Discussion Paper No. 9304 July 1993

Rural Performance and Agricultural Growth: A Philippine Perspective

by

*Arsenio M. Balisacan**

**Associate Professor, School of Economics
University of the Philippines

Abstract

Usual indicators of intertemporal rural performance are technically flawed mainly because of the shifting of the physical area of the rural sector as population grows and/or economic activity expands. The problem is illustrated using Philippine poverty data. The paper also shows that rural poverty in the Philippines was substantially unaffected by the rapid agricultural growth during the green revolution period. Both demand and supply considerations constrained the responses of the rural sector to the stimulus provided by rapid agricultural growth.

1. Introduction

Getting rural development moving has been a primary concern of development policy in less developed countries (LDCs) such as the Philippines. This concern is, of course, not surprising: poverty in these countries is essentially a rural phenomenon (Jazairy et al. 1992, Quibria and Srinivasan 1992). Since the large majority of the rural poor are dependent on agriculture for livelihood, productivity increases in agriculture are viewed as a critical element of rural development strategy. Agricultural growth is considered to provide direct as well as indirect stimulus to the setting up of new industries through intersectoral linkage effects, thereby facilitating industrialization as well as directly addressing the problems of poverty, unemployment and underemployment (Adelman 1984, Mellor 1986, Bautista 1993, Ranis and Stewart 1993).

Postwar rural performance in the Philippines is dismal in relation to those in East Asian countries and many other LDCs. This is not due to the absence of rapid agricultural growth in the Philippines. While agricultural growth faltered in recent years, the agricultural sector in the Philippines performed remarkably well vis-à-vis other developing Asian countries from the second-half of the 1960s to the early 1980s, the height of the so-called green revolution period. However, during this period, the ranks of the unemployed and underemployed continued to swell, real wages persistently fell, and the incidence of rural poverty remained high and seemed substantially unaffected by the rapid agricultural

growth then taking place. The size distribution of income also became less egalitarian. The farm-nonfarm rural linkages expected to be induced by agricultural growth were simply weak or non-existent. What went wrong?

This paper examines the constraints to sustained rural growth and poverty alleviation in the Philippines. It first characterizes rural performance in terms of intertemporally consistent indices of rural poverty. It then describes Philippine agricultural growth and the character of postwar employment generation. Subsequently, it elaborates on the supply and demand factors responsible for the poor response of rural nonfarm areas to the stimulus provided by rapid agricultural growth. Finally, it draws some conclusions and implications for rural development policy.

2. Indicators of Intertemporal Rural Performance

The usual indicators of intertemporal rural performance, including rural poverty and income distribution, are technically flawed. First, the definition of "urban areas" in the Family Income and Expenditures Survey (FIES), the main source of data for intertemporal rural household indicators in the Philippines, has changed substantially over the years. In the 1961 FIES, urban areas included Metropolitan Manila (Manila and adjacent cities and municipalities), chartered cities and provincial capitals, and all town centers of municipalities. The 1965 FIES added population density as another criterion, qualifying all town centers of municipalities with a population density of at least 500 persons

per square kilometer as well as villages contiguous to these centers and having at least 2,500 inhabitants, as urban areas. Since 1971, any district, regardless of population density, with at least six establishments (commercial, manufacturing, recreational and/or personal services), can also qualify as an urban area.

More importantly, the physical area of the "rural sector" is, almost by definition, shifting over time. As population grows and/or economic activity expands, an initially rural area will be classified as urban, sooner or later. While this may not be problematical for purposes of measuring, say, urbanization trends, it tends to create a systematic downward bias on rural performance indicators. Suppose, for example, that rapid agricultural growth in some regions leads to a similarly rapid expansion of nonfarm employment and incomes. This induces urbanization, thereby reducing the physical size of "rural areas." To the extent that household incomes rise faster in urbanizing areas than in non-urbanizing areas, poverty incidence in geographically expanding urban areas tends to fall relative to that in contracting rural areas. This is particularly so if there are constraints to the movement of labor from the slow to the rapidly growing areas, or if there are considerable lags to such movement. Thus, while the growth stimulus is initially rural-based, the gains in poverty reduction are registered as urban-based. The data, as reported, say, in population censuses, would seem to suggest that rural development programs, even if they are successful in spurring rural income growth and reducing rural poverty, do not matter much!

Table 1 shows rural and urban population counts based on published population censuses (hereafter referred to as Census Report). It also presents population estimates for fixed physical rural and urban areas. The estimation involves reclassifying geographical areas in the various population censuses according to their urban-rural classification in the 1970 census of population. These estimates show that rural areas had a population share of 69 percent 1960, 68 percent in 1970, 66 percent in 1980, and 64 percent in 1990. In contrast, the Census Report population share of rural areas was 70 percent in 1960, 68 percent in 1970, 63 percent in 1980, and 51 percent in 1990. Clearly, for the country as a whole, it is reclassification of physical areas, not physical movement of population from rural to urban areas, that mainly accounts for the growing share of urban areas in total population.

Poverty Data and Measurement Issues

One set of data for the analysis in this section is the various Family Income and Expenditures Surveys (FIES) undertaken in 1961, 1965, 1971, 1985, 1988, and 1991. Although similar surveys were also conducted in 1975 and 1979, the results were not published due to technical problems, one of which was the implausibility of the data generated owing to substantial underrepresentation of households in certain sectors of the society.[1]

The absence of reliable FIES data from 1972 to the early 1980s is a cause for concern. Significant changes in the economy took

place during this period. As shown below, agricultural growth in the Philippines during the 1965-80 period was impressive by international standards. It would be useful to have indicative figures on the responses of rural poverty to this development.

The Labor Force Survey (LFS) provides quarterly income data for a number of years in the late 1970s and early 1980s.[2] These data are, however, limited only to workers' earnings from employment (wages, salaries, and entrepreneurial incomes from self-employment), thereby excluding other sources of family income, such as shares from crops, remittances, and gifts. Remittances and income transfers were not important sources of household incomes in the 1970s, but they were in the 1980s (Balisacan 1990). Thus, while poverty indices constructed from the LFS data are systematically biased upward and may not be comparable with those based on the FIES, the bias is not expected to be large.

A potential problem with the LFS tabulated data is that the income of a household in one quarter is not matched with the income of the same household in another quarter. There is no available distribution of annual income for each household. It may be inappropriate to simply sum up the quarterly array of household incomes for each bracket to arrive at an annual figure since some households do not stay in the same income brackets from one quarter to the next. In rural areas, especially for families dependent on farming for incomes, income seasonality is considerable, especially for low-income groups. For high-income groups, there may be less "jumping around" from one income bracket to another because these

households are typically in urban areas where seasonality of income is much less. Fortunately, the income range for each bracket is sufficiently wide and the number of brackets are few, thus minimizing the "jumping around" problem for possibly much of the low-income groups. Thus, in this paper, the average of the quarterly incomes for each bracket is deemed reasonable for poverty calculations.

The identification of the poor involves the use of a broad indicator of economic resources. Conceptually, consumption is preferable to current income as indicator of household welfare. However, the use of consumption assumes that capital markets are perfect; households are able to borrow from future earnings to finance current consumption. Current consumption then reflects permanent consumption better than current income. In reality, the access of the poor to credit is extremely limited. It is thus their "opportunity to consume" that matters much to their welfare (Atkinson 1991); that opportunity is given by their current income.

A related issue in poverty identification is the construction of a poverty line or threshold. For practical purposes, a poverty threshold is defined as the critical minimum amount of income below which a person cannot attain a predetermined consumption bundle of goods and services, judged necessary for the fulfillment of certain basic consumption needs, most importantly adequate nutrition. We have adopted the poverty lines for 1988 estimated by the National Statistical Coordinating Board's Technical Working Group on Poverty Determination (TWG).[2] Real poverty lines are held fixed for the

period covered by the study. It is, of course, possible that poverty lines are positively related with correlates of development. However, Ravallion et al. (1991) have demonstrated that, for a large number of low-income countries, real poverty lines tend to increase with economic growth, but they will do very slowly for poor countries.

The commonly used summary measure of poverty in the Philippines, as elsewhere, is the head count index, expressed as the proportionate number of households whose incomes fall below the poverty line. The drawback of this measure is that it is entirely insensitive to changes of incomes below the poverty line: a poor person may become poorer, but measured poverty will remain the same. Furthermore, this index is insensitive to transfers: an income transfer from a poor person to a less poor one does not change measured poverty. Its advantage is that it is easily understood and communicated.

In addition to the head count index, two other summary measures are employed:

(i) The poverty gap, which is measured as the arithmetic mean of the income shortfall (expressed in proportion to the poverty line) over the whole population. This measure is sensitive to both the number of the poor and their degree of poverty. Its advantage is that the index gives an indication of the potential savings that can be made from targeting transfers to the poor. One objection to it, however, is that it is insensitive to the redistribution

of income within the poor group owing to the equal weights attached to the various poverty deficits.

(ii) The Foster-Greer-Thorbecke, FGT, (α=2) index, which is measured in the same way as the poverty gap except that the weights are simply squared income shortfalls.* Measured poverty using FGT (α=2) decreases whenever a transfer of income takes place from a poor household to a poorer one. Its drawback is that it is not as easy to interpret as the head count and poverty gap indices. Nonetheless, the key point to bear is that a ranking of dates, socioeconomic groups, or policies in terms of FGT (α=2) index, hereafter referred to as *distribution-sensitive measure*, should reflect well their ranking in terms of the severity of poverty. It is not the precise number *per se* that makes the measure useful, but its ability to order distributions in a better way than the alternative measures.

Rural Poverty Indicators

Table 2 summarizes rural poverty estimates based on the FIES income data. The estimates referred to as FIES estimates are based on rural population distributions reported in the FIES. The other set of estimates, referred to as Fixed Physical Areas (FPA) estimates, is based on rural population distributions for fixed physical areas of villages as defined in the 1970 Population Census (see the Appendix for the calculation). Thus, while the FIES

estimates do not control for the "shifting physical areas" problem noted above, the FPA estimates do, thereby providing a better indicator of intertemporal rural poverty.

In both FIES and FPA estimates, rural poverty fell from 1961 to 1965; the change was statistically significant for all poverty indices. However, the change from 1965 to 1971 was insignificant, implying that the relatively rapid growth of agricultural incomes did not significantly benefit the rural poor. This is consistent with the finding on rising income inequality during this period (Balisacan 1993b). As elaborated below, both pricing and infrastructure policies tended to be biased against the rural sector, particularly small- and medium-scale nonfarm enterprises in rural areas, thereby weakening the response of the rural nonfarm economy to the stimulus provided by agricultural growth.

The FIES estimates show a relatively mild increase in rural poverty from 1988 to 1991, with head count poverty rising from 50 percent to 52 percent. In contrast, the FPA estimates indicate a considerable decrease in poverty, with the head count index falling from 48 percent in 1988 to 41 percent in 1991. The discrepancy comes mainly from the shifting of physical areas arising from reclassification of villages. The sampling frame for the 1985 and 1988 FIES was based on the 1980 population census, while that for the 1991 FIES was based on the 1990 census. Both censuses applied the same set of criteria in classifying villages into "urban" and "rural" areas. A large number of initially rural areas in 1980 became urban areas in 1990 when they were found to satisfy the

criteria for urban areas. This reclassification, in addition to net migration from rural to urban areas, reduced the population share of FIES rural areas from 62 percent in 1988 to 50 percent in 1991. In contrast, the estimated rural population share based on FPA was virtually the same -- 64 percent -- during the same period.

Table 3 shows poverty estimates based on the LFS data.[9] These estimates show rural poverty falling from 1977 to 1980. While the FIES and the LFS data are, as noted above, not strictly comparable, it is interesting to note that the LFS poverty estimates for 1977 and 1978 have almost the same magnitude as the FIES estimates for 1965 and 1971. In the 1970s, the upward bias of LFS estimates is not expected to be large, which suggests that rural poverty did not change significantly during the 1970s when agricultural growth was impressive by international standards. In East Asia and in many other developing countries where agricultural incomes rose over a sustained period, rural poverty fell considerably (Oshima 1990).

Interestingly, the change in rural poverty based on the head count and poverty gap indices from 1977 to 1978 was statistically insignificant, while that in the other index which is sensitive to the severity of poverty was highly significant. This illustrates the danger of using only head count index in measuring poverty.

As might be expected, rural poverty increased significantly from 1981 to 1983. This period marked the beginning of economic difficulties precipitated by a combination of unfavorable domestic and global events. GDP contracted by about 10 percent in 1984 and 1985.

It is well known that conclusions concerning intertemporal changes in poverty may be influenced by the choice of poverty line and poverty index. Differences in needs between households of similar income (consumption) levels, though not easily measurable, are real. There may be also errors in the available data on living standards. Thus, one can ask: how robust are the results of poverty comparisons? We have employed well-known theoretical results on stochastic dominance to obtain at least a partial ordering of poverty distributions in terms of any well-behaved measures of rural poverty (see the Appendix). The results of the analysis suggest that the above-stated conclusion concerning the virtual absence of rural poverty reduction from 1965 to 1971, a period coinciding with the early stage of the Green Revolution, is robust with respect to assumed poverty lines and to poverty measures that are sensitive to the income shortfalls of the poor. The change in poverty is ambiguous from the late 1970s to the early 1980s. However, if poverty measures are restricted only to those which take into account the depth of poverty and the distribution of living standards among the poor (i.e., excluding the head count index), then poverty in 1980 and 1981 is lower than in 1977 and 1978 for all plausible poverty lines. Finally, poverty is unambiguously lower in 1988 than in previous years.

3. Postwar Agricultural Growth

The agricultural sector (comprising crops, livestock and poultry, fishery, and forestry) of the Philippine economy performed

remarkably well during the 1965-80 period (Table 4). The sector's growth was substantially higher than the averages for the developing Monsoon Asian countries and the middle-income developing countries, and compared favorably well with those for Thailand and Indonesia. However, the growth, was way below the averages for these countries in the 1980s.

In recent decades, LDCs with relatively high growth rates of agricultural value added tend to have also comparatively high GDP growth rates (Timmer 1988). This observation is, of course, not surprising given that agriculture in a typical LDC is a large fraction of the economy. In the Philippine case, the remarkably robust agricultural growth for the period 1965-80 was accompanied by a GDP growth that closely matched the averages for the developing Monsoon Asian countries and the middle-income developing countries.

Growth has not been uniform among the major subsectors of the Philippine agriculture. Agricultural crops registered the highest annual growth rate during the period 1965-80, averaging 6.5 percent (Table 5). Consequently, the share of crops in agricultural value added rose from 54 percent in the mid-1960s to about 60 percent in the early 1980s. Impressive by historical standards, the growth was particularly rapid in corn, "other crops," and to some extent, sugarcane. Surprisingly, the average growth of rice, the nation's staple crop, was relatively low, although its share in total agricultural value added remained substantial (21 percent in the 1980s). Thus, the commonly held view that the production gains in

Philippine agriculture during the 1965-80 period was primarily attributable to the green revolution in rice was a myth. Rice value added growth contributed only 16 percent to the observed growth of agricultural value added during this period.

The category "other crops", together with banana, was the fastest growing sector during the period 1965-80, contributing nearly one-half of the total agricultural growth. The growth mainly came from the rapid expansion of fruits and vegetables, particularly nontraditional export crops such as pineapple and coffee. The share of "other crops" in agricultural value added rose from 16 percent in the mid-1960s to about 30 percent in the second half of the 1980s.

4. Output and Employment Transformation

Sustained growth of productivity and incomes in rural areas requires rapid expansion of productive employment opportunities in the nonfarm sectors of the economy. Both economic theory and modern economic history show that productivity growth in these sectors tends to outweigh that in the farm sector (Syrquin 1988). Thus, as development proceeds, employment is transformed from one that is largely agricultural to one that is heavily dependent on industrial and services sectors of the economy.

Employment generation in the Philippines is poor in relation to the standards of the newly industrializing economies of East Asia and many other countries at similar income levels. This is significant considering that low opportunities for employment in

high-paying sectors are at the core of the poverty problem in the Philippines. In large part, public policies have created distortions that have not only been inimical to sustainable growth but have likewise been adverse to the employment content of growth.

Table 6 shows the output and employment shares of the major sectors of the economy. The changes in the sectoral composition of aggregate output are in accord with well-known stylized patterns of development: the increase in the share of industrial output and the fall in that of agriculture as per capita income rises (Chenery and Syrquin 1975). Industry's share rose from only one fourth of GDP in the mid-1950s to one third in the early 1990s. This change took place mostly from the mid-1950s to mid-1970s when industry, particularly its manufacturing subsector, grew relatively rapidly in response to economic incentives spawned by import-substituting development policy. In the following period, from the mid-1970s to early 1990s, industry grew sluggishly; it even contracted in the first half of the 1980s when the economy succumbed to its sharpest contraction since the Second World War.

The failure of industry's employment share to grow despite the rapid expansion of its share in GDP meant that services, mainly in the informal sector, and agriculture were the major sources of employment generation for the rapidly expanding labor force. Unfortunately, in these sectors, labor productivity was relatively low and tended to fall, especially in the 1980s. Services accounted for 40 percent of output and also about 40 percent of total employment. Although the shares of agriculture in output and

employment were comparable to those in other countries of similar income levels, the same can not be said for services. In these countries, the average share of services in national output was about 45 percent while its share in total employment was about 25 percent, thereby implying a much higher relative labor productivity.[6]

As noted above, labor productivity in agriculture tends to be low relative to the rest of the economy. The sectoral difference reflects differences in the nature of production function, rate of technological change, and mobility of resources.[7] The productivity gap may even increase from the early to middle stage of development. Thus, the transfer of labor out of agriculture to more productive sectors would be interpreted as an improvement in average employment situation and living standards of the employed population. Once migration and capital accumulation have significantly reduced labor surplus, relative labor productivity and wages in agriculture rise, eventually reducing the productivity gap between the sector and the other sectors.

Figure 1 shows the trends in average labor productivity in the three major sectors of the economy -- agriculture, industry, and services -- since the mid-1950s. At least three major observations can be noted. First, average labor productivity in agriculture has consistently been lower than that in industry and services. Second, labor productivity in the services sector was comparable to that in manufacturing in the latter part of the 1950s, remained virtually stagnant up to the 1970s, and then dropped in the 1980s,

especially for the commerce subsector. This occurred in tandem with the substantial increase in the share of the services sector in total employment -- from 25 percent in the mid-1950s to 39 percent in the late 1980s. Third, although labor productivity in industry managed to rise in the 1960s and 1970s, the growth soon petered out and labor productivity fell for the most part of the 1980s. Average labor productivity in industry in 1986-90 was even lower than during the economic crisis of 1983-85. Thus, unlike in newly developed economies whose historical patterns show that the productivity gap was narrowed down by capital accumulation and technological change in agriculture, the reduction in productivity gap (at low level of development) in the Philippines was achieved not by relatively rapid growth of labor productivity in agriculture but by the prolonged drop of labor productivity in industry.

Exacerbating the poor performance of the economy in generating productive employment opportunities has been the relatively rapid expansion of the labor force. By international standards, the growth of the labor force was high, averaging 4.2 percent a year during the second half of the 1970s and early part of the 1980s and 2.5 percent a year during the second half of the 1980s (Table 7). The unusually high growth rate (averaging 3.9 percent a year) of the working-age population in the second half of the 1970s partly contributed to the high growth of the labor force during this period. Labor force participation rates also rose, particularly among female members, in the 1970s.[8] Working-age population growth slowed down to 3.0 percent a year in the first half of the 1980s

and 2.6 percent in the second half, but labor force participation remained relatively high throughout the 1980s.

Interestingly, while employment growth was persistently lower than output growth in the 1970s (the implicit employment elasticity with respect to output for this period was close to 0.65), such was not the case in the early part of the 1980s. Employment expanded at an extraordinarily high rate of 3.7 percent per year in 1981-85 even though GDP contracted by an annual average of 1.9 percent. However, the number of underemployed workers was high, averaging 28 percent of the employed workers during the period (in contrast with the average of 20.6 percent for the period 1976-80). Moreover, the expansion took place in low productivity areas, mainly the informal services sector. This trend continued to the late 1980s and early 1990s.

Persistent declines in real wages and the rise in per capita income were rather unique in the Philippines. In the postwar experience of Asian countries, particularly Taiwan and South Korea, growth was accompanied by rising real wages in agriculture and industry, even when there was considerable unemployment (Oshima et al. 1986: 151). This occurred not because these countries had effective laws on minimum wages, but because labor productivity growth and expansion of employment accompanied the growth of GDP per capita. Government policies in the Philippines, on the other hand, tended to undermine both productivity growth and the generation of employment opportunities for its expanding labor force.

4. Constraints to Agricultural Growth-Led Rural Poverty Alleviation

The rapid agricultural growth did not, as shown above, translate into substantial reduction of rural poverty. Income distribution in rural areas also became less egalitarian, with the Gini ratio rising from 0.41 in 1965 to 0.45 in 1971 (Balisacan 1993b). Real wages in rural areas (as well as in urban areas) fell in the 1970s and in the early 1980s (Lal 1986). For the landless workers and for small farmers who also depend on off-farm work for supplementary incomes, the decline in real wages is indicative of deteriorating economic well-being (Papanek 1989, Oshima 1990).

Both demand and supply considerations constrained the linkages of agricultural growth. On the demand side, the stimulus provided by agricultural income growth on domestic nonfarm activities was weak owing to the fact that the growth was not broadly based. This arose partly from the highly skewed distribution of landholding and the highly capital-intensive plantation farming and large-scale processing in the export crop sector (e.g., banana and pineapple plantations). Despite continuing legislation on land reform, there has been much less actual implementation.[9] Thus, the landholding Gini ratio remained high--about 0.5--from 1960 to 1980 (Balisacan 1990). Accentuating the influence of this agrarian structure on the distribution of the income gains from productivity increases was the greater availability of subsidies on credit and fertilizer for the more affluent farmers (David 1986). Because the consumption pattern of large farmers is most likely geared to those

goods and services with high import (or urban) content, the linkages of agricultural income growth were weak in setting in motion a sequence of employment and income multiplier effects on the rural (as well as urban) economy.

On the supply side, unfavorable fiscal and macroeconomic environment prevented the rural nonfarm sector from responding vigorously to the agricultural income growth. High effective protection in the import-substituting manufacturing sector induced a strong policy bias against agriculture and the rural sector. Trade restrictions and highly overvalued exchange rate unduly promoted capital-intensive activities and, in the process, severely penalized labor-intensive activities and backward integration.[10]

Generous fiscal incentives provided a window for the development of export-oriented manufacturing establishments through export-processing zones (EPZs). However, the development of these EPZs, which, with the exception of Cebu (exporting garments and electronics), were located at a distance from sources of labor, "required heavy infrastructural investments, and led to capital-intensive, uneconomic, MNC-dominated operations, which by and large had little impact on rural industry or agriculture" (Ranis and Stewart 1993: 98). Government interventions, especially in the 1970s and early 1980s, also tended to diminish the role of market mechanism in favor of regulations by parastatals as well as promoted a monopolistic structure in important sectors of the economy. The use of governmental functions to dispense economic

privileges to some select group close to the ruling elite was rampant.

Investments in physical infrastructure were concentrated in highly urbanized centers and Central Luzon (Pampanga and Nueva Ecija). Metro Manila and Central Luzon had almost one half of the total infrastructural investments in the late 1960s and early 1970s (ILO 1974). While government expenditures in agriculture grew rapidly -- by an average of 13.2 percent a year -- from the late 1960s to the early 1980s, this occurred mainly in the favored rice sector. This pattern of government spending promoted regional inequality. More importantly, the neglect of most rural areas in the Philippines considerably weakened the rural sector's supply response to the stimulus provided by agricultural growth.

Public investment in human capital--mainly health and education--was likewise biased against the rural areas. In the 1970s and early 1980s, high-quality primary education was limited to less than 10 percent of total elementary population, mostly in private schools in Metro Manila (World Bank 1976). Likewise, access to health services was a sore point for the rural population, as health facilities were concentrated in Metro Manila. Undoubtedly, these biases contributed to the weak entrepreneurial response in rural areas.

6. Conclusion

The little rural poverty reduction in the Philippines from the second half of the 1960s to the early 1980s is surprising

considering (i) that agricultural growth was fairly impressive by international standards and (ii) that rural poverty fell substantially in other developing countries where similarly rapid agricultural growth took place. Clearly, while agricultural growth is necessary to sustained rural poverty reduction, the Philippine experience suggests that it is not enough. Sustained reduction in rural poverty demands an institution of interrelated policy reforms and programs aimed at enhancing the intersectoral employment linkages of agricultural income growth, increasing labor and total factor productivity, and building the human capital of the poor.

We have pointed out the importance of *initial* conditions, including the size distribution of assets and incomes, in considerably influencing the response of rural (and urban) areas to the stimulus provided by agricultural growth. There is currently little empirical work to bank on for a deeper understanding of this issue. Counterfactual analysis using economywide models that realistically capture the economic structure and rural institutions of a developing economy such as the Philippines is needed if further insights are to be gained.

The reclassification of physical areas as population grows and/or economic activity expands tends to create a systematic downward bias on rural performance. We have shown that rural poverty indicators tend to become biased upward as urbanization proceeds. This reclassification has likewise important implications on other aspects of sectoral and spatial transformation. High urban population growth in LDCs is, for

example, commonly attributed to rapid rural-urban migration (Pernia 1991, Nijkamp 1993). National data on rural-urban migration have been based mainly on published population censuses. If reclassification of physical areas is the one largely driving the commonly observed high growth of urban population, such as the case presented in this paper, then the rural-urban migration story in the development literature is somewhat exaggerated.

Notes

1. For a description of the comparability and limitations of the various FIES, see Balisacan (1993a).

2. Quarterly income data were not collected prior to 1977. No LFS data are available for 1987, and only third-quarter income data are available for 1988, 1989, and 1990. Given the significant seasonality of rural incomes, the 1988-1990 data can not be used for poverty comparison.

3. The TWG's procedure of establishing the poverty line is an adaptation of the Orshansky method (Orshansky 1965). Daily and monthly food thresholds are obtained by costing low-cost menus by region and by area (rural, urban), which meet 100% adequacy of the recommended dietary allowance for energy (2,000 calories) and 80% adequacy for other nutrients. Estimates of nonfood needs are based on the consumption pattern of FIES sample families whose incomes fall within 10 percentage points above and below the food threshold. That is, to obtain the total poverty line (food plus basic nonfood), the food threshold is divided by the average propensity to consume, defined as the proportion of food to total expenditures, for these sample families.

4. The FGT index (Foster et al. 1984) is a class of additively decomposable poverty measures. The head count and the poverty gap are special cases of this index, i.e., for $\alpha=0$ and $\alpha=1$, respectively. These measures are *additively decomposable* in the following sense: the aggregate (population) poverty level is simply

a weighted average of the subgroup poverty levels, the weights being their population shares. Moreover, FGT (α=2) satisfies the main axioms for a desirable summary measure of poverty. Owing to this property, FGT (α=2) has been popular in recent empirical work (see, e.g., Ravallion and van de Walle 1991, Thorbecke and Berrian 1992).

5. As in FIES prior to 1988, the "shifting physical areas" problem is not an important issue in this data set. The classification of barangays (villages) does not vary markedly for the 1970 and 1980 population censuses, the bases of LFS sampling frames for the years included in Table 3.

6. Based on figures from the World Bank's *World Development Report* and ILO's *International Labour Statistics*.

7. Low mobility of resources underlies the persistence of disequilibrium phenomena such as *surplus labor in agriculture and other low productivity activities.*

8. The increase in female labor force participation rate can be explained partly by the decline in real wages in the 1970s and 1980s. As wages had been falling, females, especially housewives and the elderly, entered the labor market in order to maintain family incomes. Oshima et al. (1986: 160) noted that the average number of earners per family rose from 1.83 to 2.0 in the 1970s. This, in turn, might have accentuated the fall in real wages as the rise in the female participation increased labor supply. Another factor that facilitated the female participation in the labor

market was the work opportunities opened up to them during the 1970s.

9. The coexistence of numerous small peasant farms and large plantations in the Philippines somewhat resembled that of Latin America. For a comprehensive account of Philippine agrarian structure, see Hayami, Quisumbing, and Adriano (1990).

10. Indeed, this is a common theme in the writing of serious students of the Philippine economy. See, for example, Power and Sicat (1971), de Dios (1984), Bautista (1989), and Krugman et al. (1992).

APPENDIX

Poverty Indicators for Fixed Rural Areas

The FGT class of poverty measures is given by

$$P_\alpha = \frac{1}{n}\sum_{i\in q} n_i\left(\frac{z-y_i}{z}\right)^\alpha \qquad (1)$$

where q is the number of persons whose incomes fall below the poverty line z, y_i is the per capita income of family i, n_i is family size, n is the total number of persons in the population, and $\alpha \geq 0$ is a measure of poverty aversion. The decomposition of P_α into rural (r) and urban (u) sectors is

$$P_\alpha = \omega P_{\alpha,r} + (1-\omega) P_{\alpha,u} \qquad (2)$$

where ω is the population share of rural areas. Let $P'_{\alpha,i}$ $(i=r,u)$ be the poverty index for sector i with a population share of ω' after a change. Following Ravallion and Huppi (1991), the change in observed aggregate poverty can be written as:

$$P'_\alpha - P_\alpha = \sum_i \left(P'_{\alpha,i} - P_{\alpha,i}\right)\omega_i + \sum_i \left(\omega'_i - \omega_i\right)P_{\alpha,i} + \sum_i \left(P'_{\alpha,i} - P_{\alpha,i}\right)\left(\omega'_i - \omega_i\right) \qquad i=r,u \qquad (3)$$

The first term on the right-hand side is the contribution of the gains to the poor within each sector to the change in aggregate poverty, controlling for their base period population shares. The second term is the contribution of urban-rural changes in population distribution to the change in aggregate poverty. The

third term is residuals, arising from the possible correlation between population shifts and intrasectoral changes in poverty.

Collecting all terms for r, the level of contribution of rural areas to the total change is

$$(P'_{\alpha,r}-P_{\alpha,r})\,\omega + (\omega'-\omega)\,P_{\alpha,r} + (P'_{\alpha,r}-P_{\alpha,r})\,(\omega'-\omega) \;=\; c(P'_{\alpha}-P_{\alpha}), \qquad (4)$$

where c is the proportionate contribution of r to the total change in P_α.

By definition, $P'_\alpha - P_\alpha = 0$ at a given date t. If at this date fixed physical rural areas are different from reported rural areas owing to reclassification, $P'_{\alpha,r}$ would be different from $P_{\alpha,r}$, the measured poverty index based on shifting rural areas. In this context, ω' is interpreted as the population share based on rural population distributions for fixed physical rural areas. It can then be shown that rural poverty at date t for fixed physical rural areas, $P'_{\alpha,r}$, is simply

$$P'_{\alpha,r} \;=\; (\omega/\omega')\,P_{\alpha,r}. \qquad (5)$$

Similarly, urban poverty for fixed physical urban areas is

$$P'_{\alpha,u} \;=\; [(1-\omega)/(1-\omega')]\,P_{\alpha,u} \qquad (6)$$

The above procedure is only an approximation. It would be useful to estimate the $P'_{\alpha,i}$ directly from distribution of household incomes (or expenditures) for the population of fixed physical rural areas.

Robustness of Poverty Comparisons

Suppose the poverty line is found in the interval $[z_0, z_1]$; all poverty lines in this interval are potential candidates. Let F_i and F_j denote the cumulative distribution of income or standard of living for states i and j, respectively. Poverty is higher in state i than in state j for all poverty lines in the interval $[z_0, z_1]$ and all additively separable poverty measures, including the P_α class of measures, if and only if the *first-order dominance* condition

$$F_i(z) - F_j(z) \geq 0 \qquad (7)$$

holds for $z \leq z_1$, and with a strict inequality for at least one such value of z (Atkinson 1987, Condition IA). If this condition does not hold, then some poverty lines or some poverty measures rank the two states differently to others. That is, given the uncertainty about precise poverty lines and poverty measures, the poverty ordering of the two states is ambiguous.

If the poverty ordering is ambiguous, one can further restrict the range of poverty lines, or one can impose more structure on the poverty measures. One appealing restriction to impose is the Sen (1976) *weak transfer* axiom. This holds for the P_α poverty measures as long as $\alpha > 1$. Then a necessary and sufficient condition for poverty to be higher in state i than in state j for all poverty lines in $[z_0, z_1]$ and all strictly convex and separable poverty measures is for the following *second-order* condition to hold for all $z \leq z_1$ (Atkinson 1987, Condition IIA):

$$\int_0^z (F_i(y) - F_j(y))\,dy \geq 0. \qquad (8)$$

If poverty orderings remain ambiguous, higher-order dominance conditions may be useful. This requires further restricting the precise structure of poverty measures.

References

Adelman, Irma, "Beyond export-led growth," World Development, Vol. 12 (1984), pp. 937-949.

Atkinson, A.B., "On the measurement of poverty," Econometrica, Vol. 55 (1987), pp. 749-764.

Atkinson, Anthony B., Comparing poverty rates internationally: lessons from recent studies in developed countries," World Bank Economic Review, Vol. 5 (1991), pp. 3-21.

Balisacan, Arsenio M., "Rural poverty in the Philippines: incidence, issues and policies," Paper presented at the Finalization Symposium on Priority Issues and Policy Measures to Alleviate Rural Poverty (Manila: Asian Development Bank, November 14-16, 1991).

Balisacan, Arsenio M., "Urban poverty in the Philippines: nature, causes and policy measures," Paper presented at the Finalization Meeting on Critical Issues and Policy Measures to Address Urban Poverty (Manila: Asian Development Bank, March 22-24, 1993a).

Balisacan, Arsenio M., "Agricultural growth, landlessness, off-farm employment, and rural poverty in the Philippines," Economic Development and Cultural Change, Vol. 41 (1993b), pp. 533-562.

Bautista, Romeo M., "Development strategies, industrial policies, and agricultural incentives in Asia," in Romeo M. Bautista and Alberto Valdés (eds.), The Bias Against Agriculture: Trade and Macroeconomic Policies in Developing countries (San Francisco, California: ICS Press, 1993).

Bautista, Romeo, Impediments to Trade Liberalization in the Philippines, Thames Essay No. 54 (London: Trade Policy Research Centre, 1989).

Chenery, Hollis B. and M. Syrquin, Patterns of Development, 1950-1970 (London: Oxford University Press, 1975).

David, Cristina C., "The Philippines," in Anne Booth, Cristina C. David et al., Food Trade and Food Security in ASEAN and Australia (Kuala Lumpur and Canberra: ASEAN-Australia Joint Research Project, 1986).

de Dios, Emmanuel (ed.), An Analysis of the Philippine Economic Crisis: A Workshop Report (Quezon City: University of the Philippines Press, 1984).

ILO [International Labour Organization], Sharing in Development: A Programme of Employment, Equity and Growth in the Philippines (Geneva: ILO, 1974).

Foster, James E., Joel Greer, and Erik Thorbecke, "A class of decomposable poverty measures," Econometrica, Vol. 52 (1984), pp. 761-66.

Hayami, Yujiro, Agnes Quisumbing, and Lourdes Adriano, Toward an Alternative Land Reform Paradigm: A Philippine Perspective (Quezon City: Ateneo de Manila University Press, 1990).

Jazairy, Idriss, Mohiuddin Alamgir, and Theresa Panuccio, The State of Rural Poverty: An Inquiry into Its Causes and Consequences (New York: New York University Press, 1992).

Kakwani, Nanak, "Testing for significance of poverty differences, with application to Côte D'Ivoire," Living Standards Measurement Study Working Paper 62 (Washington, D.C.: World Bank, 1990).

Krugman, Paul R., James Alm, Susan M. Collins, and Eli M. Remolona, Transforming the Philippine Economy (Makati, Philippines: NEDA/UNDP, 1992).

Lal, Deepak, "Stolper-Samuelson-Rybczynski in the Pacific: real wages and real exchange rates in the Philippines, 1956-1978," Journal of Development Economics, Vol. 21 (1986), pp. 181-204.

Mellor, John W., "Agriculture on the road to industrialization," in John P. Lewis and Valeriana Kallab (eds.), Development Strategies Reconsidered (Washington, D.C.: Overseas Development Council, 1986).

Nijkamp, Peter (1993), "Urban environmental quality improvement in developing countries: socio-economic possibilities and limits," Paper presented at the Finalization Meeting on Critical Issues and Policy Measures to Address Urban Poverty (Manila: Asian Development Bank, March 22-24, 1993).

Orshansky, Mollie, "Counting the poor: another look at the poverty profile," Social Security Bulletin, Vol. 28 (1965), pp. 3-29.

Oshima, Harry T., "Employment generation: the long-term solution to poverty," Asian Development Review, Vol. 8 (1990), pp. 44-70.

Oshima, Harry T., Elizabeth de Borja, and Wilhelmina T. Paz, "Rising national income per worker and falling real wages in the Philippines in the 1970s," Philippine Review of Economics and Business, Vol. 23 (1986), pp. 151-90.

Papanek, Gustav F., "Growth, poverty, and real wages in labor abundant countries," Background paper for the World Bank's *World Development Report 1990* (Washington, D.C.: World Bank, 1989).

Pernia, Ernesto M., "Aspects of urbanization and the environment in Southeast Asia," Asian Development Review, Vol. 9 (1991), pp. 113-136.

Power, John H. and Gerardo P. Sicat, The Philippines: Industrialization and Trade Policies (London: Oxford University Press, 1971).

Quibria, M.G. and T.N. Srinivasan, "Rural poverty in Asia: priority issues and policy options" (Manila: Asian Development Bank, 1992).

Ranis, Gustav and Frances Stewart, "Rural nonagricultural activities in development: theory and application," Journal of Development Economics, Vol. 40 (1993), pp. 75-101.

Ravallion, Martin and Monika Huppi, "Measuring changes in poverty: a methodological case study of Indonesia during an adjustment period," World Bank Economic Review, Vol. 5 (1991), pp. 57-82.

Ravallion, Martin and Dominique van de Walle, "The impact on poverty of food pricing reforms: a welfare analysis for Indonesia," Journal of Policy Modelling, Vol. 13 (1991), pp. 281-299.

Ravallion, Martin, Gaurav Datt, and Dominique van de Walle, "Quantifying absolute poverty in the developing world," Review of Income and Wealth, Series 37 (1991), pp. 345-361.

Sen, Amartya, "Poverty: an ordinal approach to measurement," Econometrica, Vol. 22 (1976), pp. 219-231.

Syrquin, Moshe, "Patterns of structural change," in Hollis Chenery and T.N. Srinivasan (eds.), Handbook of Development Economics, Vol. I (Amsterdam: North Holland, 1988).

Thorbecke, Erik and David Berrian, "Budgetary rules to minimize societal poverty in a general equilibrium context," Journal of Development Economics, Vol. 39 (1992), pp. 189-205.

Timmer, C. Peter, "The agricultural transformation," in Hollis Chenery and T.N. Srinivasan (eds.), Handbook of Development Economics, Vol. I (Amsterdam: North Holland, 1988).

World Bank, The Philippines: Priorities and Prospects for Development (Washington, D.C.: World Bank, 1976).

Table 1

Rural Areas and Urbanization

	1960	1970	1980	1990
1. Total Population (in million)	27.09	36.68	48.10	60.69
% Change per year	-	3.01	2.71	2.33
2. Proportion Which is Rural				
Census Report	70.20	68.17	62.49	51.16
Fixed Rural Areas a/	68.55	68.17	66.35	64.16
3. Proportion Which Is Urban				
Census Report	29.80	31.83	37.51	48.84
Fixed Rural Areas	31.45	31.83	33.65	35.84
4. Rural Population Growth				
Census Report	-	2.74	1.84	0.32
Fixed Rural Areas	-	2.98	2.44	1.99
5. Tempo of Urbanization b/				
Census Report	-	0.95	2.51	4.64
Fixed Rural Areas	-	0.80	0.83	0.97

a/ Based on 1970 urban-rural classification of villages.
b/ Urban-rural growth difference.

Source: National Statistics Office,
Integrated Census of the Population, various years.

Table 2

Rural Poverty, FIES and Fixed Physical Areas, 1961-91
(in percent, except for t-ratios) a/

	1961	1965	1971	1985	1988	1991
FIES Rural Areas b/						
Population Share	64.50	68.70	69.60	61.40	62.10	50.40
Head Count	64.06	55.23 (-6.50)	57.31 (1.69)	59.43 (2.75)	50.19 (-12.46)	52.40 (2.48)
Poverty Gap	30.42	26.18 (-5.08)	27.88 (1.20)	23.52 (-8.05)	18.58 (-13.31)	19.00 (1.00)
FGT (a=2)	18.05	16.08 (-2.97)	16.35 (0.46)	12.25 (-12.33)	9.05 (-12.53)	9.03 (-0.07)
Fixed Physical Areas c/						
Population Share	68.51	68.36	67.93	65.30	64.60	64.20
Head Count	60.33	55.54 (-3.50)	58.66 (2.54)	55.94 (-3.51)	48.27 (-10.29)	41.13 (-8.07)
Poverty Gap	28.65	26.33 (-2.78)	27.72 (1.86)	22.14 (-12.64)	17.87 (-11.59)	14.91 (-7.29)
FGT (a=2)	17.00	16.17 (-1.26)	16.74 (0.96)	11.53 (-15.70)	8.70 (-11.25)	7.09 (-6.16)

a/ Figures in parentheses are t-ratios for poverty difference between the year indicated and the preceding year. The test is based on Kakwani's (1990) methodology. Critical t-value at 5% significance level is 1.96. At 1% level, t-value is 2.58.

b/ Estimated directly from published Family Income and Expenditures Survey (FIES) data.

c/ See text for the calculation.

Table 3

Rural Poverty, LPS Data, 1977-83
(in percent, except for t-ratios)

	Head Count	Poverty Gap	FGT (a=2)
1977	56.17	28.08	14.04
1978	55.67	28.39	14.53
	(-0.65)	(0.80)	(2.51)
1980	48.58	24.29	12.14
	(-10.90)	(-12.40)	(-14.23)
1981	49.41	24.70	12.35
	(1.62)	(1.68)	(1.64)
1982	57.08	28.54	14.27
	(15.08)	(15.10)	(15.09)
1983	60.63	30.32	15.16
	(7.06)	(7.08)	(7.08)

Notes: 1. No data available for 1979.
2. Figures in parentheses are t-ratios for poverty differences between the year indicated and the preceding year. The test is based on Kakwani's (1990) methodology. Critical t-value at 5% significance level is 1.96.

Source: National Statistics Office,
Integrated Survey of Households Bulletin, various years.

Table 4

Agricultural Growth in Developing Monsoon Asia and Middle-Income Developing Countries

Country	1990 Per Capita GDP (US $)	Share of Agriculture in GDP (%)		Annual Growth Rate (%)			
				GDP		Agriculture	
		1965	1990	1965-80	1980-90	1965-80	1980-90
Malaysia	2,369	28	21.1 a/	7.3	5.2	4.5 b/	3.8
Thailand	1,437	32	17.0	7.2	7.6	4.6	4.1
Indonesia	602	51	22.0	8.0	5.5	4.3	3.2
Philippines	713	26	22.0	5.9	0.9	4.6	1.0
Developing Monsoon Asia	1,225	38	27.6	5.4	5.6	2.3	2.9
Middle-Income Developing Countries	2,241	20	12.0	6.1	1.7	3.6	1.8

a/ For 1988
b/ For 1972-1980

Sources: Asian Development Bank, Key Indicators of Developing Asian Pacific Countries, 1990 and 1991.
World Bank, World Development Report, 1990, 1992.

Table 5

Average Annual Growth Rates of Value Added in Agriculture by Sector, 1965-90 a/

	1965-80	1980-90	1965-90
All agricultural crops	6.5 (92.07)	1.6 (48.48)	4.4 (79.22)
Rice	3.7 (16.27)	2.8 (16.14)	3.3 (16.55)
Corn	6.2 (8.73)	3.7 (11.24)	4.8 (8.26)
Coconut	3.6 (5.47)	3.1 (8.17)	2.8 (4.82)
Sugarcane	4.2 (6.93)	-6.9 (-13.25)	-0.4 (-0.66)
Banana	13.6 (11.15)	1.9 (3.05)	8.8 (8.36)
Other crops	11.4 (43.58)	1.9 (23.84)	7.7 (41.90)
Poultry and Livestock	2.8 (7.93)	5.8 (51.60)	4.2 (20.78)

a/ Growth rates are based on three-year moving average trends. Agriculture Sector includes agricultural crops and poultry and livestock. Figures in parentheses are contributions of the indicated sector to total agricultural growth.

Sources: National Economic and Development Authority, Philippine Statistical Yearbook, various issues.

National Statistical Coordination Board.

Table 6

Sectoral Composition of Gross Domestic Product and Employment, 1955-1990 a/

	1955	1965	1975	1985	1990
Gross Domestic Product					
Agriculture	33.22	30.22	26.92	28.64	26.67
Industry	25.66	28.09	33.79	32.61	33.48
(Manufacturing) b/	(18.63)	(21.21)	(24.99)	(24.21)	(24.66)
Services	41.12	41.69	39.29	38.75	39.85
Employment					
Agriculture	60.04	57.57	54.28	49.52	45.21
Industry	15.67	14.76	14.74	14.11	16.61
(Manufacturing) b/	(12.37)	(11.31)	(10.97)	(9.59)	(10.23)
Services	24.29	27.67	30.98	36.37	38.18

a/ Three-year averages, centered around the year shown.
b/ Manufacturing is a subsector of Industry.

Sources: National Economic and Development Authority,
Philippine Statistical Yearbook, various issues.

National Statistical Coordination Board.

Table 7

Labor Force Participation Rate and Average Annual Growth Rate of GDP, Labor Force and Employment

	1971-75	1976-80	1981-85	1986-90	1956-90
Labor Force Participation Rate a/	49.94	60.78	62.82	64.86	57.66
Growth Rate					
GDP	6.19	5.64	-1.88	4.4	4.4
Working-Age Population	2.86	3.86	3.81	2.58	2.64
Labor Force	3.43	4.08	4.29	2.49	3.2
Employment	3.86	3.98	3.75	2.58	3.19
Agriculture	5.25	3.02	2.54	0.35	2.33
Industry	2.7	3.26	3.62	5.1	3.19
(Manufacturing)	3.48	1.68	2.27	3.8	2.61
Services	2.18	5.88	5.52	3.59	4.71

Note: For the period 1971-75, the reference period is past week and "working age" refers to 10 years and above; for the period 1976-1990, the reference period is past quarter and "working-age" refers to 15 years and above.

a/ Labor force as percent of working-age population.

Sources: National Economic and Development Authority, Philippine Statistical Yearbook, various issues.

National Statistics Office, Integrated Survey of Households Bulletin, various issues.

Figure 1
Real Value Added Per Worker