

# ASPECTS OF POVERTY IN MALAYSIA

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This paper is concerned with the definition and measurement of poverty in Malaysia. A poverty line is estimated after considering both the absolute and relative approaches to the definition. Various indices of poverty are discussed, ranging from the simple "incidence of poverty" measure to others which take account of the "poverty gap". There is a derivation of a new index due to Sen, and alternative normalizations are suggested for it. Estimates of all these measures are presented for Malaysia. Finally, the simple "incidence of poverty" measure, which is decomposable, is adopted to construct a "profile" of the poor in Malaysia.

One of the two fundamental objectives of the Malaysian Government's New Economic Policy is "... to eradicate poverty by raising income levels and increasing employment opportunities for all Malaysians, irrespective of race"<sup>1</sup>. This paper examines some aspects of poverty in Malaysia, from the data generated by the 1970 Post Enumeration Survey<sup>2</sup>. The purpose of the study is to explore the extent and nature of poverty in Malaysia, so that policy measures for its alleviation might be considered.

After a brief discussion of the Survey, and the income and population concepts relevant for a measurement of living standards in the population, we go on to define a poverty line for Malaysia. There is then a discussion on various different measures of poverty, including a recent one proposed by Sen. Alternative normalizations are suggested for the Sen index, and estimates of these measures are presented for Malaysia. Finally, a "profile" of the poor is constructed, which describes them in terms of socio-economic characteristics such as race, location, employment status, occupation, etc. Such information not only helps to trace the "correlates" of poverty, but also to identify areas of government intervention for poverty redressal.

## THE POST ENUMERATION SURVEY

The data source for this study is the Post Enumeration Survey (PES) of the 1970 Census. The survey covered a scientifically selected sample of about 135,000 individuals (approximately 25,000 households) in Peninsular Malaysia,

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<sup>1</sup>See paragraph 1, *Mid-Term Review of the Second Malaysia Plan 1971-1975*, Kuala Lumpur, 1973.

<sup>2</sup>It will form part of a larger study analysing the distribution of personal incomes in Malaysia. See S. Anand, "The Size Distribution of Income in Malaysia", Part I (December 1973) and Part II (May 1974), mimeographed, Development Research Center, World Bank and St. Catherine's College, Oxford (respectively).

or approximately 1.5% of the population. Its basic purpose was to check on the content and coverage of the Census, but it was later expanded to include some family planning and income questions as well. The income data of the Survey have not as yet been analysed.

The PES concept of individual and household income appears to be fairly comprehensive. It includes income (wages and salaries; business, property and interest income; remittances and transfers) both in cash and kind. A money value is imputed to receipts in kind, to own consumption from production, and to owner-occupied housing. Eleven major categories of income were distinguished to enable an accurate estimate of the "true" income<sup>3</sup>. Considerable probing and prompting seem to have been undertaken in order to obtain data that are complete and accurate.

### INEQUALITY IN LEVELS OF LIVING

Income as defined in the PES sense is not necessarily a good indicator of levels of living or welfare. Current consumption or some notion of "permanent" income might be more appropriate for purposes of welfare measurement. And even if PES income is used, it should ideally be adjusted for (direct and indirect) tax incidence and public goods and services, which have a differential impact according to income class. Unfortunately it has not been possible to make such corrections here, and PES income unadjusted is used as a proxy for welfare levels.

The welfare level or living standard of a household depends both on the total income of the household and on its size and composition. The welfare level of an individual person depends on the amount of income he shares of the household to which he belongs. Information about how household income is shared among members is not easily obtainable. We make the assumption that it is shared *equally* among all members, although its distribution undoubtedly depends on characteristics of individual members such as earner status, age, sex, and even weight! No correction is made for household composition here, and the procedure is adopted of ranking individuals and households on the basis of their *per capita* household income. This income concept should yield a reasonable approximation to differences in levels of living across individuals or households.

To measure inequality in levels of living between individuals (and households) we have estimated the distribution of individuals (and households) according to *per capita* household income. The mean income of individuals in Malaysia is M\$50 per month and the inequality in their incomes as measured by the Gini coefficient is 0.498. The bottom 40 percent of individuals receive only 12.3 percent of total income while the top 5 percent receive 28.5 percent of the income. A breakdown by ethnic group shows that the mean income level of the Chinese (at M\$68 per month) is twice that of the Malays (M\$34 per month). The mean income of the Indians is M\$57 per month. However, the disparities in mean income *between* the racial groups account for only about 10 percent of income inequality in the country (as estimated by a decomposition of the Theil index of inequality

<sup>3</sup>Unfortunately, only the total of these eleven components of income has been coded onto the data tapes.

into between- and within- race components<sup>4</sup>). In other words, some 90 percent of the inequality in Malaysia is due to the very large discrepancies in income *within* each race group<sup>5</sup>.

For an analysis of poverty we need to examine only the lower end of the national income distribution<sup>6</sup>. The truncation point depends on the precise definition of poverty adopted, and it is to this we now turn.

#### THE DEFINITION OF A POVERTY LINE

There are essentially two approaches to the definition of a poverty line, an *absolute* and a *relative* one. In the absolute approach a certain “minimal” living standard (in terms of nutrition levels, clothing, etc.) is specified, and the income required to support it is calculated. The relative approach interprets poverty in relation to the prevailing living standards of the society, recognising explicitly the interdependence between the poverty line and the *entire* distribution of income. Our estimate of a poverty line is a compromise between these two types of consideration. It should evoke agreement about a definition of the “poor” in Malaysia.

The crudest definition of a relative poverty line is the income level which cuts off the lowest  $x$  percent, say, of the population in the national income distribution. There are two objections to this method of defining the poor. First, the method prejudices the issue as to the *extent* of poverty (it is  $x$  percent by definition!). Secondly, it implies that the “poor are always with us”. In a trivial statistical sense there is always a bottom  $x$  percent in the income distribution and so one could never actually eradicate poverty. Even so, it could still be perfectly reasonable for a government to be continually concerned with the lowest  $x$  percent of the population. Indeed with a Rawlsian criterion of justice<sup>7</sup>, one is concerned precisely with improving the welfare levels of the worst off group—in this case, the lowest  $x$  percent.

The choice of percentile  $x$  in the distribution is, of course, somewhat arbitrary. In the context of developing countries, the figure of 40 percent has sometimes been suggested.<sup>8</sup> For Malaysia, the *per capita* household income level which cuts off the bottom 40 percent of the population from the rest is very slightly under M\$25 per month. We have rounded this off to an income level of M\$25 per month. The percentage of individuals who fall below this level of *per capita* household income is thus a little higher, at 40.2 percent. However, the percentage of *households* falling below such a poverty line is 36.5 percent. This is due to the

<sup>4</sup>See Anand (1973), pp. 126–128.

<sup>5</sup>Thus a *doubling* of all Malay incomes to bring them on a par with the Chinese will reduce national inequality by only about 10 percent. It is misleading, therefore, to quote income disparity ratios between the races in attempting to explain economic inequality in the country, although this is often done in public debate.

<sup>6</sup>This does not mean that we are unconcerned with inequality. In fact, it can be shown that poverty redressal is the most “efficient” method of inequality redressal! See the Annex in Anand, *op. cit.*

<sup>7</sup>See John Rawls, *A Theory of Justice*, for the now famous “maximin” criterion of social welfare.

<sup>8</sup>The popularity of this particular figure seems to stem from Mr. Robert McNamara’s plea in his 1972 Speech to the World Bank’s Board of Governors that special policies be initiated to increase the income growth of the lowest 40 percent in developing countries.

poor having larger-sized households on average than the non-poor (see the later section entitled “A Profile of Poverty in Malaysia”).

There is another method of defining a relative poverty line which circumvents the criticism that the poor are necessarily always with us. We can define poverty in relation to contemporary living standards by drawing the poverty line at, say, *half* the average income level of the society.<sup>9</sup> In this case, although the poverty line rises with the general level of incomes it is no longer true that poverty cannot be eliminated. In fact, it is “quite possible to imagine a society in which no one has less than half the average income—in which there is no poverty according to this definition”.<sup>10</sup> The *per capita* income in Malaysia has been estimated at M\$50 per month, so the relative poverty line according to this definition is also M\$25 per month.

An *absolute* poverty line has been estimated recently by the Ministry of Welfare Services in Malaysia. The Ministry is currently considering a public assistance programme, one of whose major objectives is to “. . . bring into being a scheme of social assistance based on principles of social justice whereby all those in poverty through circumstances beyond their control should be eligible for assistance in the quantum related to their needs . . .”.<sup>11</sup>

For this purpose, the Ministry identified a poverty line in terms of the income required to maintain a family in “good nutritional health” as well as to satisfy “minimum conventional needs in respect of clothing, household management, transport and communication”. The minimum basket of food to maintain good nutritional health was devised with assistance from the Institute of Medical Research in Malaysia. The items of food chosen were costed at prices prevailing in August 1974, and a minimum food budget was thus obtained.

The minimum food budget was estimated separately for adults (male/female) by ethnic group<sup>12</sup> and for children (divided into two age groups), both according to rural/urban location. It was found, however, that there was very little difference in cost between the food baskets of the three ethnic groups. There was also “. . . very little variation between urban and rural prices for the items considered”.<sup>13</sup> Accordingly, the average cost was taken of the food baskets for the three ethnic groups in rural and urban areas.<sup>14</sup>

<sup>9</sup>See A. B. Atkinson, *The Economics of Inequality*, Clarendon Press, Oxford, 1975.

<sup>10</sup>See Atkinson (1975), p. 189.

<sup>11</sup>See page 105, Annex VI, of memorandum dated March 1975 from the Department of Social Welfare, Ministry of Welfare Services, entitled “A Joint State and Federal Government Public Assistance Programme”. Other objectives of the scheme are to “. . . suggest various formulae and structures for the sharing of financial and technical responsibility by State and Federal Governments . . .”, and eventually to: “. . . integrate this social assistance with social insurance to form a nation wide social security scheme in the full sense of the term” (pp. 105–6).

<sup>12</sup>The breakdown by ethnic group allows for the different dietary habits and conventions of the three major communities in Malaysia.

<sup>13</sup>See paragraph 16, p. 119, of the memorandum from the Ministry of Welfare Services, March 1975.

<sup>14</sup>The items of food, quantities and prices for a 30-day month for each race group are set out in detail in Appendices II, III, and IV of the Ministry’s memorandum. In choosing the items of food, the cheapest vegetables were chosen; two common varieties of fish (i.e. ikan cincaru and ikan kembong) which are “not necessarily the cheapest available”; sweetened condensed milk for adults, and powdered milk for children (recommended by nutritionist); for meat a combination of pork and chicken for Chinese, beef and chicken for Malays, and mutton and chicken for Indians. A very detailed breakdown is available in Appendices I-IV of the Memorandum.

A food price index (provided by the Department of Statistics) was used to deflate the food budgets back to 1970, the year to which our Survey data refer. We obtained the following estimates of the monthly cost of food at 1970 prices for Malays, Chinese, and Indians in rural and urban areas.

Ethnic Group Stratum	Malay		Chinese		Indian		Children	
	Male	Female	Male	Female	Male	Female	0-6	7-11
Rural	25.39	24.13	24.56	23.29	25.67	24.41	14.95	21.04
Urban	25.85	24.59	25.00	23.74	26.41	25.15	15.29	21.46
Average	25.62	24.36	24.78	23.51	26.04	24.78	15.09	21.25

Source: Appendix V, Ministry of Welfare Services Memorandum, March 1975.

The average monthly cost in 1970 of a nutritionally adequate diet for a male was M\$25.37, for a female M\$24.21, for a child M\$18.17, and the average for an individual in the population at large M\$22.58. The food budget for a household will therefore depend on its size and composition. The Ministry, however, assumes a given relationship between size and composition<sup>15</sup> so that for instance, the average sized five-member household is assumed to consist of two adults and three children. The minimum food budget for such a household is thus M\$104.09 per month.

An estimate of *non-food* expenditure is also required to calculate the total poverty budget. Three different methods have been used for this purpose, all based on expenditure data obtained from the 1973 Household Expenditure Survey (HES). In the first method, the proportion of total expenditure on food was estimated for families (of all sizes) with monthly incomes less than M\$200 in the 1973 HES. The poverty line for each household size class was then calculated by multiplying the reciprocal of this proportion by the minimum food budget<sup>16</sup> for that household size.

In the second method, the non-food budget was restricted to certain "essential" items. The following four items were isolated as essential: (i) clothing and footwear, (ii) rent, fuel and power, (iii) household equipment and operations, and (iv) transport and communications. The ratio of expenditure on each item to food expenditure was then estimated for families (of all sizes) in the under M\$200 monthly income class (from the 1973 HES). These ratios were applied to the minimum food budget for each household size class to calculate the non-food portion of its poverty budget. This method is thus similar to the first except that all non-food items other than the above four are excluded from the poverty budget.<sup>17</sup> Naturally it leads to a lower poverty line.

<sup>15</sup>See Appendix VI of the Ministry's Memorandum.

<sup>16</sup>This method is due to M. Orshansky, "Counting the poor: another look at the poverty profile", *Social Security Bulletin*, Vol. 28, 1965.

<sup>17</sup>Omitted for example, are the following categories of expenditure (from HES 1973): beverages and tobacco; medical care and health expenses; education and cultural services; recreation and entertainment.

The third method estimates the non-food part of the poverty line budget by taking the *actual* expenditures incurred on these four items by households with monthly incomes under M\$200 (in the 1973 HES). These were adjusted upwards for price increases between (July) 1973 and (August) 1974, to obtain the non-food component corresponding to the (August 1974) minimum food budget. The adjusted value was divided by the average household size in the under M\$200 monthly income class to yield the non-food cost *per person*. Finally, the poverty line for each household size class was calculated by adding the minimum food budget for that size class to the product of household size with non-food cost per person. Thus the non-food budget of a household is here assumed to be shared equally between its members.

The non-food budget has been estimated at 1970 prices for each of the three methods. Different price indices (provided by the Department of Statistics) have been applied to deflate the different non-food items. A detailed breakdown of the non-food cost per person in 1970 is presented below for the third method.

	Cost per person in M\$ per month
(i) Clothing and footwear	0.98
(ii) Rent, fuel and power	4.74
(iii) Household equipment and operation	0.58
(iv) Transport and communication	1.44
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Total non-food cost per person for "essential" items	7.74
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For a five-member household, therefore, the poverty line according to the third method is (M\$104.09 + 5 × M\$7.74 = )M\$142.79 per month in 1970. The 1970 poverty line for a household of five persons according to the first method was estimated at M\$207.70, and according to the second method at M\$163.24.

It is difficult to defend the first method on the basis of an absolute subsistence definition of poverty. The non-food budget includes many items which might be considered "inessential" for subsistence. The second and third methods come closer to the subsistence notion of poverty in as much as they specify only certain non-food items deemed to be essential. Even for these methods, however, the food basket chosen is obviously not a nutritional "minimum".<sup>18</sup> The food budget estimated by the Ministry appears to be based more on general consumption patterns in the society than on the absolute minimum required for subsistence. It is likely, therefore, to be higher than is strictly implied by the latter definition.

<sup>18</sup>The diet for the minimum food budget was obtained "... basically from the diet provided in Government Hospitals for a "normal average adult"..." (memorandum, p. 118). For children it was the "... diet required for normal growth and maintenance of good nutritional health...". The weekly dietary scales adopted in calculating food requirements, contained in Appendix I of the Memorandum, were devised with the help of the Institute of Medical Research, Malaysia.

In fact the concept of “minimum” is itself difficult to fix, since minimum requirements *vary* with the level of activity of the individual. Subsistence requirements (in terms of the intake of calories and proteins) are not unique, but depend on the physical work output of the person. Thus it is not easy to be very precise about a “subsistence” level of living.

The eventual choice of a poverty line must to some extent remain arbitrary. On a per person basis, the absolute poverty line under the second method is M\$32.6 per month, and under the third method it is M\$28.6 per month (dividing by five the poverty line for the average household of five members). In view of the estimates suggested by this absolute approach and by the relative approach considered earlier (and they are fairly close), we judge as appropriate for Malaysia a poverty line rounded off at M\$25 per month (household income per person).<sup>19</sup>

### THE SEN POVERTY MEASURE

Two types of indices have hitherto been used to measure the extent of poverty once the poverty line has been defined. The commonest index is the percentage of the population in poverty, also referred to as the “incidence of poverty”. The other index is the “poverty gap”, which is the total income needed to bring all the poor up to the poverty line. (In the United States, the poverty gap is sometimes expressed as a fraction of GNP.) The former index ignores the amounts by which the incomes of the poor fall short of the poverty line, while the latter index is independent of the number actually in poverty. Both, moreover, are insensitive to a transfer of income from the poor to the very poor. In other words, neither measure is sensitive to the *distribution of income* among the poor. A new measure of poverty has recently been proposed by Sen,<sup>20</sup> which incorporates all three of these concerns into a single index.

The index is axiomatically derived after the general form for the poverty measure is taken to be a “normalized weighted sum of the income gaps of the poor”. Two axioms then suffice to derive the index. The first specifies the income weighting scheme, and the second stipulates the normalization procedure. Sen chooses the rank-order weighting scheme, in which the weight on the income gap of a poor person is simply his rank in the income ordering below the poverty line. It will no more come as a surprise<sup>21</sup> that this weighting scheme throws up the Gini coefficient of the income distribution of the poor. Sen’s normalization axiom requires that when all the poor have the same income, the index takes a value equal to the proportion of persons in poverty multiplied by the proportionate average shortfall of their income from the poverty line.

The following notation (see Sen (1974)) is introduced to set up the Sen index and relate it to other poverty measures.

<sup>19</sup>In 1970 US dollars, this is equivalent to a poverty line of about US\$110 per annum.

<sup>20</sup>See A. K. Sen, “Poverty: An Ordinal Approach to Measurement”, mimeo, London School of Economics, November 1974, forthcoming *Econometrica*; and A. K. Sen, “Poverty, Inequality and Unemployment: Some Conceptual Issues in Measurement”, *Economic and Political Weekly*, Special Number, August 1973, pp. 1457–1464.

<sup>21</sup>See A. K. Sen, *On Economic Inequality*, Clarendon Press, Oxford, 1973.

Let  $n$  = total population size  
 $\mu$  = mean income of the population  
 $z$  = poverty line  
 $q$  = number of people in poverty (i.e. with income less than or equal to  $z$ )  
 $m$  = mean income of the poor  
 $G$  = Gini coefficient of the distribution of income among the poor

Relabel the population (if necessary) in non-descending order of income so that

$$y_1 \leq y_2 \leq \dots \leq y_n.$$

Then

$$y_q \leq z, \text{ but } y_{q+1} > z.$$

The proportion of the population in poverty is:  $q/n$ .

The poverty gap  $T$  is:

$$T = \sum_{i=1}^q g_i$$

where  $g_i = z - y_i$  is the income gap of person  $i$ .

Thus  $T = \sum_{i=1}^q (z - y_i) = q(z - m)$ .

Therefore, the average poverty gap  $\quad \quad \quad = (z - m)$

the proportionate average income shortfall from the poverty line  $\quad \quad \quad = \frac{z - m}{z}$

and the normalized value of the Sen index  $\quad \quad \quad = \frac{q}{n} \cdot \frac{z - m}{z}$ .

The rank order weighting scheme implies a weight of  $(q + 1 - i)$  on the income gap  $g_i$  of person  $i$ , since there are  $(q - i + 1)$  persons among the poor with incomes at least as large as that of person  $i$ . The Sen index  $P$  is then:

$$P = A \sum_{i=1}^q (q + 1 - i)(z - y_i)$$

where  $A$  is a parameter depending on the normalization selected. The normalized value of the index, when each  $y_i = m$ , is:

$$\frac{q}{n} \cdot \frac{z - m}{z} = A(z - m) \frac{q(q + 1)}{2}, \quad \text{since } \sum_{i=1}^q (q + 1 - i) = \frac{q(q + 1)}{2}.$$

Thus

$$A = \frac{2}{(q + 1)nz}.$$



Now the Gini coefficient  $G$  of the distribution of income among the poor can be written as (see Sen (1974)):

$$G = \frac{q+1}{q} - \frac{2}{q^2 m} \sum_{i=1}^q (q+1-i)y_i$$

Therefore,

$$P = \frac{q}{n} \cdot \frac{1}{z} \left[ z - m + \frac{q}{q+1} Gm \right].$$

For large  $q$ ,  $q/(q+1) \approx 1$ , and the index  $P$  reduces to:

$$P = \frac{q}{n} \cdot \frac{1}{z} [z - m(1 - G)].$$

The effect of the weighting scheme is to augment the average poverty gap by the Gini coefficient times mean income of the poor. Thus an additional income “loss” arises when inequality in the distribution is taken into account. The correction for this loss involves deflating the mean income of the poor by  $(1 - G)$ , which yields the familiar “equally distributed equivalent income”<sup>22</sup> corresponding to the rank order welfare function. Hence the weighted income gap is calculated by taking the difference not between the poverty line and the mean income of the poor, but between the poverty line and the equally distributed equivalent income of the poor.

The index  $P$  lies between 0 and 1. It assumes the value 0 when everyone’s income is above the poverty line  $z$  (i.e. when  $q = 0$ ), and the value 1 when everyone has income zero (implying  $m = 0$  and  $q = n$ ).

The rank order welfare function is rather special and not easily defensible. Other welfare functions may be found more acceptable; the weighting schemes implied by them produce different values for the equally distributed equivalent income and, by the same token, different measures of inequality. It is evident that the weighted income gap under any welfare function is simply the difference between the poverty line and the corresponding equally distributed equivalent income.

We noted earlier that a commonly used index of poverty (in the United States) is the percentage of GNP needed to close the poverty gap. A slightly different normalization than the one used by Sen produces a poverty measure which generalizes this index to correct for income inequality among the poor. Let us modify the normalization so that when incomes below the poverty line are equal, the measure reduces to the poverty gap expressed as a fraction of the total income of society (i.e.  $q/n \cdot (z - m)/\mu$ ). With this normalization,  $A$  takes the value:  $A = 2/[(q+1)n\mu]$ .<sup>23</sup> The same weighting procedure as before now yields the modified Sen measure  $M$  given by:

$$M = \frac{q}{n} \cdot \frac{1}{\mu} [z - m(1 - G)]$$

<sup>22</sup>See A. B. Atkinson, “On the measurement of inequality”, *Journal of Economic Theory*, vol. 2, 1970, pp. 244–263. The “equally distributed equivalent income” is the level of income per head which if equally distributed would give the same level of social welfare as the existing distribution of income.

<sup>23</sup>Sen himself alludes to this kind of normalization in Sen (1973), but his equations (8) and (9) there imply a different value of  $A$ , viz.  $A = 2/n^2\mu$ .

The relationship between  $P$  and  $M$  is

$$M = \frac{z}{\mu} \cdot P$$

and the measure  $M$  lies between the limits 0 and  $z/\mu$ .

The measure  $M$  reduces to the proportion of total income needed to eliminate the poverty gap in one of two circumstances: either (i) incomes below the poverty line are equally distributed (implying  $G = 0$ ), or (ii) the same weight of unity attaches to the income gap of every person below the poverty line.

Instead of expressing the income required to close the poverty gap as a fraction of total income, define an index  $F$  (after Fishlow) which expresses the gap as a ratio of the total income of the non-poor. The motivation for this index is the elimination of poverty through a direct transfer of income from the non-poor to the poor. The ratio reflects the burden on the non-poverty group since it represents the proportionate reduction in their income if the poverty gap is to be closed through redistribution alone.

Two comments are appropriate about these indices  $M$  and  $F$ . First, they are not so much measures of poverty as indicators of the ease of its alleviation. Failure to distinguish the measurement of poverty from the prospects for its alleviation can lead to the following anomalous consequence. With no change in the number of the incomes of the poor, an increase in the incomes of some people above the poverty line will lead to a fall in both the indices  $M$  and  $F$ . Yet no reduction in poverty has actually occurred<sup>24</sup> since the position of the poor remains unchanged.<sup>25</sup> What has happened is that a smaller fraction of society's income is now required to eliminate poverty, and to that extent the task may be felt potentially easier. The measurement of poverty thus needs to be separated carefully from its alleviation.

Secondly, the values of  $F$  and  $M$  could exceed unity if the poverty line happens to be drawn at a level sufficiently higher than the mean income of the society. For the poverty gap could then exceed the income of the non-poor (or the total income of society),<sup>26</sup> implying a value of  $F$  (or  $M$ ) larger than one. A sufficient condition for the poverty problem to be "tractable" through transfers is that the mean income of society exceed the poverty line income. There is then enough income to bring everyone in the population above the poverty line. With this condition satisfied, both the indices  $M$  and  $F$  are bounded above by unity.

#### ESTIMATES OF POVERTY IN MALAYSIA

The indices discussed above have been estimated for the Malaysian sub-population in poverty. We assume first that the weight attaching to each person's income gap is unity. The indices then reduce to the poverty gap expressed in terms

<sup>24</sup>There might even be an increase in poverty if one takes a relative view of poverty.

<sup>25</sup>The Sen poverty measure  $P$  is unchanged in this case since the income gap of the poor is normalized on the poverty line  $z$  and not on the mean income  $\mu$  of the entire community. Only an actual reduction in the number, or an increase in the incomes, of the poor can lead to a fall in the Sen poverty index.

<sup>26</sup>If poverty is to be eliminated by transfers alone, the income of the non-poor must be sufficiently larger than the poverty gap so as not to drag the non-poor into poverty themselves.

of various categories of income. Estimates of these measures, the proportion in poverty, and the average income gap, are presented in the table below for Peninsular Malaysia and each ethnic group.

	Proportion of persons in poverty $\left(\frac{q}{n}\right)$	Average poverty gap ( $z - m$ ) in M\$ per month	Weights of unity on income gaps of poor persons			Gini coefficient of income distribution among poor	Rank-order weights on income gaps of poor persons		
			P	M	F		P	M	F
Peninsular Malaysia	0.402	9.05	0.145	0.073	0.083	0.2126	0.200	0.100	0.115
Malays	0.562	9.74	0.219	0.161	0.215	0.2200	0.294	0.216	0.290
Chinese	0.183	6.80	0.050	0.018	0.019	0.1677	0.072	0.026	0.028
Indians	0.334	7.28	0.097	0.043	0.048	0.1658	0.137	0.060	0.067
Others	0.433	12.44	0.215	0.029	0.030	0.3328 <sup>z</sup>	0.288	0.039	0.040

The percentage of the population in poverty was calculated as 40.2 percent, and the average poverty gap as M\$9.05 per month. The poverty gap as a fraction of the total income needed to support everyone in the population at the poverty level is 14.5 percent. The index  $M$  for the country was estimated at 0.073, which implies that the poverty gap in Malaysia stands as 7.3 percent of total personal income. If poverty were to be eliminated by a transfer from the non-poor to the poor, the non-poor would need to sacrifice 8.3 percent of their income (or 12.7 percent of their income in excess of poverty line income).

These indices have also been computed separately for each ethnic group. The average income gap is largest for the small and heterogenous community of "Others" (comprising the Europeans, Thais, other Asians, etc.), while the incidence of poverty is highest among the Malays. The product of these two numbers (divided by poverty level income) gives the Sen measure in the unit weights case, which shows that poverty is more acute among the Malays than among the "Others".

The values of  $M$  and  $F$  for the communities show the poverty gap of each race group in terms of the incomes of that group. From a policy viewpoint, however, it is probably more useful to express the poverty gap of each race group in terms of the *overall* poverty gap. Doing this we find that of the aggregate income shortfall, the Malays account for 79.0 percent, the Chinese for 11.9 percent, the Indians for 8.0 percent, and Other communities for 1.1 percent.<sup>27</sup> However, of the aggregate *number* in poverty, the Malays account for 73.5 percent, the Chinese for 15.8 percent, the Indians for 9.9 percent, and Other communities for 0.8 percent. The difference between these two sets of figures obviously reflects the difference between communities in their average poverty gap.

Assume now that rank-order weights attach to the income gaps of poor persons. The average poverty gap then needs to be augmented by the Gini coefficient times mean income of the distribution among the poor. This adjustment yields values for  $P$ ,  $M$  and  $F$  shown in the last three columns of the table.

<sup>27</sup>In a poverty relief programme, allocation to communities in these percentages will reduce their income gaps equiproportionately.

The Sen poverty measure takes the value 0.200 for Peninsular Malaysia. It is difficult to judge whether that is a large or small number in the absence, for instance, of estimates for other countries.<sup>28</sup> In fact, that was one of the main reasons for evaluating the Sen measure in the unit weights (or distribution-free) case, where it has a straightforward interpretation. Its value under rank-order weighting then indicates the magnitude of the correction due to inequality among the poor.

According to the Sen index, poverty is highest amongst the Malays, followed by the "Others", Indians, and Chinese, respectively. Although this indicates the severity of the problem *within* each ethnic group, it cannot reveal anything about the *contribution* of each group to overall poverty. The Sen measure is, unfortunately, not decomposable between groups. Yet, in the design of poverty redressal policies, it would seem important to be informed of the extent to which a particular group accounts for overall poverty. An index which does permit decomposition between groups is the simple "incidence of poverty" measure. In our concluding section, we adopt this index to diagnose the nature of poverty in Malaysia.

#### A PROFILE OF POVERTY IN MALAYSIA

A diagnosis of poverty requires answers to questions such as: Who are the poor? Where are they located? In which sectors do they work? What are the characteristics of the poor that are different from those of the non-poor? and so forth. The "profile of poverty" below describes the poor in terms of socio-economic variables such as race, location, employment status, occupation, sector of employment, and education.

Since the household is the basic income sharing unit, it would seem more useful (for policy purposes) to describe the population in poverty in terms of its *household*, rather than individual, characteristics. The unit in terms of which poverty is measured here is, accordingly, the household. Regrouping the lowest 40.2 percent of the population into household units implies 36.5 percent of households in poverty.

The panels in the table show two distinct aspects of poverty. In column 2 is shown the percentage distribution of poverty between the categories of each selected characteristic. This allows us to locate concentrations of poverty. Column 4, on the other hand, shows those groups which suffer from a particularly high incidence of poverty; these are the "high risk" groups who may, in fact, account for only a small proportion of overall poverty. Clearly, both types of information are important for the design of poverty redressal policies.

The following picture of the poor emerges from an examination of the numbers in the table.

(1) The problem is overwhelmingly a Malay one, with 78.1 percent of the poor (households) being Malays. There are six Malay households in poverty for every one Chinese. Over one half (51.4 percent) of the Malays suffer from poverty, whilst the incidence among Chinese is 14.7 percent, and among Indians 24.8 percent.

<sup>28</sup>The Sen index would seem useful mainly for comparisons, either across countries or over time. So far, however, we have not seen any other estimates of the measure for a comparison.

(2) Poverty is also overwhelmingly a rural phenomenon, with 87.7 percent of the poor living in rural areas.<sup>29</sup>

PROFILE OF POVERTY IN MALAYSIA  
POVERTY LINE DEFINED AT HOUSEHOLD INCOME PER MEMBER OF M\$25 PER MONTH.  
36.5 PERCENT OF ALL HOUSEHOLDS FALL BELOW THIS POVERTY LINE.

Selected Characteristic	(1) Percentage Distribution Among all Households	(2) Percentage Distribution Among Poverty Households	(3) Percentage Distribution Among Non-Poverty Households	(4) Incidence of Poverty (Percent)	(5) Relative Incidence of Poverty (Col. 2/ Col. 1)
<i>Race of H/H</i>					
Malay	55.4	78.1	42.4	51.4	1.41
Chinese	32.0	12.9	42.9	14.7	0.40
Indian	11.7	8.0	13.9	24.8	0.68
Other	0.9	1.0	0.8	40.3	1.11
	(100.0)	(100.0)	(100.0)		
<i>Location by Stratum of H/H</i>					
Urban	28.4	12.3	37.6	15.8	0.43
Rural	71.6	87.7	62.4	44.6	1.22
	(100.0)	(100.0)	(100.0)		
<i>Location by State of H/H</i>					
Johore	13.4	12.1	14.1	32.9	0.90
Kedah	11.3	15.1	9.2	48.6	1.34
Kelantan	9.5	17.0	5.2	65.2	1.79
Malacca	4.6	4.1	4.9	32.0	0.89
Negri Sembilan	4.7	4.2	5.1	32.1	0.89
Pahang	5.8	4.9	6.3	30.7	0.84
Penang	8.5	6.9	9.4	29.7	0.81
Perak	17.8	16.8	18.3	34.5	0.94
Perlis	1.5	2.4	1.0	58.9	1.60
Selangor	18.2	9.5	23.2	19.1	0.52
Trengganu	4.7	7.0	3.3	54.6	1.49
	(100.0)	(100.0)	(100.0)		
<i>Employment Status of Head of H/H</i>					
Employer	2.7	0.4	4.0	5.1	0.15
Employee	51.8	38.2	59.3	26.3	0.74
Own Account Worker	39.3	55.3	30.4	50.1	1.41
Housewife/Houseworker	2.6	2.2	2.8	30.5	0.85
Unemployed	3.6	3.9	3.5	38.0	1.08
	(100.0)	(100.0)	(100.0)		
<i>Occupation of Head of H/H</i>					
Professional and Technical	5.7	1.1	8.2	6.7	0.19
Administrative and Managerial	3.3	0.4	4.9	4.4	0.12
Clerical and Related	4.0	0.3	6.1	2.7	0.08
Sales Workers	11.5	6.4	14.3	20.0	0.56
Service Workers	8.3	3.4	10.9	14.9	0.41
Farmers	27.6	47.9	16.4	61.9	1.74
Farm Labourers	21.6	29.5	17.3	48.6	1.37
Production Workers	18.0	11.0	21.9	21.9	0.61
	(100.0)	(100.0)	(100.0)		

<sup>29</sup>Separate profiles of the urban and rural poor (not shown here) reveal that the ethnic distribution of urban poverty is quite different from that of rural poverty. The Chinese form the most numerous group among the urban poor, even though the relative incidence of urban poverty amongst Chinese is 0.72 compared to 1.44 amongst Malays.

MALAYSIA POVERTY PROFILE—(Continued)

	(1)	(2)	(3)	(4)	(5)
Selected Characteristic	Percentage Distribution Among all Households	Percentage Distribution Among Poverty Households	Percentage Distribution Among Non-Poverty Households	Incidence of Poverty (Percent)	Relative Incidence of Poverty (Col. 2/ Col. 1)
<i>Sector of Employment of Head of H/H</i>					
Agriculture	24.1	41.7	14.4	61.5	1.73
Agricultural Production	25.7	33.4	21.4	46.2	1.30
Mining and Quarrying	1.8	0.9	2.3	18.1	0.50
Manufacturing	8.6	5.2	10.4	21.8	0.60
Construction	3.2	2.0	4.0	21.5	0.63
Public Utilities	1.6	1.0	2.0	21.0	0.63
Commerce	12.6	7.2	15.6	20.2	0.57
Transport and Communication	5.5	3.3	6.7	21.2	0.60
Services	16.9	5.3	23.2	11.1	0.31
	(100.0)	(100.0)	(100.0)		
<i>Education of Head of H/H</i>					
None	32.1	43.2	25.7	49.0	1.35
Some Primary Completed	33.1	35.6	31.7	39.1	1.08
Primary	20.4	18.4	21.6	32.8	0.90
Lower Secondary (Forms I-III)	6.7	2.1	9.3	11.7	0.31
Some Upper Secondary	3.0	0.4	4.4	5.2	0.13
Certificate V or Higher	4.7	0.3	7.3	2.1	0.06
	(100.0)	(100.0)	(100.0)		
<i>Sex of Head of H/H</i>					
Male	81.7	77.5	84.2	34.6	0.95
Female	18.3	22.5	15.8	44.9	1.23
	(100.0)	(100.0)	(100.0)		
<i>Age of Head of H/H</i>					
Under 20	1.5	1.3	1.6	31.5	0.87
20-29	15.3	11.5	17.5	27.4	0.75
30-39	25.2	26.7	24.4	38.5	1.06
40-49	22.9	25.4	21.5	40.4	1.11
50-59	19.1	18.0	19.7	34.3	0.94
Over 60	16.0	17.1	15.3	39.0	1.07
	(100.0)	(100.0)	(100.0)		
<i>Household Size</i>					
1	8.9	5.7	10.7	23.5	0.64
2	9.5	6.1	11.6	23.2	0.64
3	11.7	9.4	12.9	29.5	0.80
4	13.1	11.4	14.0	31.8	0.87
5	12.6	13.8	11.9	40.0	1.10
6	12.0	13.8	11.0	41.8	1.15
7	9.8	12.5	8.2	46.7	1.28
8	7.9	9.9	6.8	45.6	1.25
9	5.5	6.1	5.2	40.3	1.11
10+	9.0	11.3	7.7	45.7	1.26
	(100.0)	(100.0)	(100.0)		
<i>No. of Children Under Age of 15</i>					
0	24.7	14.0	30.9	20.7	0.57
1	17.0	14.3	18.5	30.7	0.84
2	15.5	14.9	15.8	35.2	0.96
3	13.6	15.5	12.5	41.5	1.14
4	11.5	15.3	9.3	48.4	1.33
5+	17.7	26.0	13.0	53.5	1.47
	(100.0)	(100.0)	(100.0)		

MALAYSIA POVERTY PROFILE—(Continued)

	(1)	(2)	(3)	(4)	(5)
Selected Characteristic	Percentage Distribution Among all Households	Percentage Distribution Among Poverty Households	Percentage Distribution Among Non-Poverty Households	Incidence of Poverty (Percent)	Relative Incidence of Poverty (Col. 2/ Col. 1)
<i>No. of Earners</i>					
0	1.3	3.4	0.0	99.0	2.62
1	57.8	66.5	52.9	41.9	1.15
2	26.4	22.5	28.6	31.1	0.85
3	9.1	5.6	11.1	22.4	0.62
4+	5.4	2.0	7.4	13.3	0.37
	(100.0)	(100.0)	(100.0)		

(3) The four northern states of Kedah, Kelantan, Perlis and Trengganu stand out as having above average incidences of poverty; together they account for 41.5 percent of poverty households (but only for 27.0 percent of all households).

(4) Employees and own-account workers make up 93.5 percent of the poor. The incidence of poverty among households whose heads are own-account (i.e. self-employed) workers is 50.1 percent, which is higher than that among households whose heads are employees (26.3 percent). The unemployment rate among heads of poverty households is a mere 3.9 percent,<sup>30</sup> and the rate of poverty among households with unemployed heads is 38.0 percent.

(5) Of the poor, 47.9 percent are farmers and 29.5 percent are farm labourers. Both groups display high incidences of poverty with 62 out of 100 farmers, and 49 out of 100 farm labourers, in poverty. The higher incidence of poverty among farmers than among farm labourers reflects something of a dual economy in the rural sector. Farm labourers include both the relatively well paid estate workers (who form a significant proportion of the rural labour force), as well as casual and other labourers. The category of farmers includes all peasants and smallholders.

(6) The incidence of poverty is well above average in the sectors Agriculture (61.5 percent) and Agricultural Products (46.2 percent)—two sectors which account for three-quarters (75.1 percent) of poverty households, but under one half (49.8 percent) of all households.

(7) 97.2 percent of all poverty households are headed by persons who only attended primary school or less. Of these, 43.2 percent had no education at all. Education significantly raises the chance to escape from poverty, as shown by the incidence of poverty declining with education. There is an extremely sharp drop in incidence upon the acquisition even of *some* secondary education. Of those with some upper secondary education only 5.2 percent were poor, and of those who had completed the School Certificate only 2.1 percent were poor.

(8) The distribution and incidence of poverty as a function of household composition show the following features: (i) Households headed by females are

<sup>30</sup>Thus the problem of poverty needs to be distinguished from the problem of unemployment, and a policy of absorbing the unemployed (through an expansion of employment) will not make a significant dent on poverty.

somewhat more poverty-prone (44.9 percent) than those headed by males (34.6 percent). (ii) The age profile of poverty does not show wide variation in incidence, which is lowest however for the 20–29 age group. (iii) The incidence of poverty increases with household size up to 7-member households, after which the relationship is unclear (owing to the effect of additional income earners); but the incidence is above average for all size classes above five, and vice-versa. A comparison of the percentage distribution of household size among poverty and non-poverty households shows a larger average household size for the poor. (iv) The incidence of household poverty increases continuously with the number of children under age 15 (who are very unlikely to be income-earning members). (v) The quasitotality (99 percent) of households with no earner are in poverty, and the incidence rate falls with the number of earners. Of poor households 66.5 percent had just one earner and 22.5 percent had two.

When several of the characteristics associated with high degrees of poverty are taken together, we find that the chances of being poor can become extremely high. Thus, for example, a Malay farmer in rural Kelantan has a worse than three-fourths probability of being poor.

In order to design efficient (minimum leakage) policies and projects to help the poor selectively, we need to identify smaller, more homogeneous groups such as these, with particularly high incidences of poverty. This is currently being done through selected cross-tabulations of the poverty profile.