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POPULATION AND ECONOMIC ENVIRONMENT  
IN RURAL DEVELOPMENT

By

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POPULATION AND ECONOMIC ENVIRONMENT  
IN RURAL DEVELOPMENT

Emilio U. Quintana \*

Most of the developing countries today face a severe crisis in the pursuit of their goal of adequacy, if not modest affluence, over the next twenty-five years because of the race between population and food production. Wharton of the Agricultural Development Council of New York, made the statement that: "In 1340, the world's population reached <sup>60</sup>1 billion people; less than one hundred years later, it was 2 billion; thirty years later, it was 3 billion; and ten years from now it will increase to 4 billion. The Food and Agriculture Organization (FAO) predicts that food production must increase by one third over the next ten years just to sustain the world's population at its present unsatisfactory level. <sup>1</sup>/<sub>1</sub>

This paper will attempt to point out some population and economic aspects affecting Philippine rural development. Attention will be focused on factors that are associated with food shortages, low farm productivity, low income and low levels of living among our farm population. Five aspects of our Philippine population are believed to be operating to retard rural development.

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These are: 1) high rate of population growth and low income, 2) population density, 3) farm labor force density, 4) unfavorable age structure, and 5) inadequately educated and trained manpower.

1) High rate of population growth and low income

The standard of living of any population cannot be raised unless aggregate output increases more rapidly than total population. An increase in aggregate output does not result in any increase in level of living if, simultaneously, there is an equal corresponding increase in total population. The greater the rate of population increase, then the higher must be the rate of economic growth to effect an increase in per capita income.

Most of these developing nations are experiencing population growth rates in excess of 2 per cent per year, some higher than 3 per cent. The estimated growth rate of Philippine population between census years indicated that total population is expanding rapidly. From a growth rate of 1.9 per cent per year between 1902/03 and 1917/18; it increased to 2.2 per cent between 1917/18 and 1938/39. Then it declined to 1.9 per cent between 1938/39 and 1947/48 because of the war but leaped to a phenomenal rate of 3.1 per cent from 1947/48 to 1959/59. Total population was estimated to

be 31.27 million as of July 1964 and projection for 1980 is 58,130,000 assuming a rapidly declining mortality and a high fertility level. Just to <sup>buy</sup> help every man, woman and child with their present levels of food, clothing and shelter, output must grow at least at the same rate per year. By securing a growth rate for agricultural output at around 3 per cent makes no provision for higher levels of income and improved nutrition. Like other developing nations, we seek to maintain a growth rate in real per capita income of about 2 per cent per year. If we are successful, then some of the increased income will result in an increased demand for food since the largest proportion of income increases among the poor will go toward food expenditures.

Wharton estimated that if per capita incomes in the developing nations rise at a rate of 3 per cent per year, about two-thirds of this increase will be transferred to the food producing sector. Thus about 2 per cent increase in the demand for food due to growing incomes must be added to the 3 per cent increase due to population growth. These two elements imply that the developing nations must have their agricultural growth at a compound rate of 4 to 5 per cent per year.

To effect an increase in output, investment increments must be great enough to produce income increments adequate

to raise per capita income. Capital income ratios in developing countries, indicate that to achieve an increment of one unit of income, approximately three units of capital are required. Populations increasing at 3 per cent per year, for most of the less developed countries, must therefore achieve a savings of approximately 9 per cent per annum, merely to maintain their present low levels of per capita income.

Rapid population increase, however, is not necessarily a barrier to rural development. There can be little doubt that in the history of the present economically advanced countries, rapid population growth may have actually contributed to increased product per head and to a higher level of living. But the man-resources ratio in the economically advanced nations was, on the whole much more favorable at their initial stages of economic growth than is true of the less developed areas today. Low man-resources ratio and rapid population growth contributed to economies of scale. In the less developed areas today where there is already a high man-resources ratio, rapid population growth contributes not to economies of scale but to diminishing returns.<sup>2/</sup>

Oñate's study on "Population and Food Requirements: Philippines" reported a comparison of population pressure in selected countries in the world for 1957 and 1962. Australia

and Canada have 1 and 2 persons per/sq.km. for both years respectively. In the Philippines, the density was 78 in 1957 and 98 in 1962. Japan had 257 population per/sq.km. in 1962. Projections for the Philippines show that density of population per/sq.km. will increase to 180 persons per/sq.km. under the low series in 1980.<sup>3/</sup> These figures are relevant to many aspects of land use intensity, land productivity and ultimately food productivity which will be needed to support the requirements of pressures of population in the Philippines under changing technologies.

The Inter-Agency Committee on Demography indicated that the national income at 1960 prices was 10.8 billion pesos or a per capita national income of about 394 pesos. This level of per capita income rose to 438 pesos in 1962.<sup>4/</sup>

The per capita national income at constant (1955) prices grew at a rate of about 6 per cent during the period following World War II. Although this rate of increase tapered off so that the overall rate of growth from 1947 to 1960 was a little more than 3 per cent annually, such a rate was still greater than that envisioned in the Philippine economic development program in the past administration. This high rate of growth in per capita income, however, has been due mainly to increase in the period 1947 to 1950 when the country was making a rapid

post-war recovery. The annual rate of growth in the per capita income appears to have slackened off less than 2 per cent in recent years. "

The nation's slow rate of general economic growth, as measured by increases in per capita incomes has been attributed to the poor performance of the agricultural sector. The nation's rapid population growth and the rising per capita income have provided a market base for absorbing increases in agricultural output and/or marketable surpluses.

## 2) Population Density

The population pressure on land in the Philippines is becoming acute as a result of a continuous rapid population expansion and a progressively diminishing supply of arable land. With population expanding, food production has been expanded also and this has been achieved by expanding area cultivated rather than by increasing yield per unit area. The increase in the size of cultivated area can then be viewed as the result of the demand for land. The rate and intensity of land use indirectly reflect the impact of population pressure on land.

The long-run trend of area cultivated per person in the total population may be divided into four periods: (1) The pre-war period 1902-1939 was characterized by increasing

cultivated area per capita as a result of cultivated area expanding faster than population; (2) The war period 1940-45 was characterized by decline in land-population ratio; (3) The early post-war period 1945-1959 was characterized by "rising" land population ratio with slight annual fluctuations as a result of fluctuations in size of area cultivated, area expansion still faster than population expansion; (4) A period of decline and leveling off which appears to have started since 1959/60 as a result of continuous population expansion and decline and leveling off in area cultivated.

In 1960, area cultivated per person in the farm population was .58 hectare for the national level. Since farm population has been expanding continuously while area cultivated levelled off, the net result would be a declining ratio or an increasing labor intensity. The farm labor intensity measure among various regions of the country range from .31 hectare to .79 hectare per person in the farm population. The most intensive farm labor use was in Ilocos, .31 per person and the least intensive, in Southern and Western Mindanao.<sup>5/</sup>

Fonollera's trend projection on cultivated area or output on the entire post-war period (1946-65) indicates an annual expansion of 3.55 per cent. Considering all sources of area expansion as well as the probable competition of farm

and non-farm use, it would appear that this type of expansion may not be maintained until 1980. A slight to moderate expansion by 1980 would mean that cultivated area should be in the neighborhood of a little over 8 million to not more than 12 million hectares. A major portion of the anticipated slight to moderate expansion would most probably be contributed by the Mindanao regions in terms of new land development while the Luzon and Visayan regions would probably contribute to area expansion in the form of more intensive land use or an increase in the multiple cropping index. Under a condition of constant unit area yield, a drastic area expansion is necessary in order to keep up with the farm output demand of the expanding population and that the required area expansion could not possibly be satisfied altogether since the order of the magnitude is relatively larger than the available effective potential supply of agricultural land in the Philippines. Without resorting to excessive importation of the crop requirements of the population, the projected magnitude of cultivated area requirement clearly shows the urgency of concentrating the agricultural development policy of the country towards achieving increases in farm productivity within the next 15 years to avert a crisis in food self-sufficiency. It would require policies not only for providing the basic facilities to achieve the desired yield in-

creases but also some economic incentives in the form of a more realistic price policy in agriculture under conditions of adequate infra-structures and efficient organizations and institutions.

3) Farm Labor Density

In the same study, projection of farm labor force clearly point out the fact that the farm labor force will increase considerably between 6.1 million in 1964 and 8.8 million in 1980. Unless more functional educational facilities are provided to school-age children, the school dropouts will undoubtedly swell the farm labor force and this would make the labor force top-heavy with young people with little skill and limited education. When this happens, it would be a complicated problem to increase both farm and labor productivity and reduce farm employment. Considering the current trends in farm and non-farm labor force distribution, it would appear that within the next fifteen years farm labor force will continue to account for not less than fifty per cent of the total labor force in the Philippines.

The trend projections of the combined effects of a large farm labor force expansion and a relatively slight increase or decline of cultivated area projection has led to the conclusion that the farm labor-use-intensity in Philippine agriculture will become relatively more intensive or that cultivated area per

farm worker will become smaller and smaller.

An increasing farm labor-use intensity will have some serious implications on the level of farm income of the agricultural workers. Unless more capital to purchase complementary inputs will be made available to the projected land-man ratio, it would imply that gross farm output would remain stable and average labor productivity would decline.

For example, a decreasing land-man ratio without the corresponding addition of other farm inputs (assume size of farm constant) would shorten hours of work or more idle hours for more members of the farm labor force, as there are no alternative opportunities elsewhere. This situation, would, however, be altered if improved farm practices will be employed on better quality inputs in order to attain the greatest economic gains even under the same land-man ratio. It is expected that this yield-increasing labor-intensive technology that has proven to be successful in Taiwan and Japan will bring about substantial increases in gross farm output and labor productivity in the Philippines if properly applied.

It is also possible that in spite of the projected decline in land-man ratio, changes might occur in the cropping pattern due to improved irrigation facilities, production techniques and factor substitution which might promote increasing land and

labor productivity. High labor productivity is achieved only when labor is scarce relative to the other inputs since only when labor is scarce is it economically rational to use labor in productive technology and combine with increasing quantities of capital or increase labor productivity by utilizing existing labor force by increasing ~~man~~<sup>my</sup>-labor inputs. The more rapid the increase in population, the more difficult it is to achieve a state of labor scarcity.

A more realistic assumption on farm labor force density should take into account the possible change in the projected population growth rate as a result of the impact of family planning on future family size. If experiences in Taiwan and Japan could be successfully employed here, assuming that our social, cultural and religious values will allow, it is expected that our population growth rate will decline.

Another possibility under declining land-man ratio, low farm productivity will be shifts in cropping systems from subsistence to commercial or more profitable crops, as well as changes in the production techniques the adjustments of which may bring about a more efficient allocation of resources.

#### 4) Unfavorable Age Structure

High fertility areas, like the Philippines, have larger proportion of young persons than do low fertility areas. The

relatively large proportion of persons under 15 years of age, 39.5 per cent of total population in 1903, 43 per cent in 1939 and 45.7 in 1960, may be interpreted as "unfavorable" to economic development for at least two reasons: first, the relatively high proportion of young persons below working age tends to reduce labor input per capita and all other things being equal, tends therefore to reduce income per capita; second, the larger the proportion of young persons in the population requires that a greater part of limited resources be allocated to social investment, rather than to economic investment, that is, the more youthful the population, the greater is the proportion of total savings that must be devoted to the rearing of the young, and the smaller is the proportion of total savings that is available for investment in agricultural or industrial projects designed to increase per capita income.

The needs of a population are to some extent a function of its structure, that is, consumption varies with age, for both children and elderly people have different needs from those of adults of intermediate age. The United Nations has estimated the changes in the needs of a population with changing age structure, expressing the needs of an adult as unity, (1.0), and the needs of a child or an aged person by 0.7 of a unit.<sup>6/</sup>

The decline in the proportion of young persons contributes to economic development is still another significant way. For the smaller the proportion of persons below working age, the smaller is the proportion of total savings that must be allocated to the rearing of young, and the greater is the proportion of total savings that may be allocated to productive investment. Hence, a decrease in the proportion of persons below working age simultaneously decreases the dependency burdens of workers and increases the proportion of total savings which may be placed in productive channels.

5) Inadequately Educated and Trained Man-Power

The availability of science and technology does not guarantee that the economic development of a country will be furthered. If science and technology are to contribute to the productive process, special talents and skills must be developed and the population must be trained to apply the knowledge and techniques in the production processes of a given country. In short, the most important investment any country can make, whatever its stage of development, is its human resources, that is, in the education and training of its population under institutions which create incentives and make it possible for the individual to realize his aspirations.

A barrier to rural development in the Philippines is the

low quality of population, that is, the low general educational level and low skill of the population and most importantly of the labor force. High levels of illiteracy and the absence of a skilled labor force serve as major barriers to rural development. It is becoming recognized that perhaps the most important single type of investment for achieving development is investment in human resources. In fact, it is being argued that "investment in the human factor may well have a higher payoff in terms of increased output than does any other input."<sup>7/</sup>

Although literacy in the Philippines ranks high among the world's less developed nations, and has been rising from 48.8 per cent in 1939 to 59.8 per cent in 1948 and 72 per cent in 1960, it has not shown positive results in terms of increasing yields and productivity among our farmers. Studies have shown that Philippine agriculture ranks low in the use of yield-increasing technology such as fertilizer with only 9.4 kilograms per hectare of arable land as against 270.1 kilograms per hectare in Japan and Taiwan, an input necessary for increasing farm productivity.

Investment in human resources is essentially an investment to improve the quality of population which can be achieved through increased education and training. A major barrier to raising the educational level of our population may be found in high fertility. An increase in birth rate may increase total school cons-

truction needs, an increase in number of quality teachers and an increase in other educational facilities, if we are to produce better quality human resources - an educational system that is more responsive to the needs ~~of~~ problems and needs of society.

To eliminate the adverse effects of population factors on rural development, the following are the possibilities: In the short run, a) efforts should be made to intensify technical improvement, both at the farm and home levels, b) provision of adequate capital input, c) organizations and institutions should be made more efficient in allocating scarce resources, and d) national government policy should give equal emphasis on agricultural development as industrial development. In the long run, it is necessary a) to dampen rates of population increase, b) to minimize population density, c) to effect a more favorable age structure, to achieve a more balanced urban-rural population distribution, and d) to raise the quality of the population by attaining a high level of functional education and training. Each of these goals is attainable and significantly enough, all may be achieved by the same means, through a decrease in birth rate.

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