rural-to-urban migration can be examined.

To start with, it is necessary to intimate that not every transfer of income (existing or incremental) from the relatively rich urban sector to the rural sector is desirable from the point of view of the overall equality in the size distribution of income. It is easy to think of transfers which will increase inequality both within the rural sector and within the economy as a whole (even if intra-urban inequality would not be worsened at the same time). To an important extent, the precise outcome depends on the relative position, in the rural hierarchy, of the transfer recipients (as well, of course, as on the size of the transfer itself).

Consider, however, the following hypothetical (but not, as far as relative magnitudes are concerned, unrealistic) case: there are four rural families with incomes of 1, 3, 3, 5 units respectively and two urban families with incomes of 4 and 22 respectively. The Gini coefficients for the rural, urban and the total population - rounded to full percentage points - are .25, .35 and .49 respectively. To avoid unnecessary acceptance of the particular social welfare judgement implied in usage of this inequality measure,^{1/} other measures - the Kuznets index and what could usefully be discerned as Theil's entropy index - are also employed.^{2/}

^{1/} Implicit in the use of the Gini coefficient as a measure of inequality is a social welfare function ((-G), i.e. the lower is G the higher is the level of welfare) which though concave is not strictly concave. See Atkinson [1970], Sheshinski [1972] and Sen [1973].

^{2/} The Gini coefficient is defined in a footnote below. The Kuznets index is simply the arithmetic average of absolute deviations of income shares from population shares standardized to range between 0 and 1. The entropy index is based on concepts borrowed from information theory: its presently relevant interpretation is: if X_i is the income share of the i -th family

(contd. on next page)

These indices render inequality magnitudes of .22 .69 and .49 and of .17 .46 and .45 respectively. Assume now that rural-to-urban migration from the second (or third) poorest rural family has taken place with a consequent increase in income from 3 to 4 units. Referring to this increase - in accordance with the implications of the foregoing comments - as an increase in that family's income results in the sectoral Gini coefficients remaining unchanged but in the coefficient for the total population registering an improvement (.47 as against .49). Precisely the same result is rendered by the entropy index (i.e. sectoral coefficients unchanged, coefficient for the total population registering an improvement - .43 as against .45). The Kuznets index also registers an improvement for the total population (- from .49 to .48). Clearly, this result - concerning the population as a whole - is enough to withstand a change in the sectoral classification of the income recipient unit engaged in migration. For example, it holds irrespectively of whether rural-to-urban migration is from or of the second (or third) poorest rural family who may then be re-classified as urban. Not surprisingly, it is even compatible with the extreme case where the definition, sector-wise, of a family depends on its current locus and when the whole family migrates - a case in which (utilizing the Gini index) both the rural and the urban distributions of income become more unequal (.30 as against .25, .40 as against .35 respectively).

Unfortunately, it appears that there are not, to date, any empirical studies which have explicitly and systematically attempted to quantify the

(continuation of footnote 2/ on previous page)

$i = 1, \dots, n$, $\sum X_i \log \frac{1}{X_i}$ measures equality and consequently, $\frac{1}{n-1} [n - \text{antilog } \sum X_i \log \frac{1}{X_i}]$ is a measure of inequality standardized to range between 0 and 1. On the Kuznets index see Kuznets [1976]. On the entropy index see Theil [1967], Marfels [1971] and Sen [1973].

dynamic relationship between rural-to-urban migration and changes in the intra-sectoral, inter-sectoral and overall size distribution of income. This lacuna may partly be attributed to the complicated nature of the issues; since many factors, some of which are highly correlated with each other, influence the distribution of income, it is difficult to assign an observed change to a given cause viz. rural-to-urban migration. The above numerical example illustrates the difficulty involved in generalizing from the partial to the total.

In order to shed some light on the qualitative relationship between rural-to-urban migration and the size distribution of income by utilizing whatever relevant evidence is available, some generally valid observations can be made thus helping to resolve an otherwise largely indeterminate issue.

Firstly, in most less developed economies, perhaps two-thirds to three-fourths of the poorest, the bulk of which are small self-employed farmers, are located in the rural sector.^{1/}

Secondly, in most less developed economies, although both intra-urban and intra-rural income distributions by size are largely unequal, the intra-rural income distribution is usually relatively more equal than the intra-urban income distribution. The main factors which contribute to this relationship are probably: (a) the nature of the production process (lower capital intensity, higher labour intensity in the rural sector); (b) the pattern of the distribution of production resources other than labour. (With the exception of land in some Latin American countries, capital and land are most probably more equally distributed in the rural than in the urban sector); (c) the extent of specialisation

^{1/} See Chenery, et al. [1974, Ch. 17].

and diversification (labour differentiation) of the occupational structure. (The scope for specialisation and the actual levels of it are higher in the urban sector); (d) the low level of rural incomes in general (lower than the urban level) suggests a more equal rural than urban distribution of income; (e) wealthier urban persons are less risk averse; to the extent that riskier choices increase inequality, urban inequality would be greater. Most evidence appears to support the prevalence of such a difference between these sectoral degrees of inequality.^{1/}

Thirdly, as had already been mentioned elsewhere in this study, rural-to-urban migration is dominated by members of small farmer families (small farmers are taken here to imply, inter alia, having access to highly limited productive services) who are concentrated in the middle rather than at the extremes of the rural size distribution of income.

These three considerations together render it possible to argue that a transfer of income from a less equal segment of the income distribution - urban, to a lower, more equal segment of the distribution - rural, directed not to the upper group in the latter but to the small farmers is most probably, over-all, equality increasing.

To illustrate, assume first that the urban and the rural distributions are homogeneous, with the urban average being higher than the rural average. Referring to the direct, first round, effect, rural-to-urban migration resulting in urban employment shifts the rural unit (inclusive of its migrant member) upwards in the income scale. Assuming no change in the incomes of the urbanites, and utilizing

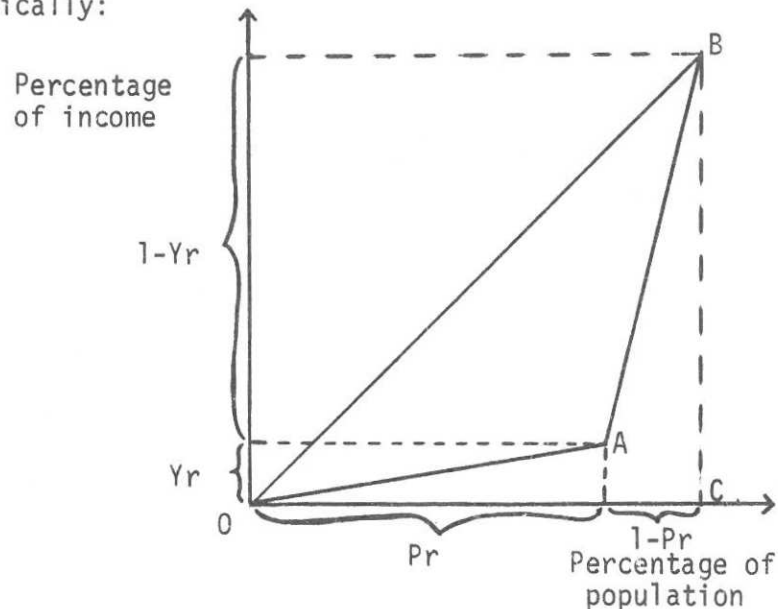
^{1/} See Weisskoff [1970], Fishlow [1972], Sabot [March 1972], Chenery et al. [1974 Table 1.4], van Ginneken [1975], Mehran [1975], Lipton [1977].

the Gini coefficient which, in such a context, is reduced simply to the difference between the rural population share in the total population and the rural income share in the total income,^{1/} it unequivocally registers an improvement;^{2/} the

1/ The claim is that when the urban and the rural distributions of income are homogeneous, with the urban average being higher than the rural average, the Gini coefficient is reduced to the difference between the rural population share in the total population and the rural income share in the total income.

The easiest proof is a geometric one. Denote by P_r , Y_r , rural population and rural income shares respectively and note that, incomewise, urbanites are ranked higher than ruralites.

Diagrammatically:



What has to be shown is that $G = P_r - Y_r$
 Since $\Delta OBC = \frac{1}{2} = \Delta OAB + \frac{P_r Y_r}{2} + \frac{(1 + Y_r)(1 - P_r)}{2}$,
 so that $\Delta OAB = \frac{1}{2} (P_r - Y_r)$
 $G = 2\Delta OAB = P_r - Y_r$.

2/ Clearly, $\frac{\partial G}{\partial Y_r} < 0$.

proportion of total income going to the ruralites is greater than before.^{1/}

Assume now that there are three sectors: rural, urban informal, urban formal, where again every unit receives, in its sector, the sector's average income. There is a ranking between these averages such that the rural average is smaller than the urban informal average which, in turn, is smaller than the urban formal average.^{2/}, ^{3/} Assume further that rural-to-urban migration results in employment in the informal sector. Clearly (and so long as the ordering is preserved - not affected by this migration) with the proportion of income going to the ruralites being greater than before, Gini, too, registers an improvement.

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- ^{1/} It is interesting to refer at this point to the implication of the removal of the assumption made throughout concerning the identity of the income recipient unit. (This reference is also a clear demonstration of the value judgement implicit in the use of the Gini coefficient already mentioned in an earlier footnote.) If the family engaged in migration is consequently tagged as urban, with both Pr, Yr falling, G may increase. Yet it might be argued that the concern raised by this increase in measured inequality is somewhat superfluous since the event responsible for it - increase in the income of the family engaged in migration with no diminution in the income of any other family - is unequivocally Pareto-optimal.
- ^{2/} In accordance with a point made earlier in the text, rural inequality is lower than urban inequality. Indexing the former as 100, the latter is greater than 100 and this is accounted for by the urban sectoral breakdown in the text above. Conceptually (since it is from the poorer rural households) rural-to-urban migration can be envisaged as keeping the rural distribution at least as equal as before, hence a continuous reference to it, income-wise, as a homogeneous segment.
- ^{3/} "... practically everywhere, wages in the unprotected sector in urban areas are substantially higher than the wages for comparable workers in the rural regions from which migration flows. The annual earnings of casual construction workers, household sweepers and rickshaw drivers in major Indian cities are about double those of landless agricultural workers in the rural hinterland. The wage of unskilled or low-skilled workers in the highly competitive textile industry of Santiago de Chile are also about double those of workers of comparable skill levels in rural areas. This type of wage differential (though not always so large) seems to be replicated in country after country." Harberger [1973].

It is interesting to note in this context that it can be shown that in the absence of externalities and returns to scale, any uniform increase in the number of income recipients (that is, over all income groups) will leave the Gini coefficient (and also other indices of inequality based on average income and dispersion of incomes) unchanged.^{1/} When the populations n_1 and n_2 of two groups, each homogeneous in its incomes grow by α_1 and α_2 respectively, where $\alpha_1 > \alpha_2$ but $U_1 < U_2$ (U_i 's average incomes), Gini will register an increase in inequality; however a transfer of income recipients from the lower income group by a magnitude given by solving $\frac{n_1 [(1 + \alpha_1) - \Delta\alpha_1]}{n_2 [(1 + \alpha_2) + \Delta\alpha_1]} = \frac{n_1}{n_2}$, so that the incomes of all those transferred will be as that of the higher income group, will result in Gini registering an improvement over the original state. Mere migration from the rural sector resulting in higher incomes for the families engaged in it generates, under conditions reflecting the assumptions made above, a more equal size distribution of income.

1 The claim is that in the absence of externalities and returns to scale, any uniform increase in the number of income recipients (that is, over all income groups) will leave the Gini coefficient unchanged.

The easiest proof is an algebraic one. When there are \hat{N} income recipients, $\hat{N} = \sum_{i=1}^N n_i$ divided into N groups constituting each n_i $i = 1, \dots, N$ members (hence $\hat{N} = \sum_{i=1}^N n_i$) Gini which can generally be defined as

$$G = \frac{1}{2\mu \hat{N}^2} \sum_{i=1}^{\hat{N}} \sum_{\substack{j=1 \\ j \neq i}}^{\hat{N}} |x_i - x_j| \quad (\mu = \text{average income}) \text{ becomes:}$$

$$G = \frac{1}{2\mu \hat{N}^2} \sum_{i=1}^N \sum_{\substack{j=1 \\ j \neq i}}^N n_i n_j |\mu_i - \mu_j|$$

A uniform increase, say by β , of the number of recipients in each group implies

$$G = \frac{1}{2\mu (\beta\hat{N})^2} \sum_{i=1}^N \sum_{\substack{j=1 \\ j \neq i}}^N \beta n_i \beta n_j |\mu_i - \mu_j| =$$

$$\frac{1}{\beta^2} \frac{1}{2\mu \hat{N}^2} \sum_{i=1}^N \sum_{\substack{j=1 \\ j \neq i}}^N n_i n_j |\mu_i - \mu_j| = G$$

The following scenario - to be validated by evidence - is thus suggested: the direct, first round impact of rural-to-urban migration is a distribution equalising one when migrants, who are members of poor families of a poor sector, join a less poor sector and consequently they and their families taken together, become less poor.^{1/}

Before an over-all judgement can be passed it is clear, however, what has to be shown in addition - that (a) the second round effects and (b) the prevalence of externalities, would not counteract. Concerning (a), it seems that most probably, all the more important of these effects would increase equality and depress factors which positively contribute to inequality. A land augmenting technological change in small farmers' agricultural production and a consequent higher employment rate (lower level of underemployment) in the rural sector illustrate, respectively, these two types of effects.^{2/} As far as (b) is concerned, the issues involved are manifold. However, there is evidence that in the case of most individual rural communities, the magnitude of migration in general, and hence rural-to-urban migration in particular, has been low;^{3/} this limits both possible positive and negative rural-end externalities of rural-to-urban migration. It also seems that the negative external impacts are largely illusory, whereas the

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- ^{1/} With most rural migrants belonging to families engaged in agricultural production, their expected income from such production, controlling for prices and in the absence of technological change, should be compared to their actual income. This could be done via the use of a control group based on rural families who have not expelled migrants but whose resource endowment, level of technology and demographic characteristics are similar to those of the migrants' families.
- ^{2/} In the present context - i.e., reference to small farmers - mechanization offsetting the combined positive effect of technology and production on labour demand is ruled out.
- ^{3/} See Lipton [1976].

benefits are real. Consider, for example, the impact of the absence of migrants on the income level of all rural families.^{1/} So long as it is assumed that, for the migrant's family, the maximand is the family's utility from income, it is hard to perceive how the absence of a member migrant who is employed in the urban sector could, family-wise, be inferior to him not being away. If the whole family moves to the urban area (and consequently improves its income level), effective land supply for the remaining families would increase and consequently, in all probability, per capita and per family incomes too.^{2/}

Lastly, it is necessary to come to grips with the following issue. Largely due to unsubstantiated assertion and repetition the accepted view seems to be that the selectivity of rural-to-urban migration deprives the rural community of people who otherwise could have led it to prosperity or, at least, who possess such skills that their removal would inflict hardship and eventually, depress the incomes of those who remain behind.

The weaknesses of this view are manifold and probably account for the paucity of any empirical support. Migrants' absence could be temporary, their absence could remove constraints on income enhancing technological changes, "gaps" (the "village baker" example) left by them can be filled by others.^{3/}

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- ^{1/} From the point of view of equality in the overall distribution, a positive urban- end externality of rural-to-urban migration is also possible viz. if consequent upon and owing to migration the incomes of the urbanites are lowered.
 - ^{2/} There is much evidence to date that in situations where land (controlled for quality) is scarce, man/land ratios correlate significantly and positively with (various measures of) migration. See, for example, Connell et al. [1976].
 - ^{3/} The view that migration is selective - hence income depressing and inequality enhancing - probably originates in Myrdal [1957] and Richardson [1969, Ch. 12]. Its specific manifestation as above has been rejected elsewhere. See, for example, Griffin [1976]. As an example of a failure to provide concrete evidence in support of the view see Lipton [1976, pp. 42-51].

A useful complementary way of looking at the relationship between income distribution and rural-to-urban migration might be an examination of the range of policy options available for making the distribution of income more equal. To some extent, these policy options can be graded according to feasibility efficiency (in attaining the declared redistributive goals judged by cost-benefit standards) and so on. The specific instruments within a preferred option could then be compared with the correlates of rural-to-urban migration. If these are largely the same (or similar), the remaining consideration would be comparison of the social opportunity costs of resources bound in these specific instruments to the costs of rural-to-urban migration.

Of the four main alternatives, confiscatory policies and direct market intervention (control of quantities and prices) should probably be given second priority in relation to provision of inputs for the poor and to expenditure-oriented policies, i.e. public works projects aimed at reducing unemployment and raising wage levels of the poor (for example, the Crash Schemes for Rural Employment in India).

There are number of reasons for this ordering. With regard to confiscatory policies (of assets and income), political, institutional and administrative feasibility is a major shortcoming, and the fact that they rarely redistribute between sectors is another.^{1/}, ^{2/} In addition, effectiveness in the case of

^{1/} To increase substantially the political feasibility of confiscating the asset with the potentially greatest redistributive impact - land, full compensation for expropriated land as a policy strategy has been suggested [Cline, 1975]. Although it is probably true that under some conditions there will be an improvement in the income levels of the rural poor consequent upon land reform, it is far from clear (a) whether from the standpoint of financial requirements land reform based on full compensation is feasible and (b) whether the over-all redistributive impact of such a reform would be favourable - i.e. whether the favourable equity effects of the reform (inter alia through the positive production effects) would not be eliminated by such a compensation.

^{2/} Overleaf

taxation - (progressive) taxation of income and profits can be visualised a confiscatory policy - is limited not only because of the well-known problems of enactment, implementation and enforcement but also, and inter alia, since possible tax levels are severely constrained by the high mobility of capital and skilled labour^{1/} and since only certain population groups are likely to be affected by taxation.^{2/} Moreover, it is both well known and documented that unless accompanied by supportive measures - provision of services, complementary inputs and institutional infrastructure - a redistributed asset could well lose much of its earning potential.^{3/} However, provision of these belong precisely to the second, preferable group of policy options. As to direct market intervention - control of quantities and prices including wage setting, with the exception of direct measures to remove

Footnote 2/ from previous page

2/ Even over-all economic feasibility is not assured; for example, since, because of the political constraint, nationalization is nearly always confined to only one (or few) sector(s) or to only some entrepreneurs in a given sector, those whose property or land has not yet been confiscated could revert to investment and production strategies which will adversely affect the poor, reduce tax revenue derived from profits - hence resources for redistributive steps, and so on.

1/ Harberger [1974].

2/ It has been noted that "... in poor countries... when judged against the goal of a major improvement in the over-all distribution of income, the limitations [of the taxation side of the fiscal equation] are severe. ... when we look at a tax system with the distribution issue in mind, we are far better advised to think in terms of bringing about a fairer distribution of the tax burden than in terms of having a major impact on the over-all distribution of income". Harberger [1974, p.17]. It has further been intimated that "Tax systems have not generally been effective in redistributing income in developing countries, in part because they are devised to serve multiple goals." Adelman and Morris [1973, p. 92].

3/ Land reform as such was found unimportant for improving income distribution in an analysis of income distribution of 43 countries, the reason being probably "that redistribution of land favours higher incomes for the agricultural poor only when supported by measures to maintain the productivity of the redistributed land". (Emphasis added). Adelman and Morris [1973, p. 196].

market imperfections and distortions, use of this tool can usually be shown to be inefficient and in many cases may even result in adverse income distribution effects.^{1/} The impact of direct market intervention could also be greatly hindered by considerations of low substitutability and low factor productivity (low project productivity) and in any case, the main problem may often lie with availability and access (or equality of access), not with the price distortion as such, which may be corrected by way of subsidies and taxes. It is important to stress that the constraints here could be severe. Manipulation of prices aimed at stimulating production in a labour intensive industry could have both favourable and unfavourable effects on the distribution of income (increase employment but also profits and asset concentration). Maintaining a low ceiling on the price of food and wage goods will benefit the urban poor but harm the rural poor, i.e. the small farmers.

The preference of the policy options of the second group is mainly due to them being a direct approach without any need to wait unreasonable time for trickling down and spillover effects and, relatively speaking, without too great a fear of missing the intended beneficiaries. Public provision of services and consumption goods directly increases the real income and welfare of the poor. Dominant here are extension services and the provision of cheap credit, crop insurance, water and other production inputs to small farmers, and labour intensive public works and community infrastructure projects associated with rural development programmes aimed at increasing small farmer productivity. The analysis and evidence of the foregoing chapters and of the section which follows appear to provide quite strong grounds to believe (a) that rural-to-urban migration facilitates ends which are precisely taken from this armory and (b) that the

^{1/} A notorious example is the generation of "black markets" (as a result of low ceiling placed on prices e.g., of consumption goods or credit) to which the poor must consequently turn.

organizational structure and the institutional infrastructure (which are largely lacking) and the direct finance that would have to be tied to the external provision of those ends, are of a magnitude shadowed by a high social opportunity cost. It can be shown^{1/} that when account is taken of the high costs involved in creating the necessary loanable funds and in the actual process of loan-making (e.g. the administrative costs of lending and collection, losses owing to incomplete enforcement of credit contracts, defaults etc.), and of the costs of providing formal crop insurance, rural-to-urban migration is probably socially preferable. The prevalence of risk aversion can be shown^{2/} to further increase these costs so that the over-all claim of the credit and insurance package on scarce development funds is high.^{3/}

The emerging preference of rural-to-urban migration is reinforced with the policy instruments of the second group being subjected to a limitation similar to that of migration substitutes - i.e. they are administratively expensive. Ensuring that instruments are applied with minimal dilution, i.e., that non-target families

^{1/} See Chapter VI.

^{2/} See Chapter VI.

^{3/} As pointed out in Chapter II, with respect to the small farmers, rural-to-urban migration is synchronized with a stage in the life cycle of the family in which the propensity to incur technological change is particularly strong. As noted in Chapter VI below, the effectiveness and actual use of externally supplied credit and insurance are reduced in proportion to the extent of the deviation between the time at which they are to be made available and this stage. The practical difficulty of identifying this stage for each family further enhances the advantage of rural-to-urban migration vis-a-vis the instruments referred to in the text.

hardly benefit, render it necessary to discriminate, to meet the fact that often the poor do not constitute homogeneous groups but rather are intermingled with others who are not so poor (e.g. rich farmers in a generally poor village.) If, in order to spare the delivery costs while maintaining a given degree of effectiveness, the identification of the target families and the sorting out are abandoned, then, owing to the dilution effect, more resources will clearly be required. Furthermore, in face of dilution, it is also likely that the net redistributive impact of the policy instruments - narrowing of the income differentials rather than reduction in absolute poverty - will be mitigated.

Some Empirical Aspects

There are a number of reasons why the contribution of rural-to-urban migrants, as a group, to the over-all, or the urban mal-distribution of income is in fact lower than that registered by conventional methods of measurement or than what it is generally believed to be.^{1/}, ^{2/}

One factor biasing the measured intra-group inequality of migrants - probably more than it biases the degree of inequality of the non-migrants - derives from the expected variation of migrants' income over their life cycle.

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- ^{1/} This argument is independent of the point that within the urban sector, the degree of inequality is lower in those non-modern sub-sectors where migrants are concentrated; high wages and salaries in the modern industrial sub-sector render it a negative contributor to equality in the distribution.
- ^{2/} This is distinct from the point that as a group, migrants are often found to manifest a lower level of incomes inequality than non-migrants. See, for example, Fraenkel et al. [1975]. "The spread of migrants' average incomes around the mean across the regions is narrower than that of the non-migrants." This study also argues that "migration tends to even out the marginal differences of incomes among migrants". However, the data base for this statement is not clear. (The study analyses Brazilian data for 1970 only).

The impact of the time span since migration is of critical importance here. It is most probably true that in a given year, the distribution of (expected) lifetime incomes somehow discounted to that year, is more equal than that of the observed annual incomes. While this refers to all groups of income earners, the divergence appears to be greater for the migrant group, particularly if many of the migrants are of recent vintage, are young and are initially, but not long after their arrival, concentrated in low-paying jobs.^{1/} However, the conventional inequality indices capture variability which is not only due to inter-family differences in incomes, but also due to intra-family variation in income over the life cycle. To put it more bluntly, the indices capture and register income disparities reflecting different families being in different phases of their life cycle, even though the total lifetime incomes of these very same families may be precisely the same. Indeed it has been suggested recently that a meaningful improved index accounting only for the former source of variability should be used.^{2/} The conventional utilization of the inequality indices to measure a cross section distribution thus implies that, for the migrant group, the inequality bias is greater than for the non-migrant group.

The conventional way of defining and measuring income recipient units and their incomes excludes from enumeration non-market transactions which take place between households. Income distribution data refer primarily to income earners, not to income users. If the direction of non-market transfers is from the relatively better off to the poorer, then the actual inequality of the size

^{1/} Implicitly, it is assumed that non-wage income - income from capital assets - is largely insignificant.

^{2/} See Paglin [1975]. See also Kuznets [1976].

distribution of income is lower than that registered by the formal indices. Income-wise the migrant group is more homogeneous than it appears to be. For example, it is a common practice in Israel for migrants from a given source area who reside (perhaps what should be written is to reside) next to each other in the urban area, to engage in various sharing activities (many of which are carried out by women) extending beyond the family unit. At the same time, such activities are much less common for the non-migrant population. A degree of cohesion and intra-group solidarity which prevails in the origin area (the rural sector, village) is carried through to, even enhanced at, the urban sector, at least during the early years of residence there.

Evidence bearing on this point is not easily available. An analysis based on a 1967 socio-demographic survey of Kinshasa encompassing a large cross-section of migrants^{1/} revealed an interesting phenomenon of households having high "open unemployment rates" clustering with households having low "open unemployment rates" and that sharing is practiced among households in the "parcels" - "plots comprising several households which may be related in some way". A survey of about 800 rural-to-urban migrants in Sierra Leone carried out in 1974/75^{2/} revealed substantial intra-urban income transfers among migrants (but nearly zero net income transfers between migrants as a group and the urban non-migrants). Working migrants were found to provide support, unemployed migrants - to receive it. Working migrants, on the average, were transferring about 17 percent of their income to support migrant

1/ McCabe [1972].

2/ Byerlee et al. [1976].

relatives and friends. Some related evidence is provided for Medan, Indonesia^{1/}, Manila^{2/}, Bombay^{3/} and metropolitan Rio de Janeiro.^{4/}

An important empirical aspect is that, to the extent that rural-to-urban migration is strongly associated with reduction in unemployment (see Chapter III, Section 3) it contributes to a decrease in the inequality of the distribution of income. As a general rule (concerning the distribution of pre-tax receipts), employment has been found to operate in the equalising direction. The percentage of families within a given decile of any less developed economy's distribution without an employed member most probably diminishes with a movement from the lowest to the top decile (with the move between only the very top deciles registering, perhaps, a slight inverse relationship).^{5/} Throughout time, changing unemployment is probably, in a great many countries, the most important factor explaining variation in individual income inequality^{6/} and an increase in the functional share of labour (wages and salary income) in the total product implies an equalising change in the distribution of income (assuming, of course, that an implied shift away from capital and property is also a shift away from the highest income deciles).^{7/}

1/ Bruner [1970].

2/ Hart [1971].

3/ Gore [1970].

4/ Perlman [1974, 1976].

5/ See, for example, Mehran [1975].

6/ Chiswick and Mincer [1972].

7/ Kuznets [1966].

A study analysing the distribution of income of the "economically active persons who receive payments", Brazil, 1970,^{1/} pointed out that migrants tend to stretch the intra-urban size distribution of income (owing to their initial concentration in construction and personal services where earnings are frequently below the minimum wage levels indicated by legislation or minimum living standards). The absorption of migrants in low-paid urban occupations is regarded as an "undesirable result" that is, from a distribution of income point of view. "It is possible that migration did some harm to the pattern of income distribution". However, for example, no inter-temporal comparison is made between levels of income inequality for those areas which have absorbed large numbers of rural-to-urban migrants (the metropolitan regions of Belo Horizonte, Sao Paulo, Porto Alegre, Rio de Janeiro) nor is it made for the economy as a whole. The example presented at the outset of this Chapter has illustrated the possibility of a deterioration in the degree of intra-urban income equality being compatible with an improvement in the degree of income equality throughout the economy as a whole. The analysis of the present study also illustrates the need to refer to the inter-temporally changing impact of rural-to-urban migration on the distribution of income of a given sector. When the concentration of migrants in low income occupations is a short run characteristic, their stretching the urban income distribution is a transitory feature too.

Equally partial is the analysis of the impact of rural-to-urban migration on the inter-sectoral distribution of income in Brazil, 1950-1965.^{2/} It is well known that during this period rural-to-urban migration was significant (the average

^{1/} Fraenkel, et al. [1975].

^{2/} Yap [1976].

annual growth rate of the urban population was about 5.5 percent) and that during the fifties and the sixties, inequality in the country as a whole increased.^{1/} Should a conclusion be drawn that migration is positively associated with increased inequality? The study fails to provide an answer although utilization, estimation and then simulation of a simple model suggest that the impact of rural-to-urban migration is to dampen and not to enhance inter-sectoral inequality. If, historically, rural-to-urban migration rates were lower, inter-sectoral inequality would have been greater than that actually observed. The explanation which is offered is that migration improves the wage distribution as both migrants and those left behind evidence an increase in their wages; "with a higher rate of migration, agricultural wage increases faster than the urban wage." At the same time, a higher rate of migration enables more labourers to earn the higher wages associated with urban jobs. Obviously, there are a number of shortcomings to such an explanation - e.g. while leading to an improved distribution of wages, migration may, and at the very same time, lead to an increased profit concentration. It is clearly possible that this effect more than offsets the favourable wage effect on the distribution of income by size.

An important implication and indication of the improved income level of poor rural families engaged in rural-to-urban migration and of the likely future, further improvement in their income, is the level of saving consequent upon rural-to-urban migration. (It has already been argued that an improvement in the income level of these families is, ceteris paribus, synonymous with improved over-all equality.) For example, data for Greater Khartoum^{2/} indicate that,

1/ Morley [1976]. Also, consult Jain [1975, pp. 15-18] and Fishlow [1972].

2/ Oberai [1975].

taking migrants as a whole, their average propensities to save increase with the duration of stay, to reach levels which are at least as high as those achieved by the non-migrants. Of course, even if the same average propensity to save had existed before (which is doubtful) then, other things being equal, migrants have increased the absolute amount of their savings - given their higher urban incomes. Unfortunately, data concerning total familial savings (that is, of the rural family including those of the migrants) are not given; it should be noted that about two-thirds of all male migrants were not heads of households (most were friends and relatives of the urban households in which they were enumerated). Whether or not total savings (within and outside the household sector) have diminished at the same time and as a consequence of the migration flow, however unlikely, is again impossible to determine on the basis of the available data.

Finally, reference is due to the only two attempts (of which the present author is aware) to test systematically, even if not all convincingly, the impact of rural-to-urban migration (or some proxy of it) on the degree of inequality. A recent study^{1/} has utilized cross country data (not time series data for particular countries) and multivariate regression analysis to estimate the (associational) relationship between various indices of the over-all inequality in the distribution of income by size and a number of variables likely to influence this inequality. Data are for 60 countries, 40 of which are developing ones.

Estimating the relationship between the share of the urban population (as the explanatory variable) and the income share of (a) the lowest 60, 40 and 20 percent of income recipient units and (b) the top 20 percent, reveals positive associations (a) and a negative association (b) which are

1/ Ahluwalia [1976].

statistically significant at the 10 percent level. The shift of population to the urban sector is thus a process favouring "the lowest income groups at the expense of the rich". According to the study's cross section results, the impact of rural-to-urban migration on the distribution of income by size is then an equalizing one.

As to the second systematic attempt, a planning model for Korea has recently been applied to study the impact of demographic phenomena, inter alia rural-to-urban migration, on the distribution of income and the extent of poverty.^{1/} The data base is for various years within the 1968-1972 period.

Before referring to the conclusion of this study it has to be pointed out that some of the model's postulations are extremely unfavourable to the hypothesis that migration exerts an equalizing impact on the distribution of income. For example, as it is assumed that on leaving their farms the migrants' land is taken over by the large farmers, migration changes the size structure of land holdings in the agricultural sector in favour of the larger farms. Consequently, a model estimation, if it indicates a positive impact of rural-to-urban migration on equality, will a fortiori be revealing.

The results of estimating the model are indeed revealing. The general conclusion is that higher migration rates lead to improvement in the distribution of income and to reductions in the extent of poverty. These impacts are somewhat modest in the short term- within five years, but significant in the longer term - e.g. by the 9th year after migration. For example, by year 9 the effect of migration is to lower considerably the Gini coefficient of the over-all distrib-

^{1/} Adelman and Robinson [1977].

ution - from .598 to .457. The obvious policy implication of these results is that "limitations on rural-to-urban migration... tend to make the over-all distribution more unequal even in the medium term."^{1/}

^{1/} Op. cit., p. 39.

CHAPTER V

DEMOGRAPHIC INTERACTIONS: RURAL-TO-URBAN MIGRATION
AND FERTILITY DECISIONS

In Chapter II it has been assumed that fertility decisions are exogenous. In the present Chapter, some of the implications of internalizing these decisions are examined.

Within the utility maximization framework generally utilized in studying the determinants of fertility, children are seen (from a private parental point of view) to yield various direct and indirect utilities which may be conveniently enumerated under three headings: consumption utility (children are a source of personal satisfaction and pleasure); income utility (children directly contribute to the family income via their work); status, security and insurance utility. (Status - e.g. when position and power are established through children generated familial ties; security - especially old age security; insurance - an extra child can generate various utilities in the event that other children have failed to do so, mainly because of early mortality).

One implication of the analysis of Chapter II is that a new element is added to the utilities from children vector viz. "overcoming the market segmentation" (through migration) utility. This element is distinct from the other elements, in particular the income utility element, in that children's primary role as migrants is not to generate an income stream per se but to act as catalysts for the generation of such a stream by way of facilitating an income

increasing technological change on the family farm.^{1/}

At the same time it has to be recalled that within the narrower utility maximization framework of Chapter II and for a certain period, children were seen to depress familial net utility by their mere appearance and growth. The very incentive to incur technological change is attributed to these impacts. In such a narrower utility maximization framework, with the net utility diminution ("disutility"), and the removal of the credit and risk constraints inhibiting technological change (utility), as the only "cost" and "benefit" respectively, the bringing of children into the world signals that the marginal cost as yet has not outweighed the future marginal benefit (appropriately discounted) of an additional child. With other elements also present - internalizing the fertility decisions renders it necessary to broaden the utility framework - such a paradoxical interpretation is avoided.

The presence of other elements helps to explain the marginal nature of the considerations involved in the "migration utility from children". Given the

^{1/} Note that this conclusion (and its consequent fertility implication noted in the text below) is in sharp contrast with the view forcefully expressed by Mueller on a number of occasions (e.g. Mueller [1975]). Her argument is that the advent of the high yielding varieties has enhanced the need for purchased modern inputs rather than the kinds of capital which are essentially an embodiment of household labour. Consequently, it is probably more important for farmers to economize on family expenditures than to have many hands to work. The opportunity cost of supporting children seen then to compete with the externally produced inputs is thus raised - exerting a downward pressure on fertility.

Obviously, Mueller's failure to incorporate in her analysis migration and its role, the segmented structure of credit and insurance markets and the discrete nature of the technological transformation account for her reaching a diametrically different view than the present one.

presence of some children, if for such reasons as skill or sex none is an appropriate candidate for migration, an extra child may be brought into the world and prepared for eventual migration, possibly with other children contributing to this preparation (e.g. financing his education) as a necessary intermediate investment.

A related reason why the "migration utility" may lead to the production of an extra child stems from considerations of substitution and complementarity and indivisibility. As already indicated, children are the source of a number of different utilities. Yet, especially in the context of a less developed economy, not all children can efficiently provide all utilities. Specialization by different children in the production of different utilities increases total utility from children; *inter alia*, this stems from the prevalence of positive interactions. Often, specialization and indivisibility effectively tend to rule out the possibility of the same child providing "supply-side" competing utilities. Some examples will serve to illustrate this point.

Rural-to-urban migration of a maturing child presents a risk of severance, by the migrant, of the economic ("instrumental") ties between himself and the head of the family as well as the rest of the family unit. (See Chapter III, Section 2). This risk is particularly real if migration results in a remunerative and stable urban job, on completion by the migrant of the "pre-marital adolescence" stage of his life-cycle, and if the migrant remains in the urban sector for a number of years after migration. Precisely at the same point in time, parents requiring "old age security" may find that it is not forthcoming from the migrant child. The task of providing "old age security" would have to be assigned then to another child who may be "less productive" but willing to allocate a larger share of his income to his parents. For example, this may be a child who stays behind in the rural

sector and who, together with the head of the family, directly participates in the farm-end technological change facilitated by the other migrant child.

The point to be stressed here is that to the extent that children's capacity to generate different utilities is a planning variable, children will be prepared differentially to these competing tasks. Continuing the example, the potential migrant may be subjected to more or better "urban biased" schooling with the other child, say, engaging intensively in farm production. A recent (1974/75) survey in Sierra Leone^{1/} affords an illustration of this: a quarter of all rural-to-urban migrants were youngsters leaving (indeed, sent away) for schooling (the typical educated migrant attends more than half of his school years in an urban area), and another fifth were children sent away for upbringing - indirectly for schooling too. Here education is interwoven with migration (some education precedes migration which in turn is followed by more education), rather than preceding it entirely.

As another example note that the critical importance of children who specialize in the provision of different utilities in actually providing these utilities, intersected with indivisibility, implies a high degree of risk aversion in the number of children - thus favouring a high fertility level.

An important implication stemming from this argument, concerning the relationship between economic policies aimed at reducing fertility and the determinants of fertility, is that these policies have to take into consideration an additional pro-natalist element. Children are seen to yield an additional benefit viz. removal of the risk and credit constraints inhibiting technological change

^{1/} Byerlee et al. [1976].

in the rural sector. Thus, just as a social insurance scheme may be regarded as essential in depressing the "provision of old age security motive" for having children, so an institutional arrangement catering for the supply of credit and the control of the risk level may be required to defuse the "migration motive" for having children.

In the next few paragraphs some further, migration-related factors likely to stimulate an increase in the desire for children are examined briefly. This is followed by a short examination of a number of migration-related factors likely to lead to the opposite - a decrease in the desire for children. It is difficult to assess which of these opposing forces is the stronger. In the medium term it seems that, on balance, considering all various migration related factors, the desire for children at least does not decrease; in the long run, it probably does.

One reason why parents who in a given period desire a given number of children actually produce more children is uncertainty concerning the future desire for children. If (for various reasons) in a later period additional children are desired and if that period coincides with a post-fecundity period, it will not be possible to amend past error. To avoid this, parents will deliberately choose to "err" upwards. The pure fertility effect of this factor is then positive. However, uncertainty works both ways: parents may produce more children than are actually desired, ex post. This may be due to pure economic pressures. According to classical argumentation, migration opens an outlet - an escape route from this error; the possibility of migration counterbalances partly or wholly the erring upwards regret. In the presence of the migration option, the net effect of uncertainty on fertility is thus positive.

Usually it is expected that rural-to-urban migration will modify the fertility decisions of the migrants themselves. To render reference to such effects meaningful it is particularly necessary to demonstrate that the influence exerted by rural-to-urban migration is distinct from the cyclical impact to which the migrants would have been subjected had they stayed behind.

Probably a pro-natalist migration related factor, often argued to be negatively associated with fertility, is the substitution that usually accompanies migration and urbanization of nuclear (or conjugal) families for extended (or joint) families.

There are various reasons given why the extended family institution is believed to exert a favourable impact on fertility decisions. Provision of baby and child care, substitution of the wife's role in home and farm production while pregnant and tending babies and outright provision of various specific material resources needed to bear and rear children serve to illustrate the way in which the extended family diffuses burdens otherwise fully born by the parents. Conversely, by limiting their fertility parents are not spared the obligation to bear some of the costs of, and participate in, rearing children of other extended family members. With rural-to-urban migration and the consequent breakup of extended families and establishment of nuclear families, production of children requires more parental time and more market goods and services. On both accounts children now compete with other uses. With various goods and services formerly provided by the extended family "having now to be purchased", the demand for children "inevitably" shrinks.

What this widely repeated argument ignores is the issue of relative prices. The overall (opportunity and direct) costs of providing the "children related"

goods and services within the family may still be lower than the costs of providing them via the market - whether directly or, say through the wife's work, indirectly. Thus, with the relevant alternatives being "market" vis-a-vis "home" production, the preferred alternative may well be the latter. This preference is reinforced - the desired number of children under a nuclear family regime consequent upon rural-to-urban migration may be even greater than under an extended family regime - simply because various services on whose partial or full supply nuclear family members could have relied upon extended family members, must now be provided by the nuclear unit itself. For example (at early stages of development), with parents having no satisfactory alternative source of old age support, their own children will be called upon to provide such a support; likewise from the point of view of various status and insurance considerations. Incidentally, note also that given the presence of some children, the opportunity cost (in terms of the wife's time and her forgone income) of having more children may be very low simply because in the urban environment, older children, as yet barred from participation in the labour force, can take care of small ones, thus facilitating the mother's entry (or re-entry) in the labour force.

There are other, consequent-upon-migration, cost-related-considerations which positively relate to fertility. One such consideration stems from the change in the expected cost of a child. If the cost of rearing a child is fixed and if the probability that a child will survive is higher in the urban environment than in the rural environment, the expected cost of a child in the former is lower - wastage is reduced. Ceteris paribus, this probably increases the

quantity of children demanded.^{1/} Obviously this conclusion holds even though the cost of rearing a child is higher in the urban environment, as long as this cost is not so substantially higher as to offset the higher survival probability.

The expected net cost of a child is likely to decrease because of yet another factor.^{2/} The transfer from agricultural to non-agricultural means of earning a living may, after some time, increase migrants' confidence in their control over their destiny. Both removal of weather and other uncertainties generating crop, and hence income, vulnerability and the increase in income are likely to strengthen confidence in survival and to weaken the relative importance of present and near future periods, in migrants life cycle plans. This is expressed in a decrease in the time rate of discount. Since children incur most costs in the near periods but generate most benefits in later ones, the net present value of the costs of having children is reduced, bearing a positive effect on the desired number of children.

Turning now to migration-related factors likely to result in a decreased desire for children, the impact of contacts with the urban environment e.g., through the husband's occupational group, is considered first. The mere exposure to the

^{1/} When children's quality (e.g. education) is fixed, decrease in the expected price of children increases quantity (number) demanded owing to both substitution and income effects (inferiority ruled out). When quality is variable, it is the demand for children, in "effective units", which increases. For this to entail a definite increase in the quantity demanded, the income elasticity of child quantity has to be positive - even if smaller than the income elasticity of child quality.

^{2/} The expected net cost as a discounted stream of future costs and benefits is a function of (a) the periodical costs and benefits and (b) the rate of discount. The argument assumes (a) to be constant and examines the impact of a change in (b).

norms, values and general outlook of a larger community whose desired family size is smaller than that of the community from which the rural-to-urban migrants originate, is held to influence parents in choosing lower fertility i.e., to change personal tastes. At the conceptual level this argument raises a number of difficulties. For example, it ignores the cohesion of migrants as a group, a factor counter-balancing, or at least cushioning, the effect of such influences. It also abstracts from the possibility that by the time of migration, long-term tastes and attitudes towards desired family size may already be formed.^{1/} Note also that norms and values have only limited standing of their own and at least to some extent (with only few exceptions and with a lag), change with, and reflect changes in, economic conditions especially income level, level of education which is highly and positively correlated with income etc.. The observed change in fertility decisions should be attributed, then, to pure economic variables, not to the direct impact of norms and values which act as transmitters for these variables.^{2/}

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- ^{1/} It is also likely that in the short run tastes hardly change. Given this, when, as a result of migration, income increases or is higher than it would have been in the absence of migration, migrants who feel that they can afford more children will indeed desire more children. Put it differently, whereas migrants' value system is probably slow to change, migrants' incomes change much faster thus generating "effect of income" in conjunction with relatively stable tastes.
- ^{2/} Migrants may, after a while, desire less children not because everybody else, say in their social class, desire few children that is, not because of group norms as such but because, for example, everyone spends larger amounts on children than they do. This influences them into re-scheduling their planned expenditures on children - render children more expensive hence, depresses demand for children. The impact of norms as such is manifested as a potential social pressure - even a form of some sanction against deviation from the group's norm.

That younger-at-migration migrants have lower fertility than older-at-migration migrants^{1/} (-shorter exposure) does not refute this criticism since those who arrived at a younger age may well be wealthier and possess more education than the later arrivals. If the younger-at-migration migrants had married at a later age than the older-at-migration migrants, they simply may have had a shorter duration over which to establish a family. It is also possible that the early arrivals differ from the later arrivals in various respects which account for the very fact that they have migrated earlier, as well as for a difference in the fertility preferences.

If the overall net effect of the migration related factors on the demand for children by migrants in the short and medium runs is positive, or at worst ambiguous, their effect in the longer term is probably negative. The main reason for this change in impact is that in the long run, important structural and attitudinal changes influencing fertility decisions take place.

It is often argued that an increase in women's earning opportunities which follows migration influence familial fertility decisions so as to reduce the desired number of children. Note, however, that even if entire households were the modal migrating unit, given the distribution of skills and the structure of labour demand, earning opportunities (market and overall) of women may, for quite some time after migration, decline (that is, on the demand side). Since, as already mentioned, participation in market activities may be costlier than home production, desired participation also need not increase (that is, on the supply side). However,

^{1/} Iutaka et al. [1971, table 17]. The data which are for more than 900 migrants in six Brazilian cities originating in both rural and small town areas, are dated back to 1960.

this state is likely to change in the long run when the process of economic development in its various dimensions is set in motion, changing dramatically relative costs (e.g. value of time, cost of human investment), structure of consumption and demand, supply of public goods and so on.

Various social pressures also take a long time to build up, but once in force, tend to exert a negative effect on the demand for children. Eventually (and as already noted), parents may have to increase expenditures on children if others in their income and/or social class spend more than they do (e.g. on schooling). Age of marriage may have to be raised. Rural-to-urban migrants who initially reside with, or near, relatives and friends may be largely immune to such pressures but with time this situation tends to change as economic, social and intra-urban residential mobility take place.

The impact of many factors tending to influence downwards migrants' desired fertility would have been (at best) weak and slow had the migrants stayed behind in the rural areas. Some factors are causally associated with an increase in personal income, others only partly so, or not at all. Increased availability and knowledge of contraceptive technology (probably access to abortions too), women's education and the indirect effect of improved health standards, medical care and nutrition (which lower infant and child mortality) illustrate the latter.

Concluding this chapter on the note with which it started, it is noteworthy that, from the point of view of the modal family who sends a migrant son (or daughter), successful migration i.e., migration that brings about a technological change on the family farm, may reduce the need for future migration and consequently, diminish the migration generated, "overcoming the market segmentation utility" from children. *Ceteris paribus* then, this implies diminution in the desired number of children.

CHAPTER VI

RURAL-TO-URBAN MIGRATION, SOCIAL WELFARE CRITERIA AND POLICY
ORIENTED IMPLICATIONS: THE LOGICAL INFERENCE OF CHAPTER II

In this chapter some social welfare implications of rural-to-urban migration are examined according to different social welfare criteria that are likely to prevail. This is followed by an examination of the conditions for the existence of substitutes for rural-to-urban migration which - given the social welfare criterion - do not hinder those consequences of migration which are assumed to be socially desirable.

In the light of the conceptual framework developed in Chapter II; rural-to-urban migration appears to facilitate ends which are desirable from both "private" and "social" points of view. Acting as a catalyst for technological progress in agricultural production, it directly increases the expected net utility of the respective rural families, hence generating a "privately preferable" state. Moreover, it may also, if only indirectly, increase the expected gross utility of others, e.g. urban families through the increment to the production of food. To the extent that the "welfare function" of society at large is constructed by the aggregation of familial preferences, (the welfare function is of the "individualistic" type), there is a prima facie case for considering the post rural-to-urban migration state to be also "socially preferable". In fact, if only the social welfare function is based on familial preference orderings, this may be so; if $SW = V(U^1(F,L), U^2(F,L), \dots, U^N(F,L))$, what is needed is that $\frac{\partial(SW)}{\partial U^i} > 0 \quad \forall i$ where $U^i(F,L) \quad i = 1, \dots, N$ is the utility function of the i -th family. Abstracting from Arrow's "impossibility theorem" (e.g. by way of accepting one of the "escape

routes" from the theorem) and thus remaining within the realm of such a social welfare function, the difficulty, however, is that while generating $\frac{\partial (SW)}{\partial U_i} > 0$, migration may not leave some U^j $j \neq i$ intact so that the sign of $d(SW)$ may not be positive. This is equivalent to saying that rural-to-urban migration may not imply a Pareto improvement and hence, a fortiori, not Pareto optimality; though increasing the expected utility of some by making them better off, it may concurrently lower the expected utility of others (e.g. urban labourers with whom the rural migrant labourers may compete for urban jobs^{1/}). This in itself clearly need not render rural-to-urban migration socially undesirable since, in accordance with the compensation principle, if (ignoring redistribution costs) the rural gainers were, in fact, to compensate the urban losers so that the latter would be left no worse off and the former still gain, Pareto optimality would be preserved. (The form that such a compensation could take is a lump sum transfer, such as an "entrance fee" or a residence tax payable, for example, at the end of fixed time intervals to the respective urban authority.^{2/}) If the judgement as to whether a situation is Pareto optimal or not is to depend, however, only on such transfers being hypothetically possible (i.e. compensation does not actually take place), it will not, of course, a priori be conceptually possible to assert whether or not rural-to-urban migration is a "social evil", given the present criterion alone.

That rural-to-urban migration is, nevertheless, a source of "social concern" may yet derive not necessarily from its failure to satisfy Pareto optimality but

^{1/} But see reference to this point below.

^{2/} This is, of course, only the necessary requirement; sufficiency depends on the urban authority identifying - and actually transferring - compensatory benefits to the losers.

indeed, in spite of the possibility of satisfying the criterion, from the fact that the Pareto optimal state with which it is compatible is inferior to other Pareto optimal states (states among which the "optimum optimorum" is to be found). The analysis of Chapter II suggests that an alternative to technological transformation of agricultural production with rural-to-urban migration as its leverage, is technological transformation with "externally" offered and "internally" acceptable credit and insurance arrangements. Of course, examination of such a consideration presupposes going beyond the concepts of Pareto optimality to rely on a social welfare function drawn from a class of social welfare functions that specify an ordering of the set of the alternative relevant social states. In such a framework, it is possible that rural-to-urban migration, irrespective of its Paretian position, would be considered undesirable since the ensuing state, quo a social state, is of low ranking.^{1/}

It appears, therefore, that in evaluating the relative attraction of rural-to-urban migration as a means for achieving socially desirable development goals and, particularly, when the revealed urban-end consequences attributed to rural-to-urban migration (not its rural-end producing forces) e.g. externalities of the traditional variety are the cause for policy prescriptions to reduce it, a choice of a very specific welfare function or set of welfare functions is implied.^{2/}

^{1/} These "Bergson-Samuelson" type social welfare functions are more general than the social welfare functions of the "individualistic" type. In fact, the latter can be seen as a special case of the former where the only variables on which the ordering of the functions depend are familial utilities. (The origin of the conceptualization of the social welfare functions can be traced back to the late thirties - Bergson [1938], and its refinement to the late forties - Samuelson [1947, chapter 8, especially pp. 219-230].)

^{2/} Could the embodied ethical conceptualization be a (further) manifestation of the prevalence of an "Urban bias"? (See Lipton [1968, chapter 4, especially pp. 135-144] and Lipton [1977].)

Indeed, if under some social welfare functions - owing to some of its correlates but not because of its major rural-end consequence - the rural-to-urban migration state is sub-optimal (is of apparent lower rank than alternative attainable states), its functions in the accumulation of surplus and the control of the level of risk taken up, respectively, by specific forms of (at least) medium term finance and a "technological transformation insurance" (to cater, in particular, for the initial high level of subjective risk involved in the technological change) might be a socially desirable act.

If "internally rational" - such specific forms being acceptable by the decision-makers concerned as perfect substitutes for rural-to-urban migration - then, given the objective function and the estimated rate of technological transformation under migration, the exercise which planners would have to perform is to calculate the social opportunity cost of the implied loanable and insurance funds, as these are certain to generate large and positive social marginal productivities when used elsewhere. It may well be the case that the emerging conclusion then would be that technological transformation via rural-to-urban migration without a credit-insurance organizational scheme is socially preferable to (the given rate of) technological transformation levered by such a scheme, with either no or substantially restricted rural-to-urban migration.

To a large extent, the likelihood of such a result emerges from the generally high costs (with rapidly increasing marginal costs) involved in creating the necessary loanable funds on their carrying organizational infrastructure and in the actual process of loan-making, e.g. the administrative costs of lending and collection, losses due to incomplete enforcement of credit contracts, e.g. non-repayments (defaults) etc.^{1/} Some further costs are incurred as a direct response to the

^{1/} For some evidence concerning poor credit repayment records in Indonesia (1972) see Palmer [1977].

internal decision-making process which sets out the constraints under which loans would actually be taken at all. (Inter alia, these constraints require the migration-substituting institutional credit to be at least a medium term credit.) These constraints would probably dictate that a certain level of subsidy has to be embodied in the terms of the loans - a dependence of the supply price of credit on the structure and characteristics of its demand.

The same internal decision-making process also implies that the act of borrowing to finance a risk-increasing venture assumes the nature of "adding fuel to the fire"; loans, as deferred claims on future production, though catalysts of output increments, are loss magnifiers in the case of production failure and may be rejected - even if provided under particularly favourable terms - by a potential adopter of a new technology who already envisages his future position as saturated with added subjective (and objective) risk.^{1/} Risk aversion is thus transformed into and manifested as loan-taking aversion. This does not necessarily imply that all loans are always unacceptable, i.e. an absolute refusal to incur (additional?) debts. It suggests, however, that steps would be taken to reduce the risk element.^{2/} Loans may be taken but whereby only part of the borrowed sum is used to finance the technological transformation; the other part, in face of a non-satiated "precautionary demand for reserves", is held as a reserve liquidity, constituting an "insurance

^{1/} In the face of an external credit constraint, the potential adopter of a new technology may self-impose a limitation on his level of borrowing so as not to jeopardize his borrowing and bargaining power when credit becomes critical for survival.

^{2/} One such step could indeed be a risk-reducing rural-to-urban migration. This reinforces the contention (see in the text below) that only a "package" of credit and insurance can replace rural-to-urban migration.

(emergency) fund", "a hedge against uncertainty".^{1/} Payment of interest and other direct and opportunity costs of holding non-utilized credit as contingency reserves which are, in a sense, the equivalent of insurance premiums, imply that the marginal utility which accrues to the borrower from exercising his "liquidity preference" outweighs the forgone marginal utility expected to accrue from using these funds for a more intensive technological change. The presence of risks (unaccompanied by provision of a formal insurance) thus implies that less credit is used to facilitate the technological change than that which would have been used if risks were absent; the utilization of credit falls short of the point where the marginal value of its product equals its price. Hence, the ensuing social opportunity costs of the above mentioned form of "an informal insurance" are high, inter alia, because funds are wastefully tied and, given the level of borrowing, because of the positive magnitude of forgone technological change resulting from withholding part of the credit from production commitments.

The points made in the last paragraph naturally highlight the need for the provision of a formal insurance, a "technological transformation credit insurance". Given that a loan is used to facilitate technological change and given the consequent, estimated, marginal effect on the level of output, a formula of insurance may be designed whereby loan repayments would be offset against "crop failures" or negative deviations of actual output levels from the expectation, the estimated mean level.^{2/} If, whatever the magnitude of the actual failure, the in-

^{1/} Clearly, this is in a perfect analogy with the theory of the competitive firm under uncertainty where inventories are held and a preference towards flexible capital equipment is prevalent.

^{2/} Though clearly not the only possible device for shifting risks (e.g. through pooling, common stocks can also facilitate reduction of risks), given the nature of risks here involved and the prevailing structure of the economic system here depicted, it is most likely to be the more relevant and effective form.

sured is fully compensated (i.e. the equivalent of the failure would be deducted from his loan repayments, the schedule of which could, in the first place, relate to the expected schedule of food outputs) and the mean of the distribution of failure magnitudes is the size of the insurance premium, i.e. the insurance scheme is "actuarially fair" then, a risk averter would prefer paying to not paying it.^{1/}

1/ Proof. Taking food output F to be a discrete random variable with values F_1, \dots, F_n received with probabilities $P(F_i)$ $i = 1, \dots, n$ the expected utility of food output, in the absence of an actuarially fair insurance against failure, is

$$(1) \quad {}^1E U(F) = \sum_{i=1}^n P(F_i) U(F_i)$$

Defining (2) $\bar{F} = \sum_{i=1}^n F_i P(F_i)$ and arranging all F_i in an increasing order,

(1) can be re-written as

$$(1) \quad {}^1E U(F) = \sum_{k=1}^r P(F_k) U(F_k) + \sum_{h=r+1}^n P(F_h) U(F_h)$$

where $F_k \forall_k k=1, \dots, r$ maintains $F_k \leq \bar{F}$

and $F_h \forall_h h=r+1, \dots, n$ maintains $F_h > \bar{F}$

Defining (3) $\bar{F}_r = \sum_{k=1}^r F_k P(F_k)$ then, from the risk aversion

property (to a probability distribution with a given mean, the given mean with a unit probability is preferable)

$$(4) \quad U(\bar{F}_r) > \sum_{k=1}^r P(F_k) U(F_k)$$

so that (5) ${}^2E U(F) = U(\bar{F}_r) + \sum_{h=r+1}^n P(F_h) U(F_h) > {}^1E U(F)$.

Since $U(\bar{F}_r) = U \left[F_1 P(F_1) + \dots + F_r P(F_r) \right] < U \left[F_1 + (\bar{F} - F_1) P(F_1) + \dots + F_r + (\bar{F} - F_r) P(F_r) \right] = U \left(\bar{F} \sum_{k=1}^r P(F_k) \right)$

the risk averter would be better off by accepting an "actuarially fair" insurance paying an insurance premium \bar{F}_r for securing, in return, the "topping up" to \bar{F} of any crop failure, i.e.

$$(6) \quad {}^3E U(F) = {}^2E U(F) - U(\bar{F}_r) + U \left(\bar{F} \sum_{k=1}^r P(F_k) \right) = \sum_{h=r+1}^n P(F_h) U(F_h) + U \left(\bar{F} \sum_{k=1}^r P(F_k) \right) > {}^2E U(F) > {}^1E U(F).$$

However, from the point of view of the internal self-finance of the insurance scheme, the insurance premium would clearly have to be higher than the above mean because, e.g., the inter-families risks incurred may not be independent, administrative and operating costs prevail, etc.. It may then be the case that the risk averter would reject the corresponding "actuarially unfair" insurance; the higher the various costs, the less "actuarially fair" would be the premium and the less likely it is to be internally acceptable. This strengthens the requirement that the insurance coverage be offered on concessional rates.^{1/}, ^{2/}

- 1/ It should be noted that the passage of time and the application of other, specific, policy measures are likely to reduce the subsidy component. The learning from experience and gain in familiarity which will lower the subjective risk involved in the adoption of the new technology to the objective risk (subjective probabilities will converge to objective probabilities) explain the former: efficient extension services illustrate the latter. These, however, have to be financed too, though they may represent a preferred alternative if, under them, the respective marginal funds for sustaining a given rate of technological transformation (with a given degree of production success) are smaller than the corresponding subsidy fund.
- 2/ The implication of the (subjective) risk aversion property for the relative efficacy of an insurance scheme, that is, vis-a-vis that of alternative policy instruments, can be shown to stem from the following relationship.

If F_i is the magnitude of food output and P_i is the probability of output being only G_i , i.e., failing to reach F_i ($G_i < F_i \quad \forall_i, i=1, \dots, n$ denoting, say states of nature with F_i being defined for "environmental (and other ex-farm) average" conditions, G_i resulting from deviations in them) then, the ensuing expected utility of food output F_i is: $EU_i = (1-P_i) U(F_i) + P_i U(F_i - G_i)$.

$$\text{Hence: } \frac{\partial EU_i}{\partial P_i} = -U(F_i) + U(F_i - G_i), \quad \frac{\partial EU_i}{\partial G_i} = -P_i U'(F_i - G_i)$$

Denoting the following elasticities (and omitting subscripts)

$$\epsilon_P = \frac{\partial EU}{\partial P} \frac{P}{U} \quad \text{and} \quad \epsilon_G = \frac{\partial EU}{\partial G} \frac{G}{U}, \text{ they become } \epsilon_P = \frac{-U(F) + U(F-G)}{U} p, \quad \epsilon_G = \frac{-U'(F-G)G}{U} p$$

$$\text{Therefore, } \epsilon_P > \epsilon_G \iff \frac{U(F) - U(F-G)}{G} \lesssim U'(F-G).$$

Since U is a utility function of a risk averter, the left hand side of the second inequality (average change in utility) is greater than the right hand side (marginal change in utility) so that $\epsilon_G > \epsilon_P$; a risk averter is thus more concerned about a relative change in the magnitude of the failure than about an equal relative change in the respective probability. (contd.)

Hence, by way of conclusion, to persuade rural decision-makers to substitute for rural-to-urban migration requires provision of a package of specific credit and specific insurance, the likely joint claim of which on scarce development funds is high. If elimination of rural-to-urban migration is the sole objective for prescribing the package, its high social opportunity cost may well be a sufficient reason for rejecting it. The (ordinal) welfare value which the utilized social welfare function specifies for the "migration state" might, indeed, be higher than appears at first sight.^{1/}

A salient feature of the conceptual apparatus which has been developed in Chapter II however renders an "externally" available package as such (given its special terms), an insufficient surrogate for rural-to-urban migration. In the

(continuation of footnote 2/ of previous page)

Hence, aggregating for all i 's, if, as is most frequently the case, the new technology is such that, compared with the prevailing technology, its probability of expected failure - P - is smaller but the magnitude of the expected failure - G - is greater, then, ceteris paribus, a necessary condition for adoption of such a technology is that P would be significantly smaller - smaller by proportionately more than G is greater. Since (in the short run) P may be of limited amenability to policy measures, the role of an insurance scheme in reducing the magnitude of the expected failure is particularly enhanced.

^{1/} Note that to the extent that the technological change involves utilization of new inputs they can be offered to respective decision-makers at subsidized prices. However (but notice the provision below), since this cannot be conceived of as a surrogate, implicit form of credit i.e. a loan which is expected to be repaid at a future date, a package which contains it is, a fortiori, less socially desirable than rural-to-urban migration (inferior to a direct, credit-insurance package which, in turn, is not socially preferable to migration). Of course, manipulating other prices, e.g. farm output prices so as to deliberately turn the terms of trade against the respective farmers may extort a de facto repayment of funds advanced to them in the first place. Needless to say (apart from all new complexities involved - especially that it is almost impossible to administer this selectively only to small farmers), this is a disguised but complete credit cycle, the relative, dubious social desirability of which need not be referred to again.

light of the argument in Chapter II, rural decision-makers can be "bribed" to exchange rural-to-urban migration for the package and then to carry out the technological transformation if the package is made available at a specific time span. Given their short planning span, the inter-temporal changes in the size and age profile of the family unit, the pattern of the decision-making process, the production constraints and the set of the external (particularly institutional) conditions, the analysis of Chapter II has identified the specific phase in the life cycle of the family unit where a strong inducement for technological change prevails. It is at that stage that migration and the transforming of technology are intimately connected. Hence if, for example, subsidized loans backed by an insurance at concessional premiums are made available before that specific time period, they may either not be taken or, if taken, utilized either for relieving debt loads of previously incurred loans (the terms of which are relatively less favourable), or for what may generally be labelled direct consumable ends. Given the social planning span, these are unlikely to be compatible with the existing ordering of social preferences; that is to say when the social demand price of a unit of surplus in terms of a currently forgone unit of consumption is higher than a unit of consumption. From the point of view of facilitating technological change directly, these funds are virtually sterile.

A greater degree of realism would be gained by replacement of the above discrete and dichotomizing reference to time by a smoother reference. The inducement to shift production technology then attains a peak at that stage of the life cycle of the family which corresponds to the elder son reaching the age of adolescence. The extent to which a policy instrument like the "credit-insurance package" would succeed in maintaining the impetus to shift production technology without incurring

rural-to-urban migration, would depend on the goodness of fit of its time-offer profile to this pattern.^{1/}

This point generates policy implications that should be confronted with the trite "blanket" solutions often prescribed for "curtailing the inflow of rural migrants". Given that the policy aim is to reduce rural-to-urban migration and given the background of the analysis of Chapter II, the desirability of using "limited development funds ... to raise rural incomes through programs of land consolidation and registration, provision of increased agricultural extension services and general rural development schemes"^{2/} cannot be denied. But, the relevant question is what is the relative efficacy in achieving the above declared objective of such general and largely indirect measures, vis-a-vis alternative ones. If applied to a given rural community, e.g. a village, the impact of a given measure may be too diluted to affect directly individual families in the way desired. Even if not, it may still fall short of generating the desired effect owing to an ill fit of the time profile of the variable migration propensity of individual families and

^{1/} Attributing rural-to-urban migration and the prevalence of inducement for technological change to a number of specific stages in a specific time span of the life cycle of the family, probably results in the corresponding schematic depiction being a sinuous curve - composed of more than one such peak.

^{2/} This reference (Todaro [1967, p. 89]) by a prominent proponent of the "recent models" (see Chapter I) has become a "prototype" of a great many repetitions in numerous consequent migration studies. To cite only one representative example, Bairoch [1973, pp. 94-99]: "a substantial reduction of the rural urban drift ... could be brought about through the simultaneous application of a large number of measures" dominant among which are "an expansion of the opportunities for productive employment in agriculture", promotion of "a rapid rise in the income levels of farmers by increasing productivity in this vitally important [rural] sector" and "a better geographical distribution of the appropriate [social] facilities [as this] would help to damp down appreciably the propensity to emigrate".

thus, either help to "lock the stable-door after the horse is gone" or, to lock it before the horse is at all likely to go (or, perhaps, after its return! ...)

If the "dilution effect" or the "ill fit effect" are to be eliminated by the allocation of larger development funds and/or by a continuous flow of large development funds, the mere cost involved may, in its turn, again reduce the relative efficiency of the measures.

An alternative policy instrument would be the channelling of development funds (via credit-insurance packages as above) with the aim of reaching different individual families at specific different points of time. The notable advantage of this measure, its direct impact on the families concerned, is enhanced by the intertemporal spreading of scarce development funds (different families manifest a greater inducement to transform technology, and to produce rural-to-urban migration, at different points in time).^{1/}

This argument should not, however, be seen as an attempt to nullify the importance of measures and organizational efforts such as extension services.

^{1/} This characteristic of rural-to-urban migration should also assist in dissipating the likely worry concerning the possible consequences of all small farmer families producing migration. It is clear, that the structural changes, the internal capacity to overcome the surplus and the risk constraints and the imperfect access to external sources of credit and insurance which is not uniform across families, will not generate migration by all. Furthermore, and no less important, given the group of potential migration-producing small farmer families, each individual family will be an actual producer of migration at a specific, different, point in time. The intertemporal spreading of migration reduces therefore the potentially undesirable effect which could have ensued from "a total and a simultaneous" rural-to-urban migration. For example, within the framework of a general equilibrium analysis, such an effect would have been a derivative of the total, urban produced, surplus available for rural-land technological changes not being increased by extra migration - benefits would probably be illusory - whereas the costs are real. (Benefits are probably illusory when the "amount" of technological change is not affected, only its allocation between rural families is affected.)

Combining these with the latter policy instrument may produce even greater efficacy than what can be expected from summing up the separate impacts of each. But the advocacy of these measures (a) usually derives from an analysis whereby the causal nexus between them and the mechanism of rural-to-urban migration is vague and (b) in a dichotomic way of argumentation, implies a given degree of effectiveness in eliminating migration; to re-stress, given that this is the policy objective, it is likely to require fewer funds if pursued via the afore-mentioned alternative policy instrument.

Noticeably, reference has been confined so far to policy weapons geared towards tackling the very factors which elicit rural-to-urban migration (i.e. the "surplus" and the "risk" elements) and directed at facilitating its replacement. When policy oriented implications are examined in a wider perspective, more general factors can be referred to and other considerations be brought in. Thus, policy instruments can be aimed at eliminating the very evolution of the need for rural-to-urban migration. For example, shifting the distribution of land holdings in favour of the small farmers and/or population policy (e.g. provision of family planning services) obviously constitute potential methods for treating "the issue" at root since they can prevent or reverse the net utility diminution process analyzed in Chapter II. (Note though that the analysis in that section has treated land holdings of small farmers and fertility patterns as given). However, it has to be recalled that compared with those weapons mentioned earlier, these "methods" are, generally speaking, in the nature of longer term measures (population policy as well as "dynamic land distribution" - that is, redistribution by way of influencing the pattern of accumulation of land over time), or, politically speaking, more radical ("static land reform", "political opposition" to family

planning). The nature of these constraints places such "methods" on a different level than the ones examined above as their admissibility depends on both temporal and political considerations as well as on considerations of comparative costs.

In this wider perspective, it is instructive also to consider the impact of the relationship between rural-to-urban migration and some key variables - overall level of employment, degree of inequality in the distribution of income by size and the total level of surplus - on the social ranking of the migration state (vis-a-vis the other, non-migratory states). A strong negative "performance" with respect to any one of these variables - acting as complementary ranking criteria - could question the edge that the rural-to-urban migration state has over its substitute state, as argued earlier. Interestingly though, with respect to none of these variables does migration appear "to perform badly."

One possible concern relates to the rural-end employment consequences of a technological change brought about by rural-to-urban migration. This concern does not arise from an anti-labour bias of the new, relevant technology (new rice varieties have a definite positive impact on labour requirements^{1/}) but rather, from the suspicion that a migration - led technological change would bias against the choice of a "labour intensive technique" (i.e. a technique incorporating the migrant's labour), more than a technological change fueled by other catalysts. This could effectively bar the return to the rural sector of the family migrant who then, when competing successfully with other urban job seekers for scarce urban jobs - merely displaces one of them.

1/ International Rice Research Institute [1975].

There is nothing inevitable or particularly convincing in this scenario. For one thing, the choice of technique - by ... degree of its labour intensity - depends, other things being equal, on the assumption concerning the return of the migrant member. Ex ante, there are (to simplify matters) two main possibilities: (a) that the choice of technique is based on the expectation that the migrant member will return; (b) that the choice is based on the assumption that he will not. If ex post, (a) materializes, the scenario as above collapses. If ex post the migrant does not return but ex ante was expected to do so, two questions arise: first, could his unexpected stay in the urban sector impede the utilization of other family members' labour on the family farm? Probably not. Given the technique chosen, with the degree of labour intensity tailored to the expected participation of a returning migrant, this possibility would largely depend on the extent of the existence of intra-family labour complementarities and on the ex post substitutability of production factors. Increased production and full utilization of the family farm labour will be hindered if the ex post substitutability is severely restricted, if labour complementarities are strong and if the relevant time span is the short run. Surely this is a highly implausible requirement. (For example, in the absence of the latter condition, e.g. when maturity is gained by the next (say) son, the constraining effect of the former two conditions is greatly weakened).

Second, would not the presumed employment in the urban sector of the non-returning migrant generate adverse urban "employability effects" (e.g. displacement of other urban labourers) that would outweigh the employment gain of the migrant member himself as well as the time discounted employment gain of other members of his family on the farm? In principle, this question is valid even if it is assumed that in the absence of migration and the technological change it brings about, the

potential migrant would have become unemployed and even if, on the other hand, the latter, "multiplier type" gain (of employment by other members) is ignored. Then, (a) if equal weights are assigned to the employment of all labour force participants, it is hard to see how that "adverse" situation could prevail.^{1/} Moreover (b) to the extent that many rural-to-urban migrants do not compete with urban labourers in the same urban labour sub-markets (see Section 3 of Chapter III), the displacement argument is weakened and the accumulated decrease in the employment probability of the non-migrants derived in the footnote example is consequently overestimated.

Finally, there are also the possibility (c) of ex ante expected non return, ex post realized return and (d) ex ante expected non return, ex post non return. Considering this latter perfect foresight case first, (with the (realized) appropriate choice of technique and urban employment), it is undoubtedly compatible with employability of all family members (disregarding the exceptional case where a migrant member has to remain in the urban sector in spite of being

^{1/} Assuming, for example, the labour force, the number of job vacancies n and the rigid wage rate to be fixed, if $N > n$ is the number of candidates competing for these jobs, all facing equal probabilities, then, unless specific postulations (e.g. regarding motivations) are introduced, the accumulated reduction in the probabilities of employment of all other candidates is clearly identical to the increase in the employment probability of the migrant. (For him, the increment is from $\frac{n}{N}$ to 1; for

the rest $\left(\frac{n}{N} - \frac{n-1}{N-1} \right) (N-1) = 1 - \frac{n}{N}$).

unemployed since he has not been expected to return^{1/}). The conditions, then, are of the "adverse, urban employability effects" type of situation already examined. As to the former possibility (c), if it occurs after the technology has been introduced (an introduction facilitated by migration), employment prospects on the farm for the migrant are probably better than prior to migration unless, given the technique chosen, the ex post related substitutability is zero or near zero. If the ex post return (in spite of the ex ante expected non return) occurs prior to the introduction of the new technology - a situation resulting probably from an urban job search ending in a failure, the overall employment effect of migration is nil and the scenario referred to earlier obviously does not apply.

Concerning the accumulation-of-surplus connotation of rural-to-urban migration, there are obvious reasons why, on this count too, the migration state fares pretty well. The very reason of rural-to-urban migration and the very consequence of a successful migration (definitely in the short and medium run) is accumulation of surplus by the family as a whole.

^{1/} That this is an exception is rendered by one of the characteristics of the migration process as portrayed in Chapter II viz., that mutual benefit and mutual dependence (reciprocity) are interlocked in the strategy "the maturing (say) son migrates - the head of the family stays behind." Not only does technological change depend on "successful migration" alleviating the surplus and risk constraints - hence one direction of dependence. At least for some time, there is a counter direction of dependence deriving not only from that the success of migration may well depend on rural financing but also, from the condition characterizing the labour market into which the migrant son enters. This market is vulnerable to cyclical fluctuations and to considerable instability. (Firstly, some of the markets where the migrant is more likely to find employment are perhaps the first to witness contraction of the demand for labour (expressed in redundancies and layoffs rather than in reduced wage rates) as the downswing of a cycle commences. Secondly, concerning other markets where the migrant is likely to find employment, considerable instability of employment is a fundamental, permanent characteristic of them.) The migrant may thus be compelled to withdraw from the urban sector back to his family and it is the feasibility of this eventuality which contributes to the explanation of him remitting to his family in the first place, etc..

It is often assumed - following Little & Mirrlees - that the employment of a migrant has a positive social cost composed of his rural forgone output and of part of his extra urban consumption out of the added income. Surely, there need not be extra urban consumption if any surplus of income over past (i.e. rural) consumption is remitted back to the rural family and there need not be any marginal rural product forgone which, most probably will be the case, if the migrant is a young family member who, prior to migration, had not participated in agricultural production. (Such is most often the case when prior to migration the migrant has attended school).^{1/}

^{1/} Interestingly enough, even a simplified manipulation of the recent models referred to in Chapter I ends up with a zero net consumption increase type of result.

When (recall Chapter I) the value of the output forgone of the migrant is VMP_L^A , the urban wage is W_I and the probability of urban employment is $\frac{L_I}{L_S}$

(L_I - urban employed, L_S - urban labour force) the equilibrium condition is $VMP_L^A = \frac{L_I}{L_S} W_I$. Since, at equilibrium, every extra urban vacancy draws in $\frac{dL_S}{dL_I} = \frac{L_S}{L_I} (> 1)$ migrants, total output forgone is $VMP_L^A \cdot \frac{L_S}{L_I}$ which

had it been consumed in full, is also the diminution in rural consumption.

On the other hand, if the one migrant who fills up that vacancy consumes all his urban wage, his - and the ensuing urban consumption - is W_I . Clearly

$VMP_L^A \cdot \frac{L_S}{L_I} - W_I = 0$ - economywise, there is no increase in consumption.

But, even if there is a loss of some rural product, consideration of the social cost in a dynamic context - which is the appropriate one - could still result in its negation. When the marginal propensity to consume out of extra output produced through a migration-led technological change is smaller than unity, overall surplus will rise and this, even after appropriate discounting, may at least compensate for the positive rural product forgone.

Finally it is necessary to refer to the impact of rural-to-urban migration on the degree of inequality of the distribution of income by size. As this impact has been examined, in some detail, in Chapter IV, suffices it to note here the conclusion of that chapter: rural-to-urban migration tends to contribute to a diminution of the overall degree of inequality or, to put it more categorically, limitations on rural-to-urban migration tend to make the overall distribution more unequal (partly by increasing rural poverty). In this case too, the migration related variable has, then, the right sign so that incorporation of the inequality criterion also favourably ranks the migration state as a social state.

APPENDIX I

A NOTE ON "SEASONAL RURAL-TO-URBAN MIGRATION"
BY A SMALL FARMER PRIOR TO THE MATURING OF HIS ELDEST SON

This appendix suggests some reasons - apart from very general ones such as the need of the head of the family to "keep an eye on his land and on squabbling family members" - for holding the view that a farm family will prefer rural-to-urban migration by the eldest son once he gains maturity, to the "seasonal rural-to-urban migration" by the head of the family which may have been adopted previously. In a weaker form the argument can be taken to imply that earlier "seasonal rural-to-urban migration" by the head of the family may at best complement but not substitute a (seasonally unconstrained) rural-to-urban migration by the eldest son.

The feasibility of seasonal rural-to-urban migration requires, as a precondition, that under existing technology and intensity of cropping, expansion of labour towards agricultural production and allied activities will stretch over a continuous period of time substantially shorter than a year. Clearly this may well not be the case in practice.

Secondly, even when a busy season-slack season dichotomy is, in general, a valid one, busy season labour input and slack season labour input need not be completely independent; to some extent they can (or even should) be regarded as substitutes for each other. (Clearing a canal in the slack season may reduce requirements of carrying water in buckets from old-style wells in the busy season). This immediately implies that the marginal product of labour applied in the slack season need not be nil so that seasonal rural-to-urban migration, even due to

this consideration alone, is not cost-free. It is perhaps more plausible to consider busy season labour input and slack season labour input as complementary. (Transplanting in the slack season may increase the volume of output harvested by given labour input in the busy season). With the respective partial cross derivatives being positive, slack season rural-to-urban migration, even due to this consideration alone, is definitely not cost-free.

Thirdly, in the hypothetical context of a seasonal rural-to-urban migration, the assumption made earlier, e.g. in Section 2 of Chapter III, of negligible transfer costs cannot possibly hold. Generally speaking, the ratio between the related costs and the relevant benefits is likely to be high. (This refers not only to the relevant pecuniary ratio but also to the relevant time ratio; the acts of rural-to-urban migration and return may stretch over a significant portion of the slack season's span).

Fourthly, the structure and conditions characterizing urban labour markets (as referred to, for example, in the final paragraphs of Chapter II) militate against seasonal migration. Considerable waiting time prior to the securing of a job, the high likelihood of never re-obtaining it if before the end of the slack season (e.g. due to emergency) or at its termination, it has to be given up, and the period of time required to gain familiarity with urban conditions as well as, for example, to enter into some quasi-stable trading and commercial relationships, are only few relevant factors which contribute to an entry into (both the formal and the informal) urban sub-sectors being time consuming and difficult.

Fifthly and most importantly, the small farmer decision-maker has been assumed to be a net utility maximizer: both utility from food and disutility from labour count. (The analysis in Chapter II which did not introduce seasonal

separability clearly implies that a seasonal rural-to-urban migration has to be compatible not with any positive utility but with maximum net utility). There is no need here therefore to go as far as to argue that given the existing technology, relative rest over the slack season is needed to build a reserve of (storable) energy (body fat) which, in the complementary season will be fully exhausted, and that labouring to the full in the former season may deplete this reserve or even cause an irreversible deterioration of health and of labour productivity. (The prevalence of some such inter-seasonal externalities does seem highly plausible). Note that under fairly general conditions it can be shown that seasonal equalization of labour input and of income, *ceteris paribus*, raises net utility.^{1/} But the *cetera* are not *paris*. The adverse impact on output in the busy season may offset at least part of the increment to income resulting from the seasonal rural-to-urban migration; given income produced via rural-to-urban migration in the slack season may well demand substantially greater effort.

Sixthly, ignore for a moment all the above considerations. Moreover, make the (extremely) simplifying assumptions that the duration of the slack season is four months and that the sufficient surplus needed to meet the surplus requirement of the new technology can, given the state of urban labour markets, be secured in two years of urban employment. Seasonal rural-to-urban migration by the head of the family prior to the maturing of the eldest son will, *ceteris paribus*, render technological change possible after six years; if migration is by the eldest son - after two years. However note that of course the *cetera* are, once again, *not paris*.

^{1/} For example, given that more utility is preferred to less, that utility is derived from income only, that the "time point" marginal utility of income (that is, the additional unit of income utility derived at a given point of time) is decreasing and that rural financial markets are imperfect (the interest rate facing a borrower is significantly higher than the lending rate he can enjoy) a more (intra-year) even distribution of income would be preferable.

The earlier analysis in Chapter II argued at length that the new technology is (subjectively) riskier. To the extent that it is possible to substitute for meeting this consideration via diversification embodied in rural-to-urban migration by the eldest son, by accumulation of additional surplus, seasonal rural-to-urban migration exercised by the head of the family will render technological change possible only after more than six years though if (non-seasonal) migration is by the maturing son, transformation is still feasible after two years. Furthermore, the "two years" period is probably, in the present comparative context, an over-estimation. A better educated son may secure a better employment (recall the final paragraphs of Chapter II) hence, with a higher urban income-time ratio, facilitating a technological change after a time span shorter than two years.

Bringing in a host of other considerations (e.g. the costs of two(?) journeys instead of more than twelve) only tends to strengthen the point. It is worth noting that the very drawing up of a long term plan for generating the required surplus (via a series of repeated seasonal rural-to-urban migrations) requires, inter alia, an incentive to transform production technology and a long planning horizon. The argument in Chapter II above implies that many years prior to the eldest son reaching maturity the former is (at least) weaker and that the latter is unlikely.

There is no need to explain that all the considerations enumerated above are significantly mitigated if not rendered completely redundant when rural-to-urban migration by the eldest son who has reached maturity is possible. At the same time it is necessary to stress that the foregoing argument should not be taken as negating the possibility that, under favourable conditions prior to the maturing of the eldest son, seasonal rural-to-urban migration may, or actually

does, take place. What the argument suggests is that this can be expected to be the case only in a few special instances. And indeed, the weight of such evidence as is available does seem to indicate, fairly conclusively, that rural-to-urban migration in the main is not seasonal (and that in the case of rural-to-rural migration which is seasonal (e.g. rural India) landless labourers represent a proportion which is significantly higher than their share in the rural population. Note in this context that, in addition to many of the above-mentioned considerations, rural-to-rural migration requires that a busy season in an "accessible" elsewhere should coincide with at least a large part of the slack season at the source area). For a useful summary of the evidence see Connell et al. [1976, chapters 1, 4 and 6].

APPENDIX II

PROOF OF "THE OPTIMAL PORTFOLIO RULE"

Denote the "first investment", the other investment and "all other investments" by Y_1 , Y_2 , X respectively (taking for simplicity's sake and without loss of generality the latter to be one, "homogeneous" investment) then

$$(Y_1, Y_2) \sim P(Y_1) P(Y_2)$$

$$(Y_1, X) \sim P(Y_1) P(X)$$

$$(Y_2, X) \sim P(Y_2) P(X)$$

$$0 < \sigma^2 Y_1, \sigma^2 Y_2, \sigma^2 X < \infty$$

$$EY_1 = \sum Y_1 P(Y_1) > \sum Y_2 P(Y_2) = EY_2$$

If Y_1, Y_2 are independently distributed random variables, clearly so are the transformations $Z_1 = Y_1 + X$, $Z_2 = Y_2 + X$ - given the value of X .

$$\text{(For define } A^* = \{y_1 : z_1 \in A\}$$

$$B^* = \{y_2 : z_2 \in B\}$$

$$\text{so that } z_1 \in A \Leftrightarrow y_1 \in A^*, z_2 \in B \Leftrightarrow y_2 \in B^*$$

$$\text{Then, } P(z_1 \in A, z_2 \in B) = P(y_1 \in A^*, y_2 \in B^*) =$$

$$\text{since } Y_1, Y_2 \text{ are independently distributed}$$

$$= P(y_1 \in A^*) P(y_2 \in B^*) = P(z_1 \in A) P(z_2 \in B).$$

To show then that Z_1 is preferred to Z_2 is to show that

$$\text{the solving of } \max EU = \max \sum \sum U(\alpha_1 Z_1 + \alpha_2 Z_2) P(Z_1) P(Z_2)$$

$$\text{where } \alpha_1 \alpha_2 = 0$$

$$\alpha_1 + \alpha_2 = 1$$

renders the optimal values $\alpha_1^* = 1, \alpha_2^* = 0$.

$$\text{Since } \frac{\partial EU}{\partial \alpha_1} = \sum \sum U' (\alpha_1 Z_1 + \alpha_2 Z_2) Z_1 P(Z_1) P(Z_2)$$

$$\text{and } \frac{\partial EU}{\partial \alpha_2} = \sum \sum U' (\alpha_1 Z_1 + \alpha_2 Z_2) Z_2 P(Z_1) P(Z_2)$$

$$\text{then } \left. \begin{array}{l} \frac{\partial EU}{\partial \alpha_1} \\ \alpha_1 = 0 \\ \alpha_2 = 1 \end{array} \right| = \sum [\sum U'(Z_2) P(Z_2)] Z_1 P(Z_1) = E Z_1 E U'(Z_2)$$

$$\text{and } \left. \begin{array}{l} \frac{\partial EU}{\partial \alpha_2} \\ \alpha_1 = 0 \\ \alpha_2 = 1 \end{array} \right| = \sum [\sum U'(Z_2) Z_2 P(Z_2)] P(Z_1) = E [U'(Z_2) Z_2]$$

so that it is now sufficient to show that

$$\left. \frac{\partial EU}{\partial \alpha_1} \right|_{\alpha_1 = 0, \alpha_2 = 1} - \left. \frac{\partial EU}{\partial \alpha_2} \right|_{\alpha_1 = 0, \alpha_2 = 1} > 0 \quad (\text{-that a}$$

change (gain) in the expected utility resulting from a change in α_1 (from 0 to 1) is greater than the concomitant change (loss) in the expected utility resulting from an inverse change in α_2 (from 1 to 0)).

$$\text{Proceeding thus, } \left. \frac{\partial EU}{\partial \alpha_1} \right|_{\alpha_1 = 0, \alpha_2 = 1} - \left. \frac{\partial EU}{\partial \alpha_2} \right|_{\alpha_1 = 0, \alpha_2 = 1}$$

$$= E Z_1 E U'(Z_2) - E [U'(Z_2) Z_2] >$$

$$\text{since } E Y_1 > E Y_2 \implies E Z_1 = E(Y_1 + X) > E(Y_2 + X) = E(Z_2)$$

$$> E Z_2 E U'(Z_2) - E [U'(Z_2) Z_2] =$$

$$= - E [U'(Z_2) Z_2] + E Z_2 E U'(Z_2) + E Z_2 E U'(Z_2) - E Z_2 E U'(Z_2) =$$

$$= - E \{ (Z_2 - E Z_2) U'(Z_2) - (Z_2 - E Z_2) E U'(Z_2) \} =$$

$$= - E \{ [Z_2 - E Z_2] [U'(Z_2) - E U'(Z_2)] \}.$$

Observing however that for any monotone decreasing function $W = W(R)$ $\frac{dW}{dR} < 0$,

$$\rho = \frac{\text{COV}(W, R)}{\sqrt{\sigma^2_W \sigma^2_R}} = \frac{E[(R - ER)(W - EW)]}{\sqrt{\sigma^2_W \sigma^2_R}} < 0$$

or designating $U'(Z_2) = W$, $Z_2 = R$, with

$$\frac{dW}{dR} = \frac{dU'(Z_2)}{dZ_2} = U''(Z_2) < 0, \text{ it is obvious that}$$

$$E\{[Z_2 - EZ_2][U'(Z_2) - EU'(Z_2)]\} < 0. \text{ Hence}$$

$$- E\{[Z_2 - EZ_2][U'(Z_2) - EU'(Z_2)]\} > 0.$$

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APPENDIX

OUTLINES OF PAPERS PREPARED UNDER THE
FAO/UNFPA PROJECT INT/73/PO2

Paper No. 1

Title

Population and Socio-Economic Change in Peasant Societies
The Historical Record of Hungary --- 1700 to the Present

Author

Rudolf Andorka

Central Statistical Office, Budapest, Hungary

Outline

1. Introduction
 - 1.1 The Research Problem
 - 1.2 Sources of Data
 - 1.3 The Historical Periods Considered
2. The Pre-Industrial and Late Feudal Period
 - 2.1 The Population in 1700-1867
 - 2.2 National Income and Agricultural Production
 - 2.3 Structure of the Economy
 - 2.4 Urban and Rural Population
 - 2.5 Social Structure of Hungarian Society and of Villages
 - 2.6 Demographic Processes
 - 2.7 Case Studies Based on Family Reconstitution
 - 2.8 Conclusions
3. The Take-off to Industrialization and Development of Capitalist Society (1867-1919)
 - 3.1 Population
 - 3.2 National Income and Agricultural Production
 - 3.3 Sectoral Structure of the Economy
 - 3.4 Urban and Rural Population
 - 3.5 Social and Agrarian Structure
 - 3.6 Education
 - 3.7 Demographic Processes
 - 3.8 Fertility and Mortality Differentials
 - 3.9 Conclusions
4. The Period of Stagnating Capitalist Economy and Society (1920-44)
 - 4.1 Population
 - 4.2 National Income and Agricultural Production
 - 4.3 Sectoral Structure of the Economy
 - 4.4 Urban and Rural Population
 - 4.5 Social Structure of Hungary and of the Villages
 - 4.6 Agrarian Structure
 - 4.7 Education

- 4.8 Fertility, Mortality and Nuptiality
 - 4.9 Differential Fertility and Mortality
 - 4.10 Migration to Towns
 - 4.11 Social Mobility of the Peasants
 - 4.12 Distribution of Income
 - 4.13 Conclusions
5. An Overall View of the Historical Period of Pre-Socialist Development (1700-1944)
- 5.1 The Research Problems
 - 5.2 The Pre-industrial and Late Feudal Period
 - 5.3 The Take-off to Industrialization and to Development of Capitalist Society
 - 5.4 The Period of Stagnating Capitalist Economy and Society
6. The Period of Socialist Development (1945-75)
- 6.1 Population
 - 6.2 National Income and Agricultural Production
 - 6.3 Sectoral Structure of the Economy
 - 6.4 Urban and Rural Population
 - 6.5 Social Structure of Hungary and of the Village Population
 - 6.6 Agrarian Structure
 - 6.7 The Role of Household Plots and Auxiliary Plots in the Life of Village Society
 - 6.8 Education
 - 6.9 Fertility, Mortality and Nuptiality
 - 6.10 Fertility and Mortality Differentials
 - 6.11 Migration to Towns
 - 6.12 Social Mobility of Peasants
 - 6.13 Living Standards of Peasant and Village Population
 - 6.14 Conclusions
7. Some General Conclusions on the Interrelationships of Demographic, Social and Economic Processes

Length

120 pages approximately

Paper No. 2

Title

The Population Problem and the Development Solution

Author

Pan A. Yotopoulos

Stanford University

Outline

1. Introduction
2. The Demographic Transition: Which Economic and Demographic Variables Interact?
 - 2.1 The Specification of Demographic Variables
 - 2.2 An Index of Demographic Transition
 - 2.3 Economic Progress and Development at the Stages of Demographic Transition
 - 2.4 Empirical Analysis on the Stages of Demographic Transition
 - 2.5 Empirical Analysis of Fertility Rates in Relation to Economic Variables
 - 2.6 Summary
3. The Conceptual Framework: Economic and Other Determinants of Population Growth
 - 3.1 Economic Development
 - 3.2 Intermediate Variables
 - 3.2.1 Physiological Factors
 - 3.2.2 Cultural Factors
 - 3.2.3 Institutions and Tastes
 - 3.2.4 Socio-economic Variables
 - 3.2.4.1 Level of Income
 - 3.2.4.2 Education
 - 3.2.4.3 Social Mobility
 - 3.2.4.4 Urbanization and Migration
 - 3.3 The Scientific Blackbox
 - 3.3.1 Tastes, Prices and the Effects of Income on the Demand for Children
 - 3.3.2 The Opportunity Cost of Time for Women and Fertility
 - 3.4 Demographic Parameters
 - 3.4.1 Impact of Life Expectancy and Mortality Rates on Fertility
 - 3.4.2 Age Structure Parameters and Fertility Declines
 - 3.5 Summary
4. The Conceptual Framework Continued: Development Consequences of Population Growth
 - 4.1 The Effect of Population Growth on Investment
 - 4.2 The Effect of Population Growth on Income, Consumption and Savings
 - 4.3 Effects of Population Growth on Income Distribution and on Other Economic Variables
 - 4.4 Conclusions

5. Agriculture-Specific Aspects of Economic-Demographic Interactions
 - 5.1 Agricultural Growth and Fertility
 - 5.2 Modernization and Intensification of Agricultural Production Related to Fertility Declines
 - 5.3 Agricultural Development, Nutrition and Fertility
 - 5.4 Self-Sufficiency and Nutrition
 - 5.5 Summary
6. Population Growth and Agricultural Employment
 - 6.1 Concepts and Measurement
 - 6.2 Dependency Ratios
 - 6.3 The Dynamics of Labour Force Growth and Replacement Rates
 - 6.4 The Economically Inactive and the Willing
 - 6.5 Underemployment: The Idle, the Poor and the Additional Worker
 - 6.6 Problems of Measurement of Agricultural Labour Force and of Agricultural Employment
 - 6.7 The Economically Inactive in Agriculture: The "Willing" and Migration Off the Farm
 - 6.8 Underemployment in Agriculture: The Idle and the Poor
 - 6.9 Summary
7. Agricultural Constraints on Population Growth
 - 7.1 A Global View of Food Balance
 - 7.2 The Ingredients of Food Crises
 - 7.3 The Perceived Role of Agriculture in Economic Development
 - 7.4 Capital Investments for Agriculture
 - 7.5 Labour Intensification of Agriculture
 - 7.6 Technological Bias in Favour of Large Size
 - 7.7 Summary
8. Conclusions

Length

125 pages approximately

Paper No. 3

Title

Systems Simulation Studies for Long-term Population and
Economic Planning with Particular Reference to Agriculture

Author

Béla Martos

Institute of Economics, Hungarian Academy of Sciences, Budapest

Assisted by

Wuu-Long Lin, FAO, Rome

Outline

1. Introduction

- 1.1 Long-term Planning
- 1.2 Scope and Depth of the Study
- 1.3 Methodology: Systems Simulation
- 1.4 The Policy Concept
- 1.5 Phases of Model Development

2. The Prototype Model PT2

- 2.1 An Overall View
 - 2.2 Sectoral Classification, Dualism
 - 2.3 The National Accounts Component (NAT)
 - 2.4 The Food and Agriculture Component (AGR)
 - 2.5 The Labour Markets Component (LAB)
 - 2.6 The Population and Related Socio-economic Components (POP)
 - 2.7 Dynamics and Time Lags
- Appendix: Formal Statement of the Prototype Model PT2

3. A Country Variant: PAK1

- 3.1 Policy Issues: Data Availability
- 3.2 Model Structure

4. Validity Tests

- 4.1 Simulation at Work
- 4.2 Testing PT1/EG
- 4.3 Testing PAK1
- 4.4 The Moral of Validity Tests

Length

70 pages approximately

Title

Economic-Demographic Simulation Models:
A Review of their Usefulness for Policy Analysis

Author

Warren C. Sanderson

Stanford University

Outline

1. Introduction
2. Summary
3. The Bachue-2 Model
 - 3.1 Production Relations
 - 3.2 The Distribution of Income
 - 3.3 Savings
 - 3.4 The Components of Final Demand
 - 3.5 The Demographic Component
 - 3.5.1 The Demographic Accounting Equations
 - 3.5.2 Labour Force Participation Rates
 - 3.5.3 Education
 - 3.5.4 The Determinants of Fertility
 - 3.5.5 The Determinants of Mortality Rates
 - 3.6 Dynamic Aspects of the Bachue-2 Model
 - 3.7 The Treatment of Policy Questions
4. The Tempo II Model
 - 4.1 The Production Relations
 - 4.2 The Distribution of Income
 - 4.3 Savings
 - 4.4 The Determinants of Final Demand
 - 4.5 General Equilibrium Aspects
 - 4.6 The Demographic Component
 - 4.6.1 The Demographic Accounting
 - 4.6.2 Labour Force Participation Rates
 - 4.6.3 Education
 - 4.6.4 Fertility and Family Planning
 - 4.6.5 Nuptiality Rates
 - 4.7 Dynamic Considerations
 - 4.8 Policy Questions
5. The Simon Model
 - 5.1 Production Relations
 - 5.2 Social Indifference Curves and the Determination of Aggregate and Sectoral Output Levels
 - 5.3 Investment
 - 5.4 Technological Change
 - 5.5 The Demographic Component
 - 5.6 Conclusions

6. The FAO Model (adaptation of PT2 Model to Pakistan)
 - 6.1 Agriculture
 - 6.2 Industry
 - 6.3 Final Demand
 - 6.4 Employment
 - 6.5 Labour Force
 - 6.6 The Demographic Component
 - 6.7 Conclusions

7. The Kelley, Williamson and Cheetham Model
 - 7.1 The Relationships between Inputs and Outputs
 - 7.2 The Distribution of Income, Savings and Consumption
 - 7.3 General Equilibrium Considerations
 - 7.4 Dynamic Aspects
 - 7.5 Conclusions

Length

95 pages approximately

Paper No. 5

Title

Population Growth and Agricultural Development
A Case Study of Kerala

Authors

P.G.K. Panikar, T.N. Krishnan and N. Krishnaji
Centre for Development Studies, Trivandrum, India

Outline

1. Demographic Trends and their Implications - An Introduction
 - 1.1 Demographic Trends
 - 1.2 Impact of a High Rate of Population Growth

2. Agricultural Development with Unrestricted Imports of Food
 - 2.1 Introduction
 - 2.2 Exports and Agricultural Development
 - 2.3 Food Gap and Imports
 - 2.4 The Rationale of the Option

3. Changes in Cropping Pattern: Response to Uncertain Supplies from Outside
 - 3.1 Introduction
 - 3.2 Land Reclamation
 - 3.3 Trends in Cropping Intensity and Crop Pattern

4. Changes in the Distribution of Land: Demographic and Non-Demographic Factors
 - 4.1 The Distribution of Land
 - 4.2 Commercial Farming
 - 4.3 The Growth of Rural Wage Labour

5. Fertility Decline and Family Limitation

- 5.1 Trends in Birth Rate in Kerala
- 5.2 Trends in Age-specific Fertility Rates
- 5.3 Changes in Nuptiality
- 5.4 Changes in Marital Fertility and Family Planning
- 5.5 Inter-Relationships between Education, Health and Decline in Fertility
- 5.6 Conclusions

6. Internal and External Migration of the Population of Kerala: Causes and Consequences

- 6.1 Nature and Extent of Out-migration from Kerala
- 6.2 Internal Migration and Land Development
- 6.3 Migration and Fertility
- 6.4 Migration and Income Flow
- 6.5 Conclusions

7. Summary and Conclusions

Length

90 pages approximately

Paper No. 6

Title

Population and Agricultural Development:
Selected Relationships and Possible Planning Uses

Author

Oded Stark

Bar-Ilan University, Ramat-Gan, Israel

Outline

- 1. Introduction
- 2. Utility, Technological Change, Surplus and Risk: An Outline of a New Analytical Construct for Studying and Evaluating Rural-to-Urban Migration
- 3. Some Evidence
 - 3.1 Rural-to-Urban Migration as a Catalyst of Technological Change in Agricultural Production
 - 3.2 The Flow of Remittances
 - 3.3 Urban Unemployment of Rural-to-Urban Migrants
 - 3.4 Further Related Evidence Bearing on the Analytical Construct
- 4. The Impact of Rural-to-Urban Migration on the Distribution of Income by Size
- 5. Rural-to-Urban Migration and Fertility Decisions

6. Rural-to-Urban Migration, Social Welfare Criteria and Policy Oriented Implications: The Logical Inference of the Analytical Construct

Length

120 pages approximately

Paper No. 7

Title

Productivity, Wages and Nutrition in the
Context of Less Developed Countries

Authors

Christopher Bliss, Nuffield College, University of Oxford

and

Nicholas Stern, University of Warwick

Outline

1. Introduction
2. The Theory
 - 2.1 The Positive Theory of Wages
 - 2.2 The Worker's Choice
 - 2.3 The Shadow Wage Rate and Employment Subsidies
 - 2.4 Choice of Family Size
3. Empirical Studies on Nutrition, Productivity, and Income
 - 3.1 Estimates of Number in Poverty
 - 3.2 Energy and Work
 - 3.3 Some Empirical Observations on Wages and Incomes
4. Suggestions for Further Work

Length

40 pages approximately

Paper No. 8

Title

Development in Dual Economies

Authors

Constantino Lluch

Development Research Centre, World Bank, Washington

and

Jelle Bruinsma, FAO, Rome

Outline

1. Introduction
2. Theories of Development in Dual Economies
3. The Segmented Economy Model
4. Numerical Analysis with the Segmented Economy Model
 - 4.1 Basic Development Processes
 - 4.2 Function Specification and Parameter Estimation
 - 4.3 The Standard Path
 - 4.4 Comparative Dynamics
5. Final Remarks

Length

20 pages approximately

Paper No. 9

Title

Demographic Variables in Relation to Planning for Agricultural Development

Author

L. Naiken, FAO, Rome

Outline

1. Introduction
2. The Demographic Variables: Basic Concepts and Definitions
3. Approaches to Incorporation of Demographic Variables in Agricultural Planning Studies
4. Uses of Demographic Variables in FAO Country Perspective Studies

5. Alternative Population Growth Assumptions in the Country Perspective Studies

6. Conclusions

Length

19 pages approximately