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Development Projects and Demography:
The Tangent Point

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1. Introduction

Development projects must be viewed in the context of achieving overall improvement in the social and economic conditions of a given population. This calls for a comprehensive understanding of the nature of linkages between population and socio-economic development, taking into account the effects of development plans, programmes and projects on demographic growth.

In actual planning practice, however, population factors are in most cases only passively integrated into development plans; that is, plans are drawn to respond to projected levels and trends in population factors, or to accommodate them, not actively to seek specific demographic outcomes. While considerable work has been devoted to understanding behavioral relationships and interactions between population and socio-economic processes, population variables are usually considered exogenous, rather than endogenous to the system.

The focus of this paper is not on the general theory of the relationships between development and population but rather on specific category of development efforts, defined as development projects, and its demographic ramifications.

2. Socio-Economic Effects of Development Projects

Projects are often undertaken in order to meet specified social and economic objectives (for instance, to increase basic food supplies and to enhance the export capability of a country); to fulfill political aims (for instance, to build up support in certain categories of population); or to satisfy regional aspirations. Consequently, the success or otherwise of these projects will be measured by the attainment of predetermined goals. However, demographic trends and patterns (as well as environmental factors) will undoubtedly influence by interaction with these projects and should always be considered by the planners.

There is evidence to suggest that changes in population variables are caused by changes in socio-economic factors and that unlike most neo-classical growth theories which have treated population growth as an exogenous variable, today's development theoreticians have taken up population growth as an endogenous variable affecting and being affected by economic growth.

Implementing a particular project, therefore, can influence the structure of a given population in terms of affecting the level of fertility, mortality and migration through the derived impacts on the socio-economic structure. The probable economic and social consequences of certain development schemes are depicted below:

No	Examples of Development Projects	Impacts	
		Economic	Social
1	Irrigation	Increases output and income	Entails water-borne and communicable diseases
2	Industry	Adds to the supply of consumer goods and provides employment opportunities	Entails accidents or increased risk to diseases
3	Infrastructure	Improves access to communication	Facilitates the spread of diseases and epidemics and may result in social disruption.
4	Education	Increases efficiency, productivity and income	Transforms traditional behavior, and improves health and hygiene habits.
5	Health	Increases efficiency & productivity	Reduces threat by diseases, and improves access to family planning services.
6	Housing	Increases efficiency & productivity	Minimizes incidence of communicable diseases and contamination, and influences feeding and nutritional habits.

3. Implications for Population Variables

The central role of population factors in development planning has become increasingly recognized by policy makers and planners in developing countries. On the one hand, development programmes/projects affect population dynamics through their influence on birth and death rates, population size and growth rate, migration and urbanization, and various dimensions of population composition. On the other hand, population dynamics have implications for the achievement of development objectives.

The three demographic variables which affect population growth, size and structure are fertility, mortality and migration. These in turn are not only

interdependent, but also interact separately or in combination. Factors which affect fertility also have their impact on mortality and migration. For example, a high mortality level has been associated with high fertility and usually a decline in mortality will be followed by a decrease in fertility. This however depends on the level of socio-economic development in a society.

The structure of any population is a function of the levels, patterns and trends of fertility, mortality and migration which are determined by the underlined socio-economic conditions. In this context it is emphasized that while migration can be an important element, fertility and mortality in particular are always the critical factors in determining demographic processes.

3.1 Irrigation Development Schemes

Irrigation affects demographic factors indirectly through a number of intermediate variables such as land utilization and land use pattern, income and productivity and labour force participation, at both the household and community levels.

At the household level, an irrigation system can increase the productivity of land by making multiple cropping possible, or by making hitherto barren land fit for cultivation. As development of an irrigation system is usually related to the availability of other development inputs, such as electricity, roads, health services and schools, the utilization of these services in conjunction with the irrigation system can enhance the increased demand for family labour and female labour force participation. Increased income and wealth, as a result of increased agricultural productivity that irrigation can bring about, provide households with the ability to use electricity, education, health and recreational facilities. All these can affect ideal family size, fertility and migration.

At the community level, the availability of an irrigation system can affect the pattern of land use through the possible introduction of multiple cropping and also by helping to bring new land under cultivation-thereby increasing the ratio between cultivable land and population. An irrigation system can also reduce the element of uncertainty related to agricultural production in areas which otherwise have to depend on rainwater. In addition, the construction of irrigation projects is often tied to electrification, which, combined with higher income from increased agricultural production, may generate new agricultural technologies and transfer of resources to non-agricultural activities.

An increase in income and reduced uncertainty about it can affect both migration and fertility. The increased well-being of the community can help to generate new recreational and leisure activities, thus making the community more

attractive; this should, in turn, reduce out-migration. With regard to fertility irrigation tends to reduce the demand for children when people have access to family planning services. For example, a study which has examined the effect of an irrigation project on demographic factors in Thailand has revealed that the average number of children ever born in the irrigated villages was lower than in the non-irrigated villages.

3.2 Integrated Rural Development Programmes

An integrated rural development strategy usually involves the implementation of multi-sectoral projects in a defined geographical area. The extent to which a particular project can affect demographic factors depends largely on the availability of other related development inputs. The impact will be more comprehensive when a series of interventions are combined so as to achieve greater efficiencies of social and economic reorganization. Looked at this point of view, integrated rural development programmes are expected to have a synergistic effect.

A study on an integrated population-development programme in Malaysia, for example, shows that about 55 percent of the eligible women were practicing family planning at the time of the survey, which was higher than the national rural average of about 36 percent. With regard to health, 79 percent of mothers were making use of post-natal health care as compared to 30 percent for rural Malaysia as a whole.

3.3 Promotion of Small-Scale Industry

The effect of promotion of small-scale industries on fertility cannot be determined *a priori*. The increased income from participation in small-scale industries is more likely to reduce fertility, particularly in the long-run. But in the short-run, these industries may in fact encourage higher fertility. This may happen for two reasons. First, income-earning activities at home may not be in conflict with child-rearing activities. Second, since these industries are usually labour-intensive, increased demand for family labour in the wake of promotion of small-scale industries is likely to increase demand for children. With respect to migration, the promotion of small-scale household industries is likely to generate additional income and employment at the household level, and can therefore reduce out-migration at least in the short-run. By creating employment opportunities for family labour throughout the year, promotion of these industries may also help to deter seasonal out-migration during off-farming seasons. However, if the effect of promotion of small-scale industries on fertility is pro-natal, it may encourage out-migration from rural areas, particularly in the long-run, by increasing pressure of population on land.

A study carried out in the Philippines which had attempted to assess the impact of small-scale and cottage industries on income, employment, health, labour force participation and fertility had shown that incomes had increased and that such higher incomes were found to have a negative effect on fertility after a certain threshold level. The results also indicated that while the wife's level of education and age at marriage have a negative effect on fertility, the wife's current age was positively related to the number of children ever born.

3.4 Health, Education and Housing Projects

Health improvement projects assist to reduce the threat inflicted by diseases and improve access to family planning services. To this effect, they tend to decrease mortality levels and increase the expectation of life. Education projects which are geared to promote certain educational opportunities, on the other hand, help to enhance efficiency and productivity, to improve hygiene habits and transform traditional behaviors thereby influencing fertility levels, patterns, differential and trends. As regards to housing, conducive accommodation with good water and toilet facilities, ventilation, electricity and consumer durable is likely to generate substantial benefits in the form of minimizing the transmission of diseases, preventing unintended contamination, and influencing the feeding and nutritional habits of the dwellers, thereby contributing to the decline in mortality levels.

4. Empirical Evidence

Demographic consequences of development projects might vary considerably. Some projects may be deliberately aimed at altering population patterns; others may produce unexpected and unintended changes. Some demographic changes at both national and local level may result from overall social and economic policies rather than from specific development projects. However, if we limit our attention to those projects in which demographic consequences are expected and/or deliberately induced, it might be suggested that the effects can be quite varied. The following table attempts to demonstrate the issue.

Short-term Demographic Consequences of Selected Development Projects

Examples of Development Projects	Population Variables			
	Size and density	Characteristics of Population	Fertility / Mortality	Migration Patterns
Restriction on urban growth	+	0	0	+

Inter-city relocations	#	0	0	+
New towns and growth centers	#	+	+	#
Land settlement	#	+	+	#
Irrigation projects	+	+	+	#
Resource protection	+	+	+	+

- 0 Negligible impact
- + Some impact
- + Strong impact

Source: Thomas, I (1978) Population Policy in Tanzania, Development Studies Discussion Paper 41, Norwich, University of East Anglia.

Further, the impact assessment studies of development programmes upon demographic behavior in Thailand, Bangladesh and the Philippines have shown that:

- The most dramatic changes arising from the agricultural development programmes were economic: rice production per acre increased as a result of the application of fertilizers, pesticides and irrigation; and high yielding varieties. Demand for labour reduced unemployment in the area, and incomes were higher than those of the general population;
- Levels of literacy increased, as did access to and utilization of health facilities; tubewells replaced contaminated sources of drinking water and better communication allowed for the diffusion of modern ideas;
- Contraceptive use was much more prevalent, the pill and condom being the most popular methods;
- Fertility was considerably lower in the villages of the project areas than at the national level; and
- Villagers generally had lower fertility ideals and were less traditional with respect to son preference than had been found in surveys conducted elsewhere in Bangladesh.

5. Conclusion

The main goal of development projects is to improve the standard of living of the target population by increasing income and through the provision of social and

economic infrastructure which would modify people's values and attitudes regarding fertility, mortality and migration. Projects can, therefore, act as an explicit or population-influencing measure since they can bring about socio-economic changes which affect demographic variables. The perception of policy makers, therefore, should focus on the key population issues especially its growth and distribution and that clear articulation of the inter-relations between population and development is a *sin-qua-non* for concrete integration of population variables in the planning process.

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