INCOME INEQUALITY IN THE PHILIPPINES, 1961–91

Jonna P. ESTUDILLO

I. INTRODUCTION

THE inverted U-curve of Kuznets (1955) predicts that income inequality increases in the early stage of development and then falls after the peak is reached. This seems to be the pattern observed in most of the Asian countries especially those in East Asia (Oshima 1993). The Philippines seems to be an exception. Inequality remains high in the Philippines and the trends appear to be stable.

In this paper the trends and factors affecting household income inequality in the Philippines have been analyzed over a period of three decades from 1961 to 1991. We investigated four factors typically cited as causing changes in household income inequality: namely, (1) the rising proportion of urban households, (2) age distribution changes, (3) increasing number of highly educated households, and (4) wage rate inequality.

(1) *Rising proportion of urban households*. Income distribution of the total population can be viewed simply as a combination of income distribution of rural and urban populations. The distribution of income within the urban population is generally somewhat wider than that of the rural population due to the heterogeneity of the urban group. As the economy develops and its industrial structure shifts away from agriculture towards industry and services, urban population rises. The increasing proportion of urban population results in an increasing share of the more unequal of the two component distributions.

(2) *Age distribution changes*. With greater longevity, there will be a growing number of elderly people. Since the income of old people is typically lower than that of the young, an increasing number of elderly people should lead to a rise in the number of households with low income.

(3) *Increasing number of the highly educated*. With increasing demand for skills and higher education, households tend to invest more in human resources.

The distributional impact of the rise in the number of the highly educated is multi-faceted. The rise may increase the overall inequality as it induces an increase in the income differentials between those who have a higher education and those who do not. On the other hand, the rise may decrease the overall inequality for the inequalities associated with the educated groups tend to be lower. An increase in the number of those who have a higher schooling results in an increase in the weight attached to the group with lower inequalities.

(4)   *Wage rate inequality*. Earnings or wage income which can be defined as the returns to labor, accounts for the largest proportion of total household income and is a major contributor to total household income inequality. Wage income is a product of wage rates and hours of work. Hence, the inequality associated with wage income may arise either from wage rate inequality or hours-of-work inequality or both.

As factors (1), (2), and (3) represent "income recipient" influences, their impact was examined using population subgroup decompositions. Household population was divided into (i) rural and urban, (ii) age groups, and (iii) education groups corresponding, respectively, to factors (1), (2), and (3). The overall inequality was then decomposed into "within-group" and "between-group" inequality components. The subdividing factor can be considered to play a major role if the between-group component comprises at least one-fifth of the overall inequality.

Factor (4) is an "income source" influence. Its effect is assessed by decomposing the total income inequality into inequality contributions of various income sources. Since the focus was placed on wage income inequality, we further divided wage income inequality into wage rate inequality and hours-of-work inequality.

This paper includes five remaining sections. Section II gives an overview of the trends in household income inequality. The data set is described in Section III while the measures selected to evaluate inequality are outlined in Section IV. The results of the decomposition procedure are presented in Section V. Finally, Section VI offers a summary and implication.

II.   INEQUALITY TRENDS: AN OVERVIEW

In Table I we present the distribution of income shares among quintile groups of households and the Gini coefficients of income inequality. For almost three decades, between 1961 and 1991, household income inequality has been relatively high and fairly steady except for a secular decline in the mid-1980s;[1] the Gini coef-

---

[1] These macro trends are strongly supported by the micro-level trends. In a case study of a rice-producing village in Laguna Province, Hayami et al. (1989) similarly did not detect any appreciable change in the size distribution of income. The Gini coefficient of income inequality in the village remained almost constant from 0.467 in 1974 and 0.478 in 1987.

TABLE I

INCOME SHARES BY QUINTILES OF HOUSEHOLDS, THE PHILIPPINES, 1961–91

Quintile	1961	1965	1971	1985	1988	1991
Lowest 20%	5	4	4	6	6	5
2d lowest 20%	8	8	8	8	10	8
3d lowest 20%	11	12	13	14	13	13
4th lowest 20%	18	21	21	20	20	20
Highest 20%	58	55	54	52	51	54
Total	100	100	100	100	100	100
Gini coefficient	0.503	0.505	0.490	0.452	0.447	0.477

Source: Author's computations from the *FIES* (various years).

ficients were 0.503 in 1961, 0.505 in 1965, 0.490 in 1971, 0.452 in 1985, 0.447 in 1988, and 0.477 in 1991.[2] The decrease in income inequality in 1985 was due to the rise in the income shares of the two lowest and middle quintiles at the expense of the two highest quintiles: the combined shares of the two lowest quintiles rose from 12 per cent in 1971 to 14 per cent in 1985 while the share of the middle quintile increased from 13 per cent in 1971 to 14 per cent in 1985.

All the inequality measures reported in this study refer to household income distribution. We also computed the inequality associated with the per capita household income (total household income divided by the number of household members) in 1985 and 1991, when the data were available in ungrouped format. Per capita household income is more equitably distributed than the household income. The Gini coefficient of per capita household income was 0.388 in 1985 and 0.418 in 1991 compared to 0.452 in 1985 and 0.477 in 1991 for household income.

III. THE DATA SET

The major statistical base is the *Family Income and Expenditures Survey* (hereafter *FIES*) of the Philippine government National Statistics Office. The surveys were conducted fairly regularly at approximately five-year intervals. The data are available for 1961, 1965, 1971, 1975, 1979, 1985, 1988, and 1991; the 1991 data were

[2] We computed the Lorenz-curve coordinates for each 20 percentage points of the population for the survey years 1961, 1965, 1971, 1985, 1988, and 1991. The Lorenz curve for 1985 overlaps with that of the 1988, hence precluding us from making statements about the relative inequality of income distribution for those two years. Moreover, the Lorenz curves for 1985 and 1988 were positioned closer to the diagonal (the line of perfect equality) and lay inside the intersecting Lorenz curves for 1961, 1965, 1971, and 1991, implying that the income distribution in the mid-1980s was more favorable.

the most recently available when the study began.[3] The surveys conducted in 1975 and 1979 were not published because of serious under-reporting of income. Excluding 1975 and 1979, however, the *FIES* can be considered to be a fairly good series, in fact, the only one available from where to draw income distribution trends at the national level.[4]

In this paper, we used the *FIES*, 1965, 1971, 1985, and 1991 editions. The 1961 and 1988 editions of the *FIES* were disregarded because there had not been any significant change in the structure of household income from 1961 to 1965 and from 1985 to 1988. The data for 1965 and 1971 are presented in a tabular form while those for 1985 and 1991 are disaggregated and available on tape.

We tested the reliability of the *FIES* income data by checking them against the personal income of the national accounts. The personal income of the national accounts may be assumed to be more reliable because the data were built from a number of censuses and surveys. In general, income from the *FIES* consistently covers more than 60 per cent of the personal income of the national accounts. This proportion increased to near 70 per cent in the mid-1980s and to 80 per cent in 1991[5] (Table II).

TABLE II

COMPARISON OF THE *FIES* AND *NIA* PERSONAL INCOME, THE PHILIPPINES, 1961–91

Year	*FIES* Aggregated Household Income (Million Pesos) (A)	*NIA* Personal Income (Million Pesos) (B)	Ratio (A)/(B) (C)
1961	7,985	12,680	0.630
1965	13,025	19,387	0.672
1971	23,712	39,276	0.604
1985	305,775	466,644	0.655
1988	425,650	621,453	0.685
1991	780,632	1,028,028	0.759

Sources: National Economic and Development Authority, *National Income Accounts* (*NIA*) (Manila), various issues; *FIES* (various years).

[3] The number of samples were large. The number of household respondents were 6,977 in 1961, 4,747 in 1965, 11,659 in 1971, 16,971 in 1985, 18,922 in 1988, and 24,789 in 1991.

[4] Fields (1994) sets three minimal standards to evaluate data for validity as follows: (1) the data base must be an actual household survey or census, (2) data must be national in coverage, and (3) for comparison across time, the income concept (whether income or consumption) and recipient unit (whether household or individual) must be constant. All these criteria are satisfied by the Philippine *FIES*.

[5] There are slight conceptual differences between the personal income from the household surveys and the household accounts. The latter includes income from nonprofit institutions such as churches, private schools, clubs, associations, etc. The income of such institutions accounts for a very minor proportion of the personal income from the household accounts.

There are a number of reasons for the undercoverage of income reported in the *FIES*. Mangahas and Barros (1980) suggest that one reason might be the failure of the *FIES* to draw a meaningful number of survey respondents from the residential enclaves of the rich. Another reason might be the serious under-reporting of property income and entrepreneurial income of the upper-income class and the underestimation of noncash income of the lower-income group.

The undercoverage of personal income in the *FIES* might lead to an underestimation of household income inequality particularly because property income substantially reflects the income gap between the upper- and lower-income classes.

Household is the basic recipient unit. Household includes both families and unrelated individuals. A family is a group of persons related by blood, marriage, or adoption, living together and sharing arrangements for living. Unrelated individuals are a group of non-related individuals living together and pooling resources for the purpose of meals and lodging. Unrelated individuals include boarders, guests, employees living with employer, and the like.

Total household income is the sum of five major components:[6]

(1)   Wages: These are labor incomes from either agricultural or nonagricultural activities. Agricultural activities include farming, livestock and poultry raising, fisheries, forestry, and hunting.

(2)   Entrepreneurial incomes: These are incomes derived from self-employment or operation of family enterprises in agricultural and nonagricultural ventures. Nonagricultural entrepreneurial incomes include incomes from wholesale and retail trading, manufacturing, transportation, communication and storage, mining and quarrying, construction, recreation, and personal services.

(3)   Remittances and pensions: These are non-work sources of income which include remittances from overseas and domestic sources, pensions and retirement benefits, and gifts.

(4)   Property income: This is another non-work income source which includes rental income from nonagricultural lands, buildings, rooms and owner-occupied dwelling units, interests and dividends received from investments, and shares of crops, livestock, and poultry raised by others.

(5)   Other income: This group refers to income sources not classified elsewhere, including the production of articles for own use, winnings from gamblings, sweepstakes, lotteries, and others.

One major worrisome aspect of the *FIES* is the ever changing definition of the term "urban areas." In the 1961 *FIES*, urban areas included all places within the boundaries of chartered cities, provincial capitals, Metropolitan Manila (Manila and adjacent cities and municipalities), and the *poblaciones* (town centers) of municipalities other than provincial capitals. There was no reference to population

---

[6] All incomes are gross of taxes.

density. In the 1965 *FIES*, population density was the major criterion of an urban area and in the 1971 *FIES*, in addition to population density, the number of public infrastructure facilities such as public buildings, streets, and hospitals were also taken into account. The 1985, 1988, and 1991 surveys followed the definition used in the 1971 survey.

These changes in the definition of the urban areas may lead to a systematic downward bias in the estimates of urban inequalities. Since rural areas have lower levels of inequalities, the reclassification of rural to urban areas will tend to decrease urban inequalities, which might appear as an improvement, although, obviously, the decline in urban inequalities may be associated only with the change in definition.

IV.   MEASURES OF INEQUALITY

One decision to make in the study of income distribution is the choice of inequality measure. A suitable inequality index satisfies four properties: (1) the Pigou-Dalton condition, (2) mean independence, (3) population-size independence, and (4) decomposability.

The Pigou-Dalton condition holds if an income transfer from a wealthier to a poorer person (which does not reverse the relative income ranks) decreases the value of the index. Mean independence holds if, when all incomes are multiplied by a constant factor k, the value of the inequality index does not change. Population-size independence holds if, when the number of people at each income level is changed by the same proportion, the value of the index remains the same. Decomposability enables to partition inequality either into subpopulation or sources. An index is additively decomposable if the total inequality can be expressed as a sum of "within-group" and "between-group" inequalities. An inequality measure can be regarded as source-decomposable if the total income inequality can be broken down into weighted sum of inequality contributions of various income components.

For group decomposition, we selected the Theil index T, the Theil second measure L, the variance of log income (V), and the Gini coefficient (G), as our inequality indices. The first three measures satisfy all the suitable properties of a distribution index while the Gini coefficient, although it satisfies the first three properties and is decomposable by income source, may not be written as the sum of between- and within-group inequality components.[7] Despite this limitation, we used the Gini

---

[7] Lambert and Aronson (1993) using a fine geometric approach argued that the Gini coefficient can be rehabilitated, to make it additively decomposable, by adding a residual term to the between- and within-group components. The residual, which represents the frequency and magnitude of the overlaps between income in different subgroups, is equal to the difference between the Gini coefficient and the sum of the between- and within-effects.

coefficient because this measure is sensitive to changes in the middle-income range. Theil L and V indices are sensitive to changes in the lower-income levels while Theil T is sensitive to changes in the upper-income levels.

For the analysis of the decomposition of total income inequality by income source, we selected the Gini coefficient and the squared coefficient of variation. These two satisfy the four axioms and are the more convenient indices for use.

A.   *Group Decomposition*

Let us define the following terms:

y_i = income of the ith household,

n = number of households in the population,

m = arithmetic mean income of the population,

m^* = geometric mean income of the population,

n_j = number of households belonging to the jth group,

m_j = arithmetic mean income of the jth group,

m_j^* = geometric mean income of the jth group, and

F_i, F_{i-1} = cumulative income shares up to the ith and ith minus one household, respectively.

According to Anand (1983), the formulas for T, L, V, and G, respectively, are

$$T = \frac{1}{n}\Sigma_i \frac{y_i}{m} \log \frac{y_i}{m}, \tag{1}$$

$$L = \frac{1}{n}\Sigma_i \log \frac{m}{y_i}, \tag{2}$$

$$V = \Sigma_i (\log m^* - \log y_i)^2 / n, \tag{3}$$

$$G = 1 - \Sigma_i \frac{1}{n} (F_i + F_{i-1}), \tag{4}$$

and the decomposition equations for T, L, and V, when households are segregated into mutually exclusive and exhaustive groups, are

$$T = \Sigma_j \left(\frac{n_j}{n} \frac{m_j}{m}\right) T_j + \Sigma_j \left(\frac{n_j}{n} \frac{m_j}{m}\right) \log \left(\frac{m_j}{m}\right), \tag{5}$$

$$L = \Sigma_j \left(\frac{n_j}{n}\right) L_j + \Sigma_j \left(\frac{n_j}{n}\right) \log \left(\frac{m}{m_j}\right), \tag{6}$$

$$V = \Sigma_j \left(\frac{n_j}{n}\right) V_j + \Sigma_j \frac{n_j}{n} (\log m_j^* - \log m^*)^2, \tag{7}$$

where T_j, L_j, and V_j are, respectively, the Theil indices (T and L) and the variance of log income corresponding to the jth household group. Now, if we define,

$v_j = \dfrac{n_j}{n}$, the population share of the jth group,

$k_j = \dfrac{m_j}{m}$, arithmetic income share of the jth group, and

$k_j* = \dfrac{m_j*}{m*}$, geometric income share of the jth group,

we can rewrite equations (5), (6), and (7), respectively, as

$$T = \sum_j v_j k_j T_j + \sum_j v_j k_j \log k_j, \tag{8}$$
$$L = \sum_j v_j L_j - \sum_j v_j \log k_j, \tag{9}$$
$$V = \sum_j v_j V_j + \sum_j v_j \log k_j*^2. \tag{10}$$

The first term of equations (8), (9), and (10) (the within-group component) is a simple weighted sum of the subgroup inequality values. The second term is the between-group component, reflecting the inequality contribution due solely to differences in the subgroup means. Notice that while L and V use population shares as weights, T uses income shares. L and V are considered to be strictly decomposable indices because their between-group components measure the exact reduction in overall inequality when group means are equalized while keeping the within-group component constant. The T index is weakly decomposable because when income shares are used as weights, any changes in the group mean incomes affect the within-group component as well, so that the reduction in the overall inequality, when group means are equalized to the overall mean, is not strictly equal to the between-group component.

B. *Decomposition by Income Source*

To decompose the Gini coefficient, the first step is to divide the total household income into mutually exclusive and exhaustive income sources. Total income is then arranged from lowest to highest and a rank is given to each household. The lowest rank goes to the household with the lowest income.

The Gini coefficient of the total income, G, according to Pyatt et al. (1980) and Fei et al. (1978) can be written as,

$$G = \frac{2}{nu} \text{Cov}(y, \ r), \tag{11}$$

where n is the number of households, u is the mean income from all sources, y refers to the series of total income, and r refers to the series of corresponding ranks.

The Gini coefficient of the ith income source, G_i, is

$$G_i = \frac{2}{nu_i} \text{Cov}(y_i, \ r_i), \tag{12}$$

where u_i refers to the mean income of the ith income source, y_i is the series of incomes from the ith source, and r_i refers to the corresponding ranks.

G and G_i can be combined to form

$$G = \sum_i \frac{u_i}{u} R_i G_i, \tag{13}$$

where R_i is the rank correlation ratio which can be expressed as,

$$R_i = \frac{\text{Cov}(y_i, \ r)}{\text{Cov}(y_i, \ r_i)}$$

$$= \frac{\text{Covariance between source income amount and total income rank}}{\text{Covariance between source income amount and source income rank}}. \tag{14}$$

Equation (13) shows that G is a product of three terms: (1) the share of the ith income source in the total income (u_i/u), (2) correlation of the ith source income with the rank of total income (R_i), and (3) Gini coefficient of the ith income source (G_i).[8]

To express the contribution of the ith income source as a fraction of total inequality, equation (13) can be manipulated to form

$$1 = \sum w_i g_i, \tag{15}$$

where $w_i = u_i/u$ and $g_i = R_i(G_i/G)$ is the relative concentration coefficient. If $g_i > 1$, the ith income source is inequality-increasing.

According to Shorrocks (1983), the decomposition of the squared coefficient of variation can be written as,

$$1 = \sum_i w_i c_i, \tag{16}$$

where $c_i = \rho_i(\delta_i/u_i)/(\delta/u)$ is the relative concentration coefficient of the ith income component, ρ_i is the correlation coefficient between the ith source and total income, and δ_i and δ are the standard deviations of the ith income source and total income, respectively. If $c_i > 1$, the ith income source is inequality-increasing.

V. DECOMPOSITION RESULTS

This section presents the results of the decomposition of overall inequality. We begin with the decomposition of inequality by population grouping, followed by the decomposition of total income inequality into inequality contribution of various income components.

A. *Population Share and Income Gap*

Urban share of population rose dramatically from 30 per cent in 1965 and 1971 to 38 per cent in 1985 to 50 per cent in 1991 (Table III). Urban households had a

---

[8] The term $R_i G_i$ in equation (13) represents the "pseudo-Gini" coefficient. It is not the conventional Gini coefficient of the ith income source because the weights attached to ith income source y_i correspond to the ranking based on the distribution of total income y rather than the ranking based on the distribution of y_i.

TABLE III

POPULATION SHARE AND RELATIVE INCOME OF HOUSEHOLD GROUPS, THE PHILIPPINES, 1965–91

Household Groups	Population Share				Relative Income			
	1965	1971	1985	1991	1965	1971	1985	1991
Sector:					(Rural households = 1.00)			
Urban	0.30	0.30	0.38	0.50	2.52	2.07	2.11	2.17
Rural	0.70	0.70	0.62	0.50	1.00	1.00	1.00	1.00
All	1.00	1.00	1.00	1.00				
Age:[a]					(All households = 1.00)			
Less 25	0.04	0.05	0.02	0.02	0.61	0.60	0.62	0.68
25–34	0.25	0.24	0.20	0.20	0.81	0.86	0.80	0.84
35–44	0.27	0.27	0.27	0.27	0.96	1.00	0.98	1.00
45–54	0.23	0.21	0.23	0.22	1.18	1.15	1.13	1.10
55–64	0.13	0.15	0.16	0.16	1.27	1.20	1.17	1.14
65 and over	0.08	0.08	0.12	0.13	0.98	0.98	1.00	0.95
All	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Education:					(All households = 1.00)			
Col. grad.		0.07	0.08	0.08		2.75	2.65	2.72
Col. undergrad.		0.05	0.07	0.09		1.64	1.51	1.50
Secondary educ. grad.		0.09	0.14	0.17		1.38	1.17	1.11
Secondary educ. undergrad.		0.10	0.10	0.11		0.98	0.89	0.85
Primary educ. grad.		0.19	0.30	0.30		0.88	0.78	0.74
Primary educ. undergrad.		0.38	0.23	0.20		0.69	0.61	0.60
No education		0.12	0.08	0.05		0.59	0.57	0.48
All		1.00	1.00	1.00		1.00	1.00	1.00
Mean income (current peso / year):								
Rural					1,742	2,818	21,875	41,199
All					2,546	3,736	31,052	65,186

Source: Author's computations from the *FIES* (various years).
Note: Household groupings by education of head were not available in 1965.
[a] For the relative income, values less than unity indicate that the mean income of the group is lower than the average mean income of all households.

more than twofold income advantage over rural households. Urban-rural income gap, however, declined substantially from 2.52 in 1965 to 2.07 in 1971 and appears to have been rising steadily after 1971.

There was a decline in the population share of the two youngest groups of households (groups under 25 and those aged 25–34) and a rise in the share of the two oldest (groups aged 55–64 and aged 65 and over). The population share of the two youngest groups combined declined from 29 per cent in 1965 and 1971 to 22 per

cent in 1985 and 1991, while the combined share of the two oldest rose from approximately 22 per cent in 1965 and 1971 to 29 per cent in 1985 and 1991.

An inverted U-shaped relationship between the age of head and the mean annual household income was evident. Mean household income rose initially with the age of head, reached its peak when the head was between 55 and 64 years of age, then declined thereafter.

There was a twofold income gap between the lowest-income age group (the youngest group whose household head is less than 25 years old) and the highest (age of head of household is 55–64). Relative to the overall mean income, however, the income position of the group less than 25 years old improved while that of the group aged 55–64 worsened. The mean household income of the group less than 25 years old rose from about 60 per cent of the overall mean in 1965 and 1971 to 62 per cent in 1985 to 68 per cent in 1991. The ratio between the mean income of the group aged 55–64 and the overall mean declined from 1.27 in 1965 to 1.20 in 1971 to 1.17 in 1985 to 1.14 in 1991.

The population share of households headed by those who have completed or have acquired some college education combined rose (from 12 per cent in 1971 to 15 per cent in 1985 to 17 per cent in 1991) while the proportion of the households whose heads had no education declined (from 12 per cent in 1971 to 8 per cent in 1985 to 5 per cent in 1991).

There was a considerable difference between the mean income of the highest-income education group (college graduate) and the lowest (no-education). The income gap increased from 4.6 in 1971 to 4.7 in 1985 to 5.7 in 1991. Moreover, the income position of the no-education group remarkably worsened with its mean income as a ratio of the overall mean declining from 0.59 in 1971 to 0.57 in 1985 to 0.48 in 1991.

B. *Inequality within and between Groups*

The four measures of inequality altogether displayed higher values for urban households, once again confirming the "classic" observation that the degree of income inequality is greater among urban than among rural households (Table IV). To explain this, we analyzed the demographic composition and sector of employment of urban and rural household heads but did not detect any remarkable differences in the sex and age composition indicating that the demographic structure is not the major factor accounting for the high level of inequality in the urban areas. What appears to be more significant are differences in the employment structure. A large proportion of rural household heads was employed in agriculture (67 per cent in 1971 and 65 per cent in 1991) in contrast to urban heads of which a large percentage was employed in industries and trade (44 per cent in 1971 and 30 per cent in 1991) and in services (32 per cent in 1971 and 30 per cent in 1991). The income spread among urban households was wider because employees in major urban in-

TABLE IV

INEQUALITY DECOMPOSITION, THE PHILIPPINES, 1965–91

Household Group	Gini Coefficient				Theil T				Theil L				Variance of Log Income (V)			
	1965	1971	1985	1991	1965	1971	1985	1991	1965	1971	1985	1991	1965	1971	1985	1991
Sector:																
Urban	0.51	0.45	0.44	0.47	0.21	0.16	0.15	0.19	0.21	0.16	0.15	0.17	0.17	0.14	0.12	0.13
Rural	0.42	0.46	0.38	0.39	0.13	0.17	0.12	0.13	0.14	0.16	0.11	0.11	0.12	0.14	0.09	0.09
All	0.51	0.49	0.45	0.48	0.18	0.19	0.17	0.18	0.19	0.20	0.15	0.17	0.17	0.18	0.12	0.12
Within-group inequality					0.15	0.16	0.14	0.16	0.16	0.17	0.12	0.14	0.14	0.15	0.10	0.10
(%)					(85)	(86)	(82)	(89)	(83)	(83)	(80)	(83)	(80)	(81)	(85)	(85)
Between-group inequality					0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02
(%)					(15)	(14)	(18)	(11)	(17)	(17)	(20)	(17)	(20)	(19)	(15)	(15)
Age:																
Less 25	0.40	0.44	0.38	0.47	0.13	0.15	0.13	0.23	0.13	0.15	0.11	0.16	0.12	0.14	0.08	0.10
25–34	0.45	0.46	0.40	0.46	0.16	0.17	0.14	0.21	0.16	0.17	0.12	0.16	0.15	0.15	0.09	0.10
35–44	0.45	0.46	0.43	0.44	0.16	0.17	0.16	0.16	0.17	0.18	0.13	0.14	0.16	0.16	0.10	0.11
45–54	0.48	0.48	0.43	0.45	0.19	0.18	0.15	0.16	0.19	0.18	0.14	0.15	0.17	0.17	0.11	0.12
55–64	0.52	0.52	0.49	0.49	0.21	0.21	0.19	0.19	0.23	0.23	0.18	0.18	0.21	0.21	0.14	0.15
65 and over	0.52	0.57	0.52	0.53	0.22	0.26	0.22	0.23	0.23	0.28	0.21	0.21	0.20	0.25	0.16	0.16
All	0.51	0.49	0.45	0.48	0.18	0.19	0.17	0.18	0.19	0.20	0.15	0.17	0.17	0.18	0.12	0.12
Within-group inequality					0.17	0.18	0.16	0.17	0.18	0.19	0.14	0.16	0.16	0.17	0.12	0.12
(%)					(97)	(97)	(97)	(98)	(96)	(96)	(97)	(98)	(97)	(97)	(97)	(98)
Between-group inequality					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
(%)					(3)	(3)	(3)	(2)	(4)	(4)	(3)	(2)	(3)	(3)	(3)	(2)
Education:																
College grad.		0.35	0.40	0.41		0.09	0.13	0.14		0.10	0.13	0.14		0.10	0.11	0.12
College undergrad.		0.42	0.37	0.38		0.13	0.11	0.11		0.14	0.10	0.11		0.12	0.08	0.10
Sec. educ. grad.		0.40	0.38	0.39		0.13	0.11	0.12		0.12	0.10	0.11		0.11	0.08	0.09
Sec. educ. undergrad.		0.41	0.38	0.39		0.13	0.12	0.12		0.14	0.10	0.11		0.13	0.08	0.09
Prim. educ. grad.		0.47	0.38	0.40		0.18	0.12	0.13		0.17	0.10	0.11		0.15	0.08	0.09
Prim. educ. undergrad.		0.46	0.34	0.39		0.17	0.09	0.14		0.17	0.09	0.11		0.15	0.07	0.08

TABLE IV (Continued)

Household Group	Gini Coefficient				Theil *T*				Theil *L*				Variance of Log Income (*V*)			
	1965	1971	1985	1991	1965	1971	1985	1991	1965	1971	1985	1991	1965	1971	1985	1991
No education		0.48	0.42	0.39		0.18	0.18	0.13		0.19	0.14	0.11		0.17	0.10	0.08
All		0.49	0.45	0.48		0.19	0.17	0.18		0.20	0.15	0.17		0.18	0.12	0.12
Within-group inequality						0.14	0.12	0.13		0.16	0.10	0.11		0.14	0.08	0.08
(%)						(75)	(68)	(68)		(80)	(68)	(69)		(79)	(71)	(71)
Between-group inequality						0.05	0.05	0.06		0.04	0.05	0.06		0.04	0.04	0.04
(%)						(25)	(32)	(32)		(20)	(32)	(31)		(21)	(29)	(29)

Source: Author's computations from the *FIES* (various years).
Note: Household groupings by education of head were not available in 1965.

dustries generate the highest incomes (finance, insurance, real estate, and professional services) and also the lowest (retail trade and personal services). Urban industries offer a variety of occupations where wages vary considerably in contrast to industries in rural areas, where the jobs available are homogeneous and payment does not vary appreciably. Another contributing factor to the large urban income dispersion was the presence of a larger pool of unemployed household heads, 13 per cent in 1971 and 18 per cent in 1991, than among rural household heads, with only 7 per cent in 1971 and 10 per cent in 1991.[9]

From 1965 to 1971, there was a decline in urban, a rise in rural, and a constant aggregate inequality, implying that the opposite trends of urban and rural inequalities are offsetting and thus allow the overall inequality to remain at the same level. From 1971 to 1985 a general improvement in income distribution occurred simultaneously with a decrease in urban and rural inequalities. A reverse trend could be observed from 1985 to 1991 when the overall, urban, and rural inequalities rose.

Despite the twofold income advantage of urban households, the between-sector component accounted for less than 20 per cent of the national inequality. Thus, if we eliminate household income disparities between sectors, keeping the within-sector component at the same level, aggregate inequality declined by no more than 20 per cent.

There was a positive relationship between the age of the household head and inequality within age groups. All indices revealed the lowest degree of income inequality among households whose heads fell in the youngest age bracket and the highest inequality among those in the oldest.

Rising income inequalities from 1965 to 1971 were evident for all age groups except the group aged 45–54, whose inequality declined, and the group aged 55–64, whose income distribution remained fairly the same. From 1971 to 1985, the inequalities corresponding to all age groupings declined and in 1985 to 1991, all group inequalities rose.

The twofold income gap between the highest-income group (group aged 55–64) and the lowest (group less than 25 years old) persisted from 1965 to 1991. Hence, the between-group inequality did not change and accounted for less than 5 per cent of the aggregate inequality. The proportion of the between-group component declined slightly in 1991 because of the shift of the population towards older groups characterized by higher inequality values, which, ceteris paribus, reduced the between-age group (or augmented the within-age group) component.

There was a negative relationship between the level of schooling of the household head and the degree of income inequality. Income was more equally distributed (lower inequality values) among household heads with a higher level of edu-

---

[9] As a reference for the case of Thailand, Ikemoto (1992) provides an exhaustive analysis of the effects of increasing number of urban households on income inequality.

cation and less equally distributed (higher inequality values) among the household heads who never went to school. However, income inequality in the group with the more favorable distribution showed a tendency to rise gradually over time.

The inequalities associated within each of the educational groupings appear to have declined from 1971 to 1985, except for those of households headed by the college graduates. From 1985 to 1991, all the within-group inequalities had risen.

The between-education group component as a percentage of the aggregate inequality exceeded 20 per cent in 1971 (higher than the sector and age groupings we have examined earlier) and increased to more than 30 per cent in 1985 and 1991. Two factors can be considered: First the increase in the income gap between the college-graduate and the zero-education household groups, which tended to increase the between-group inequality component. Second the shift of the household population towards the more educated heads, which increased the weighting attached to the groups with lower inequality values. These facts may account for the decline in the absolute value of within-group component, which further magnified the relative proportion of the between-group.

Elsewhere the author (Estudillo 1995) analyzed the decomposition of inequality based on per capita household income, when households were segregated by sector, age, and education of head in 1985 and 1991. Briefly the results were as follows. First, all the indices revealed lower levels of inequality based on per capita household income relative to household income. Second, when households were grouped by sector and education of head, the between-group inequality as a proportion of total inequality was higher on a per capita household income basis while the between-group inequality was lower on a per capita basis when the age of the household head was the subdividing factor.

C. *Temporal Change in Inequality*

This section examines the extent to which the changes in different factors contributed to changes in aggregate inequality. Since the decomposition pattern for the three indices, T, L, and V, was broadly similar even if we concentrated our attention on one of the indices, our results would not be unduly affected. We focussed on Theil L index because it is a strictly decomposable inequality measure.

Applying the difference operator to both sides of equation (9) (Mookherjee and Shorrocks 1982),

$$\Delta L = \sum_j v_j \Delta L_j + \sum_j L_j \Delta v_j - \sum_j \log k_j \Delta v_j - \sum v_j \Delta \log k_j$$
$$\approx \underbrace{\sum_j v_j \Delta L_j}_{\text{(Term A)}} + \underbrace{\sum_j L_j \Delta v_j}_{\text{(Term B)}} + \underbrace{\sum_j (k_j - \log k_j) \Delta v_j}_{\text{(Term C)}} + \underbrace{\sum_j (k_j - v_j) \Delta \ln m_j}_{\text{(Term D)}}, \qquad (17)$$

where Δ represents the changes in the variables from year t to $t + 1$ and the aggregation weights in equation (17) are the final periods for v_j, L_j, and k_j.

Equation (17) is an exact decomposition of the change in L into four terms which

can be interpreted, respectively, as the impact of changes in within-group inequality or the "pure inequality effects" (Term A), the effect of the changes in population shares on within-group component of inequality (Term B), the effect of changes in population shares on the between-group component of inequality (Term C), and the influence of changes in the relative mean incomes of groups (Term D). The sum of Terms B and C corresponds to the change in aggregate inequality attributed to the changes in the structure of population as reflected in the changes in the population shares of various groups.

Table V shows the results of the decomposition of the change in aggregate inequality using the Theil L index. For purposes of presentation the true figures have been raised by a factor of 1000.

From 1965 to 1971, the contribution of the change in within-group inequality, in general, accounted for most of the change in aggregate inequality (Term A). The effects of the shift of population structure (sum of Terms B and C) in favor of urban and older generation households (group aged 55–64 and group aged 65 and over) did not appear to be significant at all. The effect of the changes in group mean incomes on temporal change in inequality (Term D) was positive but almost negligible.

TABLE V

DECOMPOSITION OF TEMPORAL CHANGE IN INEQUALITY
(THEIL $L \times 1000$)

Characteristics of Head	Change in Aggregate Inequality[a]	Contribution to Change in Theil L Due to			
		Within-Group Inequality (Term A)	Population Share		Group Mean Income (Term D)
			(Term B)	(Term C)	
1965–71:					
Sector	6	4	0	0	2
Age	6	5	0	0	1
1971–85:					
Sector	−45	−44	2	3	−6
Age	−45	−48	6	2	−5
Education	−45	−55	1	5	4
1985–91:					
Sector	13	12	3	−4	2
Age	13	15	−1	−1	0
Education	13	10	1	−1	3

Source: Author's computations from the *FIES* (various years).
Notes: 1. Subgroups are as defined in Tables III and IV.
          2. The change in the value of Theil L in this table is slightly different if computed from Table IV because of rounding off.
   [a] Negative values indicate a decrease in inequality.

The remarkable decline in inequality from 1971 to 1985 can again be ascribed to a substantial decline in within-group inequalities. The effects of population shift in favor of urban and older generation households were positive (sum of Terms B and C) because the inequalities associated with these groups were higher. The influence of the rise in the population share of groups of college-graduate and college-under-graduate household heads tended to increase aggregate inequality because the inequalities associated with these groups, although lower in comparison to the zero-education group, rose significantly from 1971 to 1985. With respect to the changes in the group mean incomes, the improvement in the income position of the group less than 25 years old (lowest income) and the deterioration of the income position of the group aged 55–64 (highest income) exerted a considerably favorable influence on the change in aggregate inequality (negative value for Term D). The change in mean income across educational groupings contributed positively to aggregate inequality because the mean income of the no-education group had declined further relative to the overall mean.

From 1985 to 1991, the rise in within-group inequalities was again the dominant component of the rise in aggregate inequality. The net contribution of the population shift to the change in aggregate inequality was almost nil (sum of Terms B and C) and changes in group mean incomes exerted the largest positive effect when households were segregated by sector and education (Term D). Urban-rural income gap rose by 6 per cent while the income gap between college-educated and zero-education household heads rose by about 20 per cent.

In the light of the decompositions performed in Table V, we applied the "shift share analysis of income inequality." The shift share technique enables to estimate the level of inequality when changes in the population structure are controlled without changing the relative income positions of the representative households of different types. In a broad sense, the shift share analysis tries to answer the question, "what would be the level of inequality in period $t + 1$ if the structure of the population had remained the same as in period t?" The answer to this question is simply the value of Theil L in period $t + 1$ minus the value of the contribution of the changes in population shares to the change in aggregate inequality. For example, if the proportion of urban households in 1985 had remained exactly the same as in 1971, the level of inequality according to the Theil L index would have been 0.147 instead of 0.152. Accordingly, if the structure of the household population grouped based on age and educational attainment of head in 1985 had remained exactly the same as in 1971, the level of inequality according to the Theil L index would have been 0.150 instead of 0.152.

D.   *Sources of Household Income*

Table VI gives an overview of the structure of total household income from 1961 to 1991. The average deflated total household income rose slightly by 13 per cent

TABLE VI

Total Household Income by Source, the Philippines, 1961–91

Income Source	1961	1965	1971	1985	1988	1991
A. Deflated Annual Household Income (Peso/Year) (CPI: 1978 = 100)						
Wages	35	41	42	38	51	53
Agriculture[a]	5	7	6	4	5	4
Nonagriculture	30	34	36	34	46	49
Entrepreneurial income	35	37	35	28	33	35
Agriculture[a]	21	24	21	12	13	13
Nonagriculture[b]	14	13	14	16	20	22
Remittances and pensions[c]	4	4	7	16	15	18
Property income[d]	9	12	10	7	5	15
Other income[e]	1	1	1	3	2	2
Total	84	95	95	92	106	123
B. Percentage of Income						
Wages	42	43	44	42	47	43
Agriculture	6	7	6	4	4	4
Nonagriculture	36	36	38	38	43	39
Entrepreneurial income	42	39	37	31	31	28
Agriculture	25	25	22	14	12	10
Nonagriculture	17	14	15	17	19	18
Remittances and pensions	5	4	7	17	14	14
Property income	10	13	11	7	5	13
Other income	1	1	1	3	2	3
Total	100	100	100	100	100	100

Source: Author's computations from the *FIES* (various years).

[a] Income from farming, livestock and poultry raising, fisheries, forestry, and hunting.

[b] Entrepreneurial incomes from wholesale and retail, manufacturing, transportation, communication and storage, mining and quarrying, construction, entrepreneurial incomes from community, social, recreational, and personal services and other enterprises.

[c] Remittances from overseas and domestic sources, pensions and retirement payments, and gifts.

[d] Rental income from nonagricultural lands, buildings, owner-occupied dwelling unit, dividends from investments, interests from bank deposits, and net shares of crops, livestock, and poultry.

[e] Income from family sustenance activities and other incomes not classified elsewhere.

from 1961 to 1965, remained fairly constant from 1965 to 1985, increased by about 15 per cent from 1985 to 1988 and from 1988 to 1991. The major source of the increase in total household real income was represented by wages from 1961 to 1965 and from 1985 to 1988 and property income from 1988 to 1991.

Wage income comprised the largest proportion of the total household income, a substantial portion of which was derived from nonagricultural wages. The next most important source was entrepreneurial income, which accounted for approximately one-third of the total. Income from remittances and pensions rose by more

than threefold and its share of total income increased from 5 to 17 per cent from 1961 to 1985. The increase in remittances and pensions might be due to the large outflows of Filipino overseas workers to the Gulf states in the late 1970s and early 1980s.

E. *Relative Concentration Coefficient*

Table VII presents the relative concentration coefficient[10] (g_i and c_i) corresponding to each income source. The terms g_i and c_i mark the distinction between inequality-increasing and inequality-decreasing income sources. The inequality associated with an income component can be considered to be inequality-increasing if g_i and c_i are greater than unity and inequality-decreasing if g_i and c_i are less than unity. If g_i is greater than unity unlike c_i (or g_i is less than unity unlike c_i), we cannot

TABLE VII

RELATIVE CONCENTRATION COEFFICIENTS OF INCOME SOURCES,
THE PHILIPPINES, 1971, 1985, AND 1991

Income Source	g_i			c_i	
	1971	1985	1991	1985	1991
Wages	1.14	1.07	1.04	1.23	0.95
Agriculture		0.01	−0.11	0.03	0.01
Nonagriculture		1.19	1.14	1.36	1.03
Enterpreneurial income	0.73	0.82	0.86	0.81	1.02
Agriculture		0.24	0.04	0.05	0.09
Nonagriculture		1.28	1.34	1.40	1.58
Remittances and pensions	1.35	1.24	1.12	0.60	0.63
Foreign remittances		1.58	1.40	0.68	0.82
Domestic remittances		0.51	0.32	0.24	0.08
Pensions and gifts		1.07	0.94	0.68	0.51
Property income	1.05	1.27	1.23	1.86	1.68
Rents		1.26	1.26	2.33	1.68
Interests and dividends		1.78	1.66	2.67	2.51
Net shares of crops,					
livestock & poultry		1.08	0.89	0.68	1.50
Other income	0.76	−0.02	−0.31	0.01	−0.08

Source: Author's computations from the *FIES* (various years).
Notes: 1. g_i and c_i are relative concentration coefficients of the Gini coefficient and squared coefficient of variation, respectively. An income source is inequality-increasing if c_i and g_i are greater than unity and inequality-decreasing if c_i and g_i are less than unity.
     2. For the definition of each income source, see footnotes in Table VI.

[10] Factor income decomposition was conducted by Jenkins (1995) for the case of United Kingdom.

firmly establish the inequality-increasing or inequality-decreasing tendency of an income source.

The concentration coefficient of the Gini coefficient in 1971 revealed that wage income, remittances and pensions, and property income were sources of increasing inequality, whereas, entrepreneurial income and other income were inequality-decreasing sources. In 1985 and 1991, the decompositions of the Gini coefficient and squared coefficient of variation showed that among the sub-components, those that represent inequality-increasing sources were nonagricultural wages, nonagricultural entrepreneurial income, rental income from nonagricultural assets, and interests and dividend incomes. Inequality-decreasing sources included agricultural wages, agricultural entrepreneurial income, domestic remittances, and other income. For foreign remittances and pensions and gifts, the two decomposition indices revealed inconsistent results. The squared coefficient of variation classifies the two income sources as inequality-decreasing, whereas, the Gini coefficient distinguishes them as inequality-increasing. The discrepancy was attributed to the fact that the Gini coefficient is sensitive to the middle-income groups while the squared coefficient of variation is sensitive to extreme incomes.

F. *Factor Inequality Weights*

Factor inequality weight represents the proportion of total income inequality contributed by an income source. Table VIII shows the factor inequality weights of the Gini coefficient and squared coefficient of deviation corresponding to each of the income sources.

Wage income was the largest source of income inequality. Its contribution to total income inequality ranged from 41 to 50 per cent. Nonagricultural wages accounted for the totality of wage income inequality contribution, followed by entrepreneurial income which accounted for more than 25 per cent of the total inequality. Ninety-five per cent of this contribution was derived from nonagricultural entrepreneurial income. The results of the decomposition of the Gini coefficient and squared coefficient of variation were not similar with respect to which of the remittances and pensions or property income contributed more to total inequality. The Gini coefficient revealed that remittances and pensions were larger contributors while the squared coefficient of variation indicated the higher contribution of property income. While the results of the two decomposition indices did not agree, one consistent pattern was visible. Foreign remittances were the major source of inequality in the remittance and pension income group while the major contributor in the property income group was rental income from nonagricultural assets. Lastly, the other income component contributed the least to income inequality, in fact, it showed a negative contribution in 1985 and 1991 based on the Gini coefficient.

To explain the magnitude of the factor inequality weights presented in Table VIII, we decomposed the Gini coefficient of total income into income shares (w_i),

TABLE VIII

FACTOR INEQUALITY WEIGHTS OF INCOME SOURCES, THE PHILIPPINES, 1971, 1985, AND 1991

Income Source	$w_i g_i$			$w_i c_i$	
	1971	1985	1991	1985	1991
Wages	0.50	0.45	0.44	0.50	0.41
Agriculture		0.01	−0.003	0.001	0.001
Nonagriculture		0.44	0.45	0.50	0.41
Entrepreneurial income	0.27	0.25	0.24	0.25	0.29
Agriculture		0.03	0.004	0.01	0.01
Nonagriculture		0.22	0.24	0.24	0.28
Remittances and pensions	0.09	0.22	0.17	0.11	0.09
Foreign remittances		0.14	0.12	0.06	0.07
Domestic remittances		0.02	0.01	0.01	0.002
Pensions and gifts		0.06	0.04	0.04	0.02
Property income	0.13	0.09	0.15	0.14	0.21
Rents		0.05	0.14	0.10	0.18
Interests and dividends		0.02	0.005	0.02	0.01
Net shares of crops, livestock & poultry		0.02	0.01	0.02	0.02
Other income	0.01	−0.001	−0.003	0.003	−0.001
Total	1.00	1.00	1.00	1.00	1.00

Source: Author's computations from the *FIES* (various years).
Notes: 1. $w_i g_i$ and $w_i c_i$ are factor inequality weights of the Gini coefficient and squared coefficient of variation, respectively. Factor inequality weights show the proportion of total inequality accounted for by each income source.
2. For the definition of each income source, see footnotes in Table VI.

correlation effects (R_i), and Gini coefficient (G_i) corresponding to each major income component (Table IX). As a result, it became possible to determine which of the income sources contributed to the rise in income inequality in 1985 to 1991. The Gini coefficient of total income rose from 0.48 in 1985 to 0.51 in 1991.[11]

Wage income contributed the most to the total income inequality because it accounted for the largest proportion of total income and showed the highest correlation with the rank of total income and a fairly high Gini coefficient. The contribution of entrepreneurial income to total inequality was lower than wages because its share of total income and its rank correlation with total income were only middle-sized while the Gini coefficient was about the same as that of wage income. The

[11] The Gini coefficient in Table VIII is slightly different from that in Table IV because in Table VIII individual household incomes were used in the computation while in Table IV grouped income data were used.

TABLE IX

DECOMPOSITION OF THE GINI COEFFICIENT, THE PHILIPPINES, 1971, 1985, AND 1991

Income Source	1971			1985				1991			
	w_i	$R_i G_i$	Contribution to Gini ($w_i R_i G_i$)	w_i	R_i	G_i	Contribution to Gini ($w_i R_i G_i$)	w_i	R_i	G_i	Contribution to Gini ($w_i R_i G_i$)
Wages and salaries	0.44	0.56	0.25	0.42	0.74	0.70	0.22	0.43	0.77	0.68	0.23
Entrepreneurial income	0.37	0.36	0.13	0.31	0.56	0.71	0.12	0.28	0.57	0.76	0.12
Remittances and pensions	0.07	0.66	0.05	0.17	0.73	0.82	0.10	0.14	0.68	0.82	0.08
Property income	0.11	0.51	0.06	0.07	0.71	0.86	0.04	0.13	0.82	0.76	0.08
Other income	0.01	0.37	0.003	0.03	−0.02	0.67	−0.001	0.02	−0.22	0.69	−0.002
Total	1.00	1.00	0.49	1.00	1.00	0.48	0.48	1.00	1.00	0.51	0.51

Source: Author's computations from the *FIES* (various years).

Notes: 1. w_i = the income share of the *i*th income source; R_i = the rank correlation coefficient of the *i*th income source; and G_i = the Gini coefficient corresponding to the *i*th income source.

2. For the definition of each income source, see Table VI and footnotes therein.

third important source of inequality was represented by remittances and pensions. The rank correlation with total income and Gini coefficient was high but its share of total income was small. Property income showed 4 percentage points of total inequality in 1985 and 8 percentage points in 1991. Its correlation with the rank of total income was middle-sized and the Gini coefficient was high. However, its share of total income was small. The contribution of other income to total inequality was almost nil. Other income included a very small proportion of total income and showed a low Gini coefficient and a negative rank correlation with total income.

Income sources which contributed significantly to the rise in total inequality from 1985 to 1991 included property income and wages. The contribution of remittances and pensions declined while the contribution of entrepreneurial income and other income remained the same.

The results of the decomposition of total income inequality based on household income were generally consistent with the results of the decomposition based on per capita household income in 1985 and 1991 except in two minor aspects. First, nonagricultural entrepreneurial income and income from net shares of crops, livestock, and poultry tended to increase the inequality according to the decomposition of household income inequality while these two were classified as inequality-decreasing sources based on the decomposition of inequality of per capita household income. Second, the factor inequality weights of wages and salaries were lower and property income higher in the case of inequality decomposition of per capita household income.

G.   *Wages Rate Inequality versus Hours-of-Work Inequality*

We have seen that wage income is by far the most important source of household income inequality and that it contributed significantly to the rise in total income inequality from 1985 to 1991. We separated wage income inequality into inequality contributions of wage rates and hours of work—wage income being the product of these two. Disaggregated data on wage rates and hours of work in the Philippines cannot be obtained easily as they are not included in household income surveys. Although the information on wage rates is available from the surveys conducted by the Bureau of Agricultural Economics and National Wage Council, since it is presented in a tabulated form, calculations targeted at disaggregated level cannot be performed. Moreover, wage rate data which refer to minimum wage rates prescribed by law, may not accurately reflect the extent of variability of wage rates. Hours-of-work data are also available in summarized format in the *Labor Force Survey* of the National Statistics Office. Due to data constraint, we used the product per worker and hours of work to analyze the variation in wage rates.

To identify which of the wage rate inequality or hours-of-work inequality is the more important factor contributing to wage income inequality, we listed in Table X

TABLE X

PRODUCTIVITY AND HOURS OF WORK, THE PHILIPPINES, 1970–90

Sector	Product per Worker[a] (Current Pesos per Year)				Average Hours of Work per Week	
	1970	1980	1985	1990	1970[b]	1990[c]
Agriculture (A)	1,931	6,883	13,937	23,167	45.7	43.2
Industry (I)	6,703	35,880	71,319	109,671	46.8	45.8
Manufacturing (M)	7,071	33,867	74,689	122,251	44.2	45.2
Services (S)	3,551	15,642	31,507	53,733	48.0	49.4

	Ratio of Product per Worker				Ratio of Hours of Work	
	1970	1980	1985	1990	1970[b]	1990[c]
Agriculture (I/A)	3.47	5.22	5.12	4.73	1.02	1.06
Industry (I/I)	1.00	1.00	1.00	1.00	1.00	1.00
Manufacturing (I/M)	0.94	1.06	0.95	0.90	1.06	1.01
Services (I/S)	1.89	2.29	2.26	2.04	0.98	0.93

Sources: International Labour Office, *Yearbook of Labour Statistics* (Geneva), various years; National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila), various years.

[a] Gross value added divided the number of persons employed.
[b] Average of four quarters.
[c] Average of the first and third quarters.

the ratio of industry product per worker[12] to agriculture and services and the ratio of industry average weekly hours of work to agriculture and services. The ratios of product per worker and ratios of average weekly hours of work reflect the "between-group" inequality or the gap between the product per worker and average weekly hours of work between industry and agriculture and between industry and services. If the ratios of product per worker are higher than the ratios shown in the hours of work, we may reasonably assume that the inequality in wage rates is higher than the inequality in hours of work.

Table X shows that the ratios of product per worker were higher than the ratios of hours of work, therefore, suggesting that wage rate inequality is higher than hours-of-work inequality and that wage rate inequality is the major source of wage income inequality. Moreover, wage rate inequality appeared to have risen from 1970 to 1980 then declined in 1985, whereas, hours of work remained fairly stable.

[12] Product per worker is defined as "gross value added" (GVA) divided by the number of persons employed. Product per worker may not reflect pure returns to labor because GVA is the sum of compensation of employees, operating surplus, and proprietor's income. The *National Income Accounts* of the Philippines did not separate compensation of employees from operating surplus and proprietor's income.

Industrial wage rates might have indeed risen vis-à-vis agriculture and services in the early 1970s to the early 1980s possibly because of increasing capital intensity in the industries. The import-substitution industrialization in the Philippines, which began in the late 1950s and lasted until the early 1980s, and the overvalued peso, which made machinery artificially cheaper than labor, may account for the large use of machines. When machinery is combined with labor, the marginal productivity of labor increases, resulting in higher wage rates in industry than in agriculture and service sectors.

Lastly, Table X also indicates the trend in household income inequality from the early 1970s to the early 1980s. Based on the household income data, inequality remained stable from 1965 to 1970, declined substantially from 1970 to 1985, and increased slightly from 1985 to 1991. If we consider that the product per worker is an approximation to wage income per worker, which, on the other hand, can be taken as a rough approximation to total income per worker (wage income accounts for the largest proportion of total income), we can somewhat speculate the trends in household income inequality by looking at the inequality trends of product per worker. It appears that household income inequality increased from the early 1970s to the early 1980s and then declined in the mid-1980s as can be seen from the trends in the product per worker between industry and agriculture and between industry and services.

VI.   SUMMARY AND IMPLICATION

In this study the trends and major sources of household income inequality in the Philippines was analyzed using the *Family Income and Expenditure Survey*, 1965, 1971, 1985, and 1991 editions. We examined four possible causes of the trends in aggregate inequality as follows: (1) rising proportion of urban households, (2) age distribution changes, (3) increasing number of the highly educated, and (4) rise in wage rate inequality.

We observed among other things that the country's income inequality was high and the trends were fairly stable except for a sharp decline in 1985. The Gini coefficient of income inequality has been consistently close to 0.50.

The rise in the number of urban households mainly resulted in the increase of inequality. When households were segregated by urban-rural classification, the proportion of total inequality accounted for by within-group inequality increased from more than 80 per cent in 1965 to close to 90 per cent in 1991 mainly due to the increasing weight attached to the urban group which displayed a higher unequal distribution. Moreover, because property income is concentrated among urban households, property income rose absolutely by more than twofold. Accordingly, property income share of total household income also increased. The relative income position of the highest 20 per cent of the household population, mainly de-

rived from urban areas, also further improved as indicated by the rise in income share of this group.

The income distributional effect of the increase in the number of elderly people is limited partly because of the relative stability of the income position of the elderly. The between-group component of inequality, when households are grouped by age of head, remained low at less than 5 per cent of the overall inequality.

Compared to sector and age of head, education of head was the more significant factor affecting the level of household income inequality. The between-group component of inequality accounted for more than 20 per cent of the total inequality when households were grouped by education of head. This proportion increased to more than 30 per cent in 1985 and 1991, when the relative income position of college-graduate and undergraduate household heads improved remarkably vis-à-vis the group of household heads lacking education.

The increase in the number of household heads with college education led to a decrease of inequality. The within-group inequality declined absolutely because the two college groups of households were associated with lower levels of inequality. The decline in the absolute value of within-group inequality outstripped the increase in between-group inequality which was due to an increase in income differentials between the college groups and zero-education group.

Among different income sources, wage income was the largest source of inequality. Its contribution to total income inequality ranged from 41 to 50 per cent. Wage income is the product of wage rates and hours of work. Hence, the inequality associated with wage income can be traced from wage rate inequality or hours-of-work inequality or both. Wage rate inequality appeared to be a more important source of wage income inequality because hours of work remained fairly stable over time.

Four strategies could be suggested to improve the distribution of income in the Philippines as follows: (1) a more regionally dispersed industrialization, (2) improvement of access to higher education, (3) favorable policy environment, and (4) effective population policy.

Foremost of the strategies is to implement more regionally balanced industrialization policies. Because Manila has traditionally been the major industrial center of the country, there is a concentration of income in Manila—a factor perpetuating the high level of inequality. Regionalization of industries could spread out employment opportunities to rural areas, increase rural wages, and eventually distribute income across the country.

We have seen that education plays a major role in determining the level of household income inequality. One measure the Philippine government has taken to improve the distribution of education and of income is to implement the "Education for All" policy (EFA), which aims at expanding primary and secondary public schools. EFA can facilitate access of poor households to education, a venue for

human resource development. However, while the goal of EFA is to make education available to all, there is a great need to improve the quality of education because cognitive skill levels of pupils from primary and secondary schools in the Philippines are substantially lower than those in neighboring Taiwan, the Republic of Korea, Japan, and Singapore.

A proper policy environment conducive to foreign investments is another important step to reduce inequality. Major achievements since 1991 include the Foreign Investment Act of 1991, which liberalized the environment for foreign investment allowing investments into all but a few sectors and 100 per cent foreign equity in most sectors, complete deregulation of foreign exchange market in 1992, opening up of the banking sector to foreign competition, and nurturing competition in the telecommunications sectors. Yet much still remains to be done. One major task is to nurture competitive industries, discourage import substitution, promote the production of tradables, and reduce the infrastructure and public construction bottleneck.

Finally, it is clear from the experiences of the newly industrializing countries that sound economic policies require the complement of an effective population policy. Faster population growth makes it difficult to expand and improve the quality of human services, a prerequisite for growth and redistribution of income.

REFERENCES

Anand, Sudhir. 1983. *Inequality and Poverty in Malaysia: Measurement and Decomposition*. New York: Oxford University Press.

Estudillo, Jonna P. 1995. "Income Inequality in the Philippines, 1961–91: Trends and Factors." Ph.D. diss., University of Hawaii.

Fei, John C. H.; Gustav Ranis; and Shirley W. Y. Kuo. 1978. "Growth and the Family Distribution of Income by Factor Components." *Quarterly Journal of Economics* 92, no. 1: 17–53.

Fields, Gary S. 1994. "Poverty and Income Distribution: Data for Measuring Poverty and Inequality Changes in the Developing Countries." *Journal of Development Economics* 44, no. 1: 87–102.

Hayami, Yujiro; Masao Kikuchi; Luisa Bambo; and Ester Marciano. 1989. "Transformation of Agricultural Village in Two Decades of Green Revolution." International Rice Research Institute, Agricultural Economics Department Paper, no. 89-17.

Ikemoto, Yukio. 1992. "Income Inequality in Thailand in the 1980s." *Southeast Asian Studies* (Kyoto University) 30, no. 2: 213–35.

Jenkins, Stephen. 1995. "Accounting for Inequality Trends: Decomposition Analyses for the UK, 1971–86." *Economica* 62, no. 1: 29–63.

Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *American Economic Review* 45, no. 1: 1–28.

Lambert, Peter J., and Richard Aronson. 1993. "Inequality Decomposition Analysis and the Gini Coefficient Revisited." *Economic Journal* 103, no. 402: 1221–27.

Mangahas, Mahar, and Bruno Barros. 1980. "The Distribution of Income and Wealth: A

Survey of Philippine Research." In *Survey of Philippine Development Research*. Vol. 1. Manila: Philippine Institute for Development Studies.

Mookherjee, Dilip, and Anthony Shorrocks. 1982. "A Decomposition Analysis of the Trends in UK Income Inequality." *Economic Journal* 92, no. 368: 886–902.

National Statistics Office. Various years. *Family Income and Expenditure Survey* (*FIES*). Manila.

Oshima, Harry T. 1993. *Strategic Processes in Monsoon Asia's Economic Development.* Baltimore: Johns Hopkins University Press.

Pyatt, Graham; Chau-nan Chen; and John Fei. 1980. "The Distribution of Income by Factor Components." *Quarterly Journal of Economics* 95, no. 3: 451–74.

Shorrocks, Anthony. 1982. "Inequality Decomposition by Factor Components." *Econometrica* 50, no. 1: 193–211.