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The size of the working poor population in developing countries

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Foreword

The aim of this paper is to estimate the population of those persons in the labour market in developing countries who are poor and who work. Given that one important *common* focus of many international agencies is poverty reduction, it is surprising that this area is not too well researched. In particular for the ILO this issue is of special interest since its own focus is the world of work. This paper is a first step in estimating the working poor population in developing countries.

Its main findings suggest that there were around 534 million persons who could be classified as the working poor in developing countries in 1997. The population was around 536 million in 1986. The working poor in 1997 constituted around 25 per cent of the employed labour force in developing countries, while around 95 per cent of them lived in low income countries. The slight decline that has taken place in the working poor populations over the decade is driven by changes in middle income countries. Working poor populations in low income countries have increased, in middle income countries they have declined. During the period, the share of middle income countries in the working poor has declined from 12 per cent to 5 per cent, while that of low income countries has increased from 88 per cent to 95 per cent. The decline (or stagnation) observed in the working poor at the all country level is unlikely to continue in the future after middle income countries are successfully able to eliminate working poverty. At a country level, as is to be expected, both low and middle income country groups include countries that show increases as well as declines in the working poor. However while in middle income countries there is a preponderance of countries showing declines according to expectation with significant reductions in working poor numbers; in low income countries both declining and increasing working poor populations are significant in number. This suggests that a possible polarisation process may be taking place within low income countries between those that are reducing the working poor and those that are not.

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Contents

List of tables

1. Introduction

In developing countries where effective social insurance systems do not exist the poor work in order to support themselves and their families. In such countries it is also apparent that the long run unemployed largely cover those who in fact are not the "poor" in society. However very often the conceptualisation behind employment and labour market policies (and the use of empirical proxies for this purpose) tends to ignore the importance of these two *stylised facts* about poverty and long-run unemployment in developing countries. This oversight is illustrated by the possibility of a negative relationship between the unemployment rate and the poverty rate in a cross section of developing economies where typically the unemployment rates are lower than poverty rates [1].

The mistake with respect to these stylised facts has a basis. It is due to the fact that the general notion of the labour market that policy makers operate with is often that of a developed market economy. In societies where social insurance systems or effective social floors [2] exist, (which are also wealthier societies), the "problem of employment" (as well as the preferred indicator revealing this problem) is rightly captured in the unemployment rate [3]. People who are unemployed in developed economies are in most instances protected by this social floor below which they are unlikely to fall. The underemployed, by the same token, are those who are not engaged in working for part of their available working time due to a lack of work, and they too are commensurately protected by the social floor. It is important to introduce here the notion of poverty that is relevant in developed economies, since it is a source of confusion. Clearly wealthier societies have a higher standard of what constitutes the poor, and thus they have higher poverty lines than developing countries [4]. So when the social floor is set at the social minimum for a developed society "the poor" in that society and the "unemployed" appear to be and are mostly the same [5]. The attributes of poverty and unemployment thus rightly belong to the same section of the labour force in developed economies.

[1] The relationship between the poverty rate (Pr) and the unemployment rate (Ur) for the 1990s for a set of developing countries for which both unemployment and poverty rates were available is:

P_r = 17.63* - 0.85*Ur (R-squared = 0.13; N = 25; t-values in parenthesis)
(3.94) (-1.91)

The relationship is of course driven by levels of national income, because unemployment rates are typically higher in middle income developing countries and poverty rates typically higher in low income developing countries. The relationship appears to be counter-intuitive only if the two stylised facts are ignored. The equation is however only illustrative because actual data on the unemployed typically not only include the long-run but also short run unemployed. Some of the latter can be in the poor. This discussed in more detail later. However the assumption made here, which is a reasonable one, is that long term unemployed are in the majority. In the country context of India the problems thrown up by the gap between poverty incidences on the one hand and unemployment on the other have been commented upon. (See A.K.Ghose (1999), Current Issues of Employment Policy in India, Economic and Political Weekly , September, 4 -10, 1999)

[2] An effective social floor can be seen as constituting an effective social insurance system, and a largely applicable minimum wage.

[3] The long run unemployment rate being defined as number of persons of working age without employment as a proportion of the labour force of that working age, for a long run reference period.

[4] So if we set a universal poverty line of US 1 dollar a day (PPP) no developed country would have any poor. Alternatively if we set a much higher poverty line which may adequately capture what is considered poor in developed economies, majority populations of developing countries could be classified as poor.

[5] Here the "poor" are on a different definition of poverty than the poor in developing countries. For example at a 10 dollar line as opposed to a 1-dollar a day line. Moreover in developed countries the definition of the poor may be higher than the limit at which the social floor equivalent is effectively set, say 8 dollars a day. So one can have unemployed at the social floor living below a "poverty line", i.e poor unemployed.

If we now remove the category of an effective social floor in a society, we approximate to conditions that bring us closer to poor developing economies. Here of course the absence of a mechanism of protection in the labour market means, from an employment perspective, that all those who survive below an appointed notional social minimum, for example below a minimum poverty line, must by definition be working in order to survive and support their families. On the other hand, in these countries those who can survive without working, i.e. the unemployed, necessarily tap in to non-institutionalised societal mechanisms (family and other networks) that allow them to survive and "seek" work. Essentially most of the unemployed choose not to (and can therefore afford not to) seek certain types of work because they can survive above the poverty line without having to take on the types of work that they do not seek. This is precisely why recorded unemployment rates, compared to poverty rates are typically low in poor developing countries. More crucially, from an employment perspective, in such countries, the attributes of poverty and unemployment do not significantly overlap for the same sections of the labour force.

What the above characterisation suggests in dynamic terms is that as societies develop effective social floors with economic growth two things happen. One, the operative definition of who the poor are changes (national poverty lines become higher); and two, those who are classifiable as the working poor are now picked up by the social floor and appear as the unemployed.

The objective of this note is make to attempt a ball-park estimate of the working poor in developing countries[6] and trends in this category over time. The working poor are defined as those who work *and* who belong to poor households. The definition of the working poor involves two statistical units: the individual and the household. The *individual* is the basis for establishing the "working " and " not working" classification; and the *household* is the basis for establishing the "poor" and "not poor" classification[7].The World Bank data on poverty headcount percentages is *based* on household surveys[8], and estimation problems associated with the latter are implicit in our estimates as well.

[6] It is often suggested in policy discussions that given the deficiency of data and information in developing country contexts, appropriate indicators for capturing the problem of employment are simply not available. Consequently we need to make do with proxies that do exist. The point to be made in this regard is that this may be permissible for some proxies that plausibly capture the working poor on the basis of expectation and country specific circumstances, like estimates of certain types of informal work or sector specific employment categories for which assumptions on poverty can be made like agricultural casual labour. Such second-best arguments however are not be justifiable for categories like the unemployed.

[7] There is consequently the category of those who are part of poor households and who yet earn higher than poverty line incomes (assuming that these are set) and those who earn less than poverty line incomes but are part of non -poor households. Clearly household sizes, and the distribution of earners and dependents in households can vary, furthermore there are income transfers across households. The poor household is consequently a result of all these factors. Estimation of the working poor at a country level can take these factors in to consideration.

[8] World Development Report, 2000/ 2001 See Technical Notes to Table 4. The *transformation* from household to individual is present in both our calculations and the World Bank's poverty data that is used. There is however another problem that our estimates do not address which concerns combining household survey data (as in the poverty estimates of the Bank) and national income accounts (as in estimates of GNP). The Bank's poverty data are based on *household* surveys and poverty results from these are in some cases known to be inconsistent with average consumption and /or income levels calculated on the basis of national income accounts. Thus there is a potential inconsistency between national income accounts data and household survey data. (See M. Ravallion (2001) Growth Inequality and Poverty: Looking Beyond Averages, WIDER (mimeo) for a discussion). We combine these data in our regressions for generating missing values, but there is nothing that is done for correcting the data problem. However, since our aim here is to generate a *ball park* global figure of the working poor, and to get a broad direction of trends over time in this figure, this may not be such a serious issue.

2. Method

If the head count population of the poor is *given*, as it is in this case, then one way to estimate the size of the working poor in a country is to adjust the figure of the population of the poor by relevant factors for the population of the poor taken from demographic and labour force data respectively, so as to exclude out of this poor population all those amongst them who do not participate in the labour market for any reason.

Starting with the population of the poor, the first factor that the population of the poor needs adjustment for is the working age population of the poor, .i.e. proportion of persons of working age in the total population of the poor. This can be called the *demographic factor for the poor*. The second factor that needs to be taken in to account is the proportion of those who are in the labour force *in* the working age population of the poor. This is the *labour force participation rate for the poor*.

We can then approximate the size of the working poor in a country in the following way.

If,
P_t = Total population
P_t' = Total population of the poor
P_w = Working age population
P_w' = Working age population of the poor
L_w = Labour force of working age
E_w = Employed Labour Force
L_w' = Labour force of working age in the poor
$P_r' = P_t' / P_t$ = Poverty headcount rate for the population

As argued, the population of the poor P_t' first need to be adjusted by the demographic factor for the poor which is:

$$D' = P_w' / P_t'$$

and then by the labour force participation rate of the poor which is

$$L_{pr}' = L_w' / P_w'$$

This gives an estimate of the working poor :

$$WP = P_t' * D' * L_{pr}'$$

If however we do not have estimates for D' and L_{pr}', then we need to assume these are the same for the poor as they are for the population as a whole, where:

The demographic factor for the total population is

$$D = P_w / P_t$$

and the labour force participation rate for the total population is

$$L_{pr} = L_w / P_w$$

Assuming,

$D' \Rightarrow D$; and $L_{pr}' \Rightarrow L_{pr}$

gives us

$WP = P_t' * D * L_{pr}$

$WP = P_t' * (P_w / P_t) * (L_w / P_w)$

which is equal to

$WP = P_r' * L_w$

We can then estimate:

$$\sum_{i=1}^{n} WP_i$$

where $_i$ are the countries from 1 to n, to get a global figure of the working poor.

Similarly we can estimate the rate of *poverty in employment* or the *working poverty rate* as the ratio of the working poor to the employed population

$WP_r = WP / E_w$

Procedures based on predicted values generated from sample regressions on poverty with national income as the independent variable, can be applied to substitute for missing values to complete the data set.

Essentially, the time trend in the estimate of population of the working poor can go either way. This is because while poverty rates have a tendency to decline over time (associated with economic growth), the labour force, like population, in absolute terms increases. Stricter comparisons over time based on preliminary exercises like the present one, are subject to cautions. However, the estimation for two points in time is of some indicative comparative value.

3. Data

Poverty

The data on poverty used in the exercise is comparable data from the World Bank for the 1980s and 1990s. The poverty rate, P_r', which is the population living in poverty relative to the whole population, is based on a *transformation* implicit in the World Bank data, that is taken as *given* in our calculations. Most poverty estimates are based on household data, which are then *transformed* to an individual count to give a poverty headcount ratio. The poverty line used is that

of 1 US dollar a day [9]. This means that the same poverty line applies to all countries. Given that it is a poverty line that is low and is generally used, the poor by definition only exist in countries where persons fall below this line. This poverty definition is used for the estimate of the working poor as the latter need to be based on an international line. This is because country figures are being compared and added to generate a global figure, and the poverty line on which the estimate of the poverty headcount is based needs to be the same.

National income

The national income estimates of GNP PPP per capita are from World Bank [10]. These estimates are required in predicting missing values. The classification of low and medium countries is also from the World Bank [11]. The selection of countries is from all low and middle income countries excluding two middle eastern countries and the large transition economies.

The labour force

The total labour force comprises people who meet the ILO definition of the economically active population of people who supply labour for the production of goods and services during a specified period. It includes both the employed and the unemployed. Some qualifications that make labour force comparisons over countries only broadly indicative are the following. While home-makers and other *unpaid* members of the care economy and the informal sector are generally excluded from the labour force, there are differences in estimates across countries based on whether special categories like students and military services are included or excluded. Secondly, in some countries data on the labour force refer to people above a specific age or in an age band, while in others there is no specific age provision. Third, the reference period of the census or survey on which these estimates are based can also vary. Lastly in developing countries a particular problem with labour force estimates is that in instances where the household is the unit of production and family members work at different degrees of intensity and regularity, the estimated labour force may be affected [12].

The labour force estimates used in the estimation are based on ILO [13] and World Bank data produced by the World Bank. Here labour force activity rates from the ILO database are applied to World Bank population estimates to create a series consistent with these population estimates [14]. Although the difference, where it obtains, is not too large, the reason for using this data is that the poverty rates being used (expressed as persons in poverty as a percentage of *population*) are the World Bank's. The labour force age definition is that of population aged

[9] These are in 1985 US purchasing power parity (PPP) on a poverty line of less than $1 dollar day basis . See Chen, Datt and Ravallion 1993; World Development Reports various years, and the World Development Indicators-CD-Rom 1999 and 2000.

[10] These are from WDI 1999 but based on Summers and Heston World Penn Tables 5.6.

[11] The World Bank's main criterion for classifying economies is gross national product (GNP) per capita. Every economy is classified as low-income, middle-income (subdivided into lower-middle and upper-middle), or high-income.Low-income and middle-income economies are referred to as developing economies. For example, for the 1990ss economies are divided among income groups according to 1998 GNP per capita, calculated using the Atlas method. The groups are: low-income, $760 or less; lower-middle-income,$761–3,030; upper-middle-income, $3,031–9,360; and high-income, $9,361 or more. See any recent World Development Report for details. In this note we fix the countries list for the two periods.

[12] ILO, Yearbook of Labour Statistics 1997.

[13] ILO database Estimates and Projections of the Economically Active Population, 1950–2010.

[14] This procedure sometimes produces labour force sizes that differ slightly from those published in the ILO's Yearbook of Labour Statistics.

15–64. A draw back of this is the non-inclusion of child labour in the potential labour force [15]. However it is quite plausible to argue that child labour is likely to come from families of the working poor.

The selection of countries is from all low and middle income countries excluding two middle eastern countries and the large transition economies.

Unemployment

The unemployment data [16] are from the ILO which defines the unemployed as members of the economically active population who are without work but currently available for and actively seeking work, including people who have lost their jobs and those who have voluntarily left work. The interpretation of unemployment estimates is specially problematic when we consider developing countries. The coverage of rural areas on this indicator is often inadequate. Most critically, unemployment rates are available for very few low income countries though the coverage is slightly better for middle income countries. Moreover even for estimates which do exist, their associated reference periods, criteria for seeking work, and the treatment of people temporarily laid off and those seeking work for the first time not only vary on a cross country comparison but can and do change over time. Although we are interested in the long run unemployed , and typically data presented by the ILO are annual averages of either monthly quarterly or semi-annual data, the reference period of which is typically a short term one, mostly a week.

Thus data on unemployment not only has poor global coverage it tends to vary on definition as well. For our purposes we need to estimate the number of employed . This is to estimate the working poor as a proportion of the “employed” labour force. We can call this ratio, the working poverty rate. It is also not possible to use direct estimates of employed labour force as these also suffer from limitations. However, unemployment rates multiplied by the labour forces in low and medium countries, give us the unemployed . This figure can be subtracted from the total labour force figures in order to generate the employed labour force figure. We take only those unemployment rates, for which values are plausible . For the rest, constituting a large set of countries we apply a rough average unemployment rate for middle and low income countries respectively for each of the chosen years. This comes to around 9 per cent for middle income countries and 3 per cent for low income countries.

[15] Apart from the issue of the distinction between working children in poverty and child labour as such, comprehensive country-based estimates for child labour for all countries do not exist. It is therefore better, if needed, to add on a global child labour estimate to a global estimate of working poor

[16] The unemployment rate is defined as the ratio of the total unemployed (for a specific age group or the whole working age labour force) to the relevant total labour force.

4. Periodisation

While labour force estimates are available in time series for most countries, poverty estimates vary across countries and are not available in a time series [17]. The period of the estimate of the working poor therefore has to be for a year for which the aggregation may be "plausible". For example if the poverty estimates in the 1980s are spread from 1981 to 1989 with the large population countries nearer 1985, it would be appropriate to select a year near this year and assume each of the poverty figures in the series to be applicable to that chosen year. The fixing of a year is also better for estimating the poverty rates for countries which have missing values [18] . We have two series of poverty for the 1980s and 1990s.

Thirty-four countries, out of which thirty-five had headcount poverty estimates on a 1 dollar a day poverty line basis and GNP per capita, for the 1980s were available . These are countries for poverty estimates ranging from 1980 to 1991. The year chosen was 1986.

Fifty-five countries for which headcount poverty estimates on a 1 dollar a day poverty line and GNP per capita for the 1990s were available. These estimates cover a period from 1992 to 1999. The year chosen is 1997.

5. The size of the working poor

We use the term "actual" for the working poor for cases where the working poor have been calculated based on an actual poverty rates for the country. The term "predicted" for the working poor is reserved for those country cases where the poverty rate used, is a predicted one, with which its relevant employed labour force figure has been multiplied to generate the working poor figure. The selection of countries is from all low and middle income countries *excluding* two West Asian countries and the large transition economies.

The four summary tables presented below are based on common country comparisons between the two selected years, 1986 and 1997, and systematically use actual and predicted observations. We start from actual observations in Table 1 and then expand the number of countries in each successive table. The fuller tables with country level observations corresponding to these summary tables are given in the Annex.

[17] It may be possible to develop a methodology at a country level such that poverty rates can be estimated for a chosen year. This can be done by applying consumption growth rates from national income accounts to poverty rates, as the World Bank does for its regional estimates in order to make projections for a pre-selected year.

[18] Fixing a year is also important for filling missing values. For example, alternatively if one uses the estimating regression equation based on data for national income for *matching* years to the poverty data, then it becomes difficult to interpret what year a predicted value of a poverty rate corresponds to for a given years value of national income. On the other hand, if labour force is fixed for all countries (actual and predicted)then the only assumption being made is on the poverty rate.

Estimate 1

Table 1.
The size of working poor and working poverty rates in 1986 and 1997 - Estimate 1: Actual values

	Working poor in 1986	Working poor in 1997	Number of countries	Number of countries negative change	Number of countries positive change	% change annual
Common countries: All low and medium income countries (actual [25])	405.441 {33.0}	392.36 {25.6}	25	15 {18}	10 {7}	-0.30 {-2.28}
Common countries: low income countries (actual [11])	379.908 {34.7}	380.3 {27.9}	11	6 {9}	5 {2}	+0.01 {-1.95}
Common countries: medium income (actual [14])	25.533 {18.9}	12.062 {7.0}	14	9 {9}	5 {5}	-6.59 {-8.68}

Note: Actual = using actual observations on poverty rates and labour force ; predicted = using an estimated poverty rate by regression on national income, and actual observations on labour force.

Figures in {} brackets are the working poverty rates, WP_r, defined as working poor asa proportion of the employed.

The first estimate, presented in Table 1, of the working poor is based on *actual* common observations for 1986 and 1997. The sample constitutes 25 common observations of which 11 common country observations are in the low income category and 14 common country observations are in the middle income category. The overwhelming percentage of the working poor remained in low income countries. The figures also show that while the absolute population of the working poor marginally declined, by 0.30 per cent per year, the working poor population in low income countries remained stable in net terms. The declines which took place in the population of the working poor were in the middle income countries. In terms of the working poverty rate, the WP_r, what is clear is that the decline in the WP_r is faster than the rate of decline in absolute numbers. Working poverty rates decline consistently across low and middle income country classifications, as well as in aggregate. They are around 25 per cent for the all country aggregate, around 28 per cent for low income countries and 7 per cent for medium income countries.

Estimate 2

Table 2.

The size of working poor and working poverty rates in 1986 (actual and predicted) and 1997 (actual)

	Working poor in 1986	Working poor in 1997	Number of countries	Number of countries negative change	Number of countries positive change	% change annual
Common countries: All low and medium income countries 1986 (actual (25) predicted (21)) ; 1997 (actual (46))	455.979 {33.0}	467.051 {26.9}	46	21 {25}	25 {21}	0.22 {-1.84}
Common countries: low income countries 1986 (actual (11) predicted (12)) 1997 (actual (23))	421.970 {35.3}	449.536 {30.1}	23	9 {13}	14 {10}	0.58 {-1.44}
Common countries: medium income 1986 (actual (14) predicted (9)) ; 1997 (actual (23))	34.008 {18.0}	17.514 {7.1}	23	12 {12}	11 {11}	-5.85 {-8.08}

Note: Actual = using actual observations on poverty rates and labour force ; predicted = using estimated poverty rate by regression on national income, and actual observations on labour force.

Figures in {} brackets are the working poverty rates defined as working poor asa proportion of the employed.

Since we have only 25 common observations in 1986 and 1997 (reported in Table 1), and 55 actual observations for 1997, therefore in order to produce a fuller comparable table, we need to increase observations in the 1986 period to match those in 1997. This is done by predicting poverty rates for those countries that are in the 1997 list but for whom poverty data is not available in the 1986 list, and then calculating the working poor for these missing countries in 1986. This prediction of poverty rates for missing countries has been done on the basis of the following equation:

$$Log\ P_r = \underset{(5.68)}{3.54} \underset{(-3.61)}{-0.69} * Log\ \text{GNP per capita (ppp) 1986}$$

[Adjusted R-Squared = 26 per cent ; N = 34 ; t values in parenthesis.]

The second estimate presented in Table 2 above, is therefore a comparison between *actual and predicted* observations of countries in the 1986 and the common country observations with these in the 1997 that are based on actual poverty rates. We find that the direction of results in Table 1 are replicated in Table 2.

Estimate 3

Table 3.
The size of working poor and working poverty rates in 1986 (actual and predicted) and 1997 (actual and predicted)

	Working poor in 1986	Working poor in 1997	Number of countries	Number of countries negative change	Number of countries positive change	% change annual
Common countries: all low and medium income countries 1986 (actual (33) predicted (53)) ; 1997 (actual (46), predicted (40))	507.44 {32.2}	506.15 {25.3}	86	48 {57}	38 {29}	-0.02 {-2.15}
Common countries: low income countries 1986 (actual (13) predicted (31)) ; 1997 (actual (23), predicted (21))	451.070 {35.1}	480.14 {29.8}	44	18 {27}	26 {17}	0.57 {-1.49}
Common Countries: medium income 1986 (actual (20) predicted (22)); 1997 (actual (23), predicted (19))	56.37 {19.2}	26.00 {6.7}	42	30 {30}	12 {12}	-6.79 {-9.09}

Note: Actual= using actual observations on poverty rates and labour force; predicted= using estimated poverty rate by regression on national income, and actual observations on labour force.
Figures in {} brackets are the working poverty rates defined as working poor asa proportion of the employed.

The third estimate presented Table 3 goes a step further. While the 1997 "actual" list of 55 countries is larger than that of the 1986 "actual" list, there are still more countries in 1997 for which estimations can be done. Table 3 expands both the lists for 1986 and 1997. The 1986 list is expanded by as many common countries (86) as is permissible by data based on the earlier equation. The 1997 list is also expanded similarly based on predicting values for poverty rates for these countries by the following equation:

$$Log\ P_r = 4.11 \ *- 0.89 * Log\ \text{GNP per capita (ppp) 1997}$$
$$(7.90)\ \ (-5.83)$$

[Adjusted R-Squared = 37 per cent ; N = 55 ; t values in parenthesis.]

Thus the comparison is between the *actual and predicted* observations of countries for both 1986 and 1997.We find that the direction of results in Table 1 and 2 are replicated in Table 3.

Estimate 4

Table 4.
The size of working poor and working poverty rates in 1986 (actual, predicted and inflated) and 1997 (actual, predicted and inflated)

	Working poor in 1986	Working poor in 1997	Number of countries	% change annual
All low and medium income countries	536.67	534.22	139	-0.04
All Low income countries	473.99	505.47	63	+0.60
All Medium income countries	62.68	28.79	76	-4.91

The last estimate in Table 4 inflates the estimates further. In Table 3 we have 86 countries for 1986 and 1997 that are *common* between the two years. We also have a list of all common countries for the two years covering most low and medium income countries (excluding the transition countries and two middle eastern countries), for which population estimates exist. These are 139 common countries. Consequently Table 4 inflates the figures for the working poor for 86 countries (44 low and 42 middle income) in Table 3 by applying the population gap percentage between these *and* the population list for the 139 country list (63 low and 76 middle) for the two years respectively [19]. The inflation is done separately for low and income and middle income countries, and then added in each case. Details of the population covered are given in the Table A4 in the Annex.

6. Patterns and trends

Each successive table of comparisons (Tables 1 to 4) maintains the general pattern observed in Table 1 which is based on the actual observation comparison. The estimates suggest three findings.

- There are around 534 million persons who can be classified as the working poor in developing countries (in 1997). Around 95 per cent of these working poor of the developing world live in low income countries. The working poor constitute around 25 per cent of the employed labour force in all developing countries. In other words *one in every four employed persons in the developing world belongs to a poor household*.

[19] For example, this gap is calculated by taking the population of low in come countries from Table 3, dividing it by the population of the 63 low income countries in the full list of 139 countries. If we call this x, then (1-x) gives the percentage by which the estimate of working poor has to be increased in order to be "blown up". The same procedure is applied to the medium income countries for 1986. The results are added. This is repeated for 1997.

- The decline that has taken place in the working poor populations in the *aggregate* (low and middle income) country classifications is driven by changes in middle income countries. Working poor populations in low income countries have increased and middle income countries have declined. Over the decade, the share of middle income countries in the working poor has declined from 12 per cent to 5 per cent, while that of low income countries has increased from 88 per cent to 95 per cent. The slow decline or stagnation observed in the working poor at the all country level is unlikely to to be sustained in the future after middle income countries are successfully able to eliminate working poverty.
- At a country level, as is to be expected, both low and middle income country groups include countries that show increases as well as declines in the working poor. However while in middle income countries there is a preponderance of countries showing declines according to expectation with significant declines in working poor numbers; in low income countries both declining and increasing working poor countries are significant in number. This suggests that a possible polarisation process may be taking place within low income countries between those that are reducing the working poor and those that are not. This is a subject for further inquiry.

The fuller tables in the Annex reflect these results in more detail at a country level.

7. Future work

For future work on the estimate itself, attempts could be made to refine the estimates of the working poor in three broad directions.

- As more observations on comparable poverty data become available, it will also allow one to chose a common year across countries for actual (or predicted [20]) poverty data. This will improve estimates, and can be done as and when new estimates become available. There is case for exploring the idea of how one can refine *transformations* from *household* data to *individual* data, which is clearly implicit in the poverty figures. Moreover we need to explore ways in which survey-based poverty estimates can be made more consistent with national income accounts.
- There is also a case for estimating the working poor at a country level on national poverty lines.
- The demographic factor for the poor which is the proportion of working age population in total population of the poor needs to be estimated separately at a country level.
- The labour force participation rates for the poor needs to be estimated separately as well. These implicitly entail assessing unemployment for the poor, especially long term unemployment, which would allow one to ascertain the extent, if any, to which our starting assumption needs to be qualified.

[20] Country specific time-series of comparable poverty data can, if a sufficient number of observations exist, allow for predicting poverty rates.

The determination of national poverty estimates are country level exercises. Poor specific demographic adjustments and labour force participation rates are also best taken from national data. Therefore refinements to the estimates have to be built up from primary country level data. This essentially entails using ***common samples*** from (i) *household income and expenditure surveys* (or their equivalents) which have reliable information on income ***and*** (ii) *labour force surveys* (or their equivalents) which have reliable information on labour. Such exercises can also form the basis of investigating the characteristics of the working poor. Moreover alternative methods for estimating the size of the working poor, starting from occupational classifications are also only possible to devise at a country level if such data are analysed.

Annex

Table A1. The size of working poor and working poverty rates in 1986 (actual) and 1997 (actual)

OBS	1986	1997	CLASS	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
1	R	R	L	Bangladesh	8066453.08	18348307.76	17.5	30.0	7.76	5.01
2	R	R	L	China	67493775.55	136216607.04	11.3	19.1	6.59	4.85
3	R	R	L	Cote d'Ivoire	570317.96	699189.07	14.7	12.7	1.87	-1.36
4	R	R	L	Ethiopia	9244398.28	8041752.50	47.4	32.3	-1.26	-3.44
5	R	R	L	Honduras	688589.73	872780.67	48.4	41.8	2.18	-1.31
6	R	R	L	India	247117278.24	187163209.79	76.1	45.4	-2.49	-4.59
7	R	R	L	Indonesia	26984088.94	14315882.88	39.9	15.7	-5.60	-8.14
8	R	R	L	Kenya	6222956.67	3866855.09	64.9	27.3	-4.23	-7.57
9	R	R	L	Nepal	3526725.44	3870935.72	45.7	38.9	0.85	-1.46
10	R	R	L	Tanzania	4882796.66	3178270.99	43.9	20.5	-3.83	-6.69
11	R	R	L	Uganda	5110682.69	3728281.44	71.4	37.8	-2.83	-5.61
12	R	R	M	Algeria	91149.30	187522.56	1.6	2.7	6.78	4.65
13	R	R	M	Brazil	15459075.72	3840148.22	27.4	5.6	-11.89	-13.42
14	R	R	M	Chile	706735.77	245649.60	17.1	4.4	-9.16	-11.55
15	R	R	M	Colombia	1087892.17	1893986.60	10.0	12.5	5.17	2.06
16	R	R	M	Costa Rica	340378.14	129692.16	36.1	10.2	-8.40	-10.88
17	R	R	M	Dominican Republic	251713.27	111556.31	10.9	3.8	-7.13	-9.11
18	R	R	M	Jamaica	71358.69	42498.56	8.5	3.5	-4.60	-7.72
19	R	R	M	Jordan	125538.00	25733.67	20.1	2.2	-13.42	-18.23
20	R	R	M	Morocco	581087.68	1480475.10	7.8	15.3	8.87	6.30
21	R	R	M	Panama	132576.49	114823.37	18.1	11.3	-1.30	-4.18
22	R	R	M	Peru	368056.36	1397676.85	5.9	16.8	12.90	9.95
23	R	R	M	Sri Lanka	2929103.58	526505.76	51.2	7.3	-14.45	-16.28
24	R	R	M	Thailand	2971681.86	727224.00	10.8	2.0	-12.01	-14.13
25	R	R	M	Venezuela, RB	416817.65	1339287.60	7.4	16.2	11.19	7.33

Table A2.The size of working poor and working poverty rates in 1986 (actual and predicted) and 1997 (actual)

OBS	1986	1997	CLASS	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
1	R	R	L	Bangladesh	8066453.08	18348307.76	17.5	30.0	7.76	5.01
2	E	R	L	Burkina Faso	1784189.14	3204900.18	43.0	63.1	5.47	3.55
3	R	R	L	China	67493775.55	136216607.04	11.3	19.1	6.59	4.85
4	R	R	L	Cote d'Ivoire	570317.96	699189.07	14.7	12.7	1.87	-1.36
5	R	R	L	Ethiopia	9244398.28	8041752.50	47.4	32.3	-1.26	-3.44
6	E	R	L	Gambia, The	116444.16	323407.61	30.4	55.4	9.73	5.59
7	R	R	L	Honduras	688589.73	872780.67	48.4	41.8	2.18	-1.31
8	R	R	L	India	247117278.24	187163209.79	76.1	45.4	-2.49	-4.59
9	R	R	L	Indonesia	26984088.94	14315882.88	39.9	15.7	-5.60	-8.14
10	R	R	L	Kenya	6222956.67	3866855.09	64.9	27.3	-4.23	-7.57
11	E	R	L	Madagascar	2019037.72	4003091.71	41.7	62.1	6.42	3.69
12	E	R	L	Mali	1889009.44	3670741.62	50.4	75.1	6.23	3.69
13	E	R	L	Mongolia	224543.40	173147.89	25.6	14.3	-2.34	-5.13
14	E	R	L	Mozambique	4601697.74	3277440.40	64.1	39.1	-3.04	-4.40
15	R	R	L	Nepal	3526725.44	3870935.72	45.7	38.9	0.85	-1.46
16	E	R	L	Nicaragua	259357.75	54648.59	22.3	3.1	-13.20	-16.43
17	E	R	L	Niger	1330170.76	2828401.44	41.0	63.3	7.10	4.02
18	E	R	L	Nigeria	16735921.03	33044754.60	49.1	72.4	6.38	3.59
19	E	R	L	Pakistan	10893310.02	14734053.24	32.1	32.6	2.78	0.15
20	E	R	L	Senegal	910218.49	1040848.01	31.8	27.1	1.23	-1.44
21	R	R	L	Tanzania	4882796.66	3178270.99	43.9	20.5	-3.83	-6.69
22	R	R	L	Uganda	5110682.69	3728281.44	71.4	37.8	-2.83	-5.61
23	E	R	L	Zambia	1298922.06	2879423.63	47.3	74.8	7.51	4.25
24	R	R	M	Algeria	91149.30	187522.56	1.6	2.7	6.78	4.65
25	R	R	M	Brazil	15459075.72	3840148.22	27.4	5.6	-11.89	-13.42
26	R	R	M	Chile	706735.77	245649.60	17.1	4.4	-9.16	-11.55

OBS	1986	1997	CLASS	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
27	R	R	M	Colombia	1087892.17	1893986.60	10.0	12.5	5.17	2.06
28	R	R	M	Costa Rica	340378.14	129692.16	36.1	10.2	-8.40	-10.88
29	R	R	M	Dominican Rep.	251713.27	111556.31	10.9	3.8	-7.13	-9.11
30	E	R	M	Ecuador	555631.10	916284.12	19.2	22.2	4.65	1.33
31	E	R	M	Egypt, Arab Rep.	3591987.61	692193.05	23.6	3.4	-13.90	-16.15
32	E	R	M	El Salvador	290052.55	629885.88	18.1	27.5	7.30	3.90
33	R	R	M	Jamaica	71358.69	42498.56	8.5	3.5	-4.60	-7.72
34	R	R	M	Jordan	125538.00	25733.67	20.1	2.2	-13.42	-18.23
35	E	R	M	Mauritius	48948.84	18753.58	13.5	4.2	-8.35	-10.09
36	R	R	M	Morocco	581087.68	1480475.10	7.8	15.3	8.87	6.30
37	E	R	M	Namibia	68462.87	232200.74	14.8	38.4	11.74	9.04
38	R	R	M	Panama	132576.49	114823.37	18.1	11.3	-1.30	-4.18
39	E	R	M	Paraguay	185359.38	365001.30	14.3	21.3	6.35	3.68
40	R	R	M	Peru	368056.36	1397676.85	5.9	16.8	12.90	9.95
41	E	R	M	South Africa	983535.05	1824064.34	8.9	12.6	5.78	3.29
42	R	R	M	Sri Lanka	2929103.58	526505.76	51.2	7.3	-14.45	-16.28
43	R	R	M	Thailand	2971681.86	727224.00	10.8	2.0	-12.01	-14.13
44	E	R	M	Trinidad/Tobago	43210.57	68129.10	11.2	13.6	4.23	1.76
45	E	R	M	Turkey	2708385.72	705112.80	13.5	2.6	-11.52	-13.99
46	R	R	M	Venezuela, RB	416817.65	1339287.60	7.4	16.2	11.19	7.33

Note: R= based on actual poverty rate value; E= based on predicted poverty rate value; L= Low income ; M= Middle income. Underlined figures are estimations.

Table A3. The size of working poor and working poverty rates in 1986 (actual and predicted) and 1997 (actual and predicted)

OBS	1986	1997	CL	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
1	E	E	L	Angola	922864.12	1670200.69	24.1	32.1	5.54	2.64
2	R	R	L	Bangladesh	8066453.08	18348307.76	17.5	30.0	7.76	5.01
3	E	E	L	Benin	778579.50	825779.79	41.8	32.7	0.54	-2.21
4	E	E	L	Bhutan	105675.92	72624.80	38.8	20.7	-3.35	-5.55
5	E	R	L	Burkina Faso	1784189.14	3204900.18	43.0	63.1	5.47	3.55
6	E	E	L	Burundi	1138644.29	1612701.28	44.6	48.0	3.21	0.67
7	E	E	L	Cameroon	833728.17	1193748.50	20.4	21.6	3.32	0.48
8	E	E	L	Chad	1053708.15	1129517.03	42.3	34.2	0.63	-1.90
9	R	R	L	China	67493775.55	136216607.04	11.3	19.1	6.59	4.85
10	E	E	L	Comoros	40534.93	45931.51	23.9	20.3	1.14	-1.45
11	E	E	L	Congo.Dem . Rep.	3299619.48	7076068.17	24.2	37.2	7.18	3.99
12	E	E	L	Congo, Rep.	257183.26	376265.49	31.9	34.9	3.52	0.83
13	R	R	L	Cote d'Ivoire	570317.96	699189.07	14.7	12.7	1.87	-1.36
14	R	R	L	Ethiopia	9244398.28	8041752.50	47.4	32.3	-1.26	-3.44
15	E	R	L	Gambia, The	116444.16	323407.61	30.4	55.4	9.73	5.59
16	R	E	L	Ghana	940054.26	1431917.46	15.8	17.5	3.90	0.93
17	E	E	L	Guinea	730836.96	564202.01	29.4	17.5	-2.33	-4.60
18	E	E	L	Guinea-Bissau	201022.44	172647.29	47.1	33.3	-1.37	-3.10
19	E	E	L	Haiti	622390.82	679993.38	23.3	21.3	0.81	-0.84
20	R	R	L	Honduras	688589.73	872780.67	48.4	41.8	2.18	-1.31
21	R	R	L	India	247117278.24	187163209.79	76.1	45.4	-2.49	-4.59
22	R	R	L	Indonesia	26984088.94	14315882.88	39.9	15.7	-5.60	-8.14
23		R	L	Kenya	6222956.67	3866855.09	64.9	27.3	-4.23	-7.57
24	E	R	L	Madagascar	2019037.72	4003091.71	41.7	62.1	6.42	3.69
25	E	E	L	Malawi	2107863.38	2258442.69	58.5	47.2	0.63	-1.93
26	E	R	L	Mali	1889009.44	3670741.62	50.4	75.1	6.23	3.69
27	R	E	L	Mauritania	262056.04	217459.03	32.4	19.8	-1.68	-4.37
28	E	R	L	Mongolia	224543.40	173147.89	25.6	14.3	-2.34	-5.13
29	E	R	L	Mozambique	4601697.74	3277440.40	64.1	39.1	-3.04	-4.40

OBS	1986	1997	CL	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
30	R	R	L	Nepal	3526725.44	3870935.72	45.7	38.9	0.85	-1.46
31	E	R	L	Nicaragua	259357.75	54648.59	22.3	3.1	-13.20	-16.43
32	E	R	L	Niger	1330170.76	2828401.44	41.0	63.3	7.10	4.02
33	E	R	L	Nigeria	16735921.03	33044754.60	49.1	72.4	6.38	3.59
34	E	R	L	Pakistan	10893310.02	14734053.24	32.1	32.6	2.78	0.15
35	E	R	L	Senegal	910218.49	1040848.01	31.8	27.1	1.23	-1.44
36	E	E	L	Sierra Leone	578849.95	955732.74	42.9	56.1	4.66	2.47
37	E	E	L	Solomon Islands	32710.57	28784.20	23.7	14.4	-1.16	-4.40
38	E	E	L	Sudan	2892711.28	2489053.78	36.6	23.7	-1.36	-3.88
39	R	R	L	Tanzania	4882796.66	3178270.99	43.9	20.5	-3.83	-6.69
40	E	E	L	Togo	359288.20	359050.02	27.6	20.8	-0.01	-2.56
41	R	R	L	Uganda	5110682.69	3728281.44	71.4	37.8	-2.83	-5.61
42	E	E	L	Vietnam	11176120.99	6818505.84	38.2	18.3	-4.39	-6.50
43	E	R	L	Zambia	1298922.06	2879423.63	47.3	74.8	7.51	4.25
44	E	E	L	Zimbabwe	765587.14	629102.90	19.9	12.3	-1.77	-4.30
45	R	R	M	Algeria	91149.30	187522.56	1.6	2.7	6.78	4.65
46	E	E	M	Argentina	883990.66	444024.46	7.9	3.4	-6.07	-7.34
47	E	E	M	Belize	8674.41	5503.05	18.0	8.0	-4.05	-7.13
48	R	E	M	Botswana	162487.51	39019.40	36.3	6.4	-12.16	-14.64
49	R	R	M	Brazil	15459075.72	3840148.22	27.4	5.6	-11.89	-13.42
50	E	E	M	Cape Verde	21102.38	15944.49	21.0	10.8	-2.52	-5.83
51	R	R	M	Chile	706735.77	245649.60	17.1	4.4	-9.16	-11.55
52	R	R	M	Colombia	1087892.17	1893986.60	10.0	12.5	5.17	2.06
53	R	R	M	Costa Rica	340378.14	129692.16	36.1	10.2	-8.40	-10.88
54	R	R	M	Dominican Republic	251713.27	111556.31	10.9	3.8	-7.13	-9.11
55	E	R	M	Ecuador	555631.10	916284.12	19.2	22.2	4.65	1.33
56	E	R	M	Egypt, Arab Rep.	3591987.61	692193.05	23.6	3.4	-13.90	-16.15
57	E	R	M	El Salvador	290052.55	629885.88	18.1	27.5	7.30	3.90
58	E	E	M	Fiji	34420.91	22580.90	15.3	8.1	-3.76	-5.60
59	E	E	M	Gabon	43499.68	32640.64	11.3	6.6	-2.58	-4.78

OBS	1986	1997	CL	Country Name	WP 1986	WP 1997	WPr 1986	WPr 1997	WP annual growth	WPr annual growth
60	R	E	M	Guatemala	1618835.85	348358.93	65.9	10.1	-13.03	-15.67
61	E	E	M	Guyana	62164.90		23.3	10.8	-4.93	-6.74
62	E	E	M	Iran, Islamic Rep.	1837662.71	1159983.38	14.3	7.0	-4.10	-6.30
63	R	R	M	Jamaica	71358.69	42498.56	8.5	3.5	-4.60	-7.72
64	R	R	M	Jordan	125538.00	25733.67	20.1	2.2	-13.42	-18.23
65	E	E	M	Korea, Rep.	1705441.17	583889.30	9.8	2.6	-9.28	-11.33
66	R	E	M	Malaysia	780675.98	355894.49	13.5	4.5	-6.89	-9.50
67	E	E	M	Maldives	19736.58	9887.45	26.0	10.4	-6.09	-8.03
68	E	R	M	Mauritius	48948.84	18753.58	13.5	4.2	-8.35	-10.09
69	R	E	M	Mexico	6172866.29	1763306.92	25.2	4.8	-10.77	-13.91
70	R	R	M	Morocco	581087.68	1480475.10	7.8	15.3	8.87	6.30
71	E	R	M	Namibia	68462.87	232200.74	14.8	38.4	11.74	9.04
72	R	R	M	Panama	132576.49	114823.37	18.1	11.3	-1.30	-4.18
73	E	E	M	Papua New Guinea	375478.40	296849.34	23.9	14.8	-2.11	-4.28
74	E	R	M	Paraguay	185359.38	365001.30	14.3	21.3	6.35	3.68
75	R	R	M	Peru	368056.36	1397676.85	5.9	16.8	12.90	9.95
76	R	E	M	Philippines	7817071.10	2556932.14	37.2	9.1	-9.66	-12.01
77	E	R	M	South Africa	983535.05	1824064.34	8.9	12.6	5.78	3.29
78	R	R	M	Sri Lanka	2929103.58	526505.76	51.2	7.3	-14.45	-16.28
79	E	E	M	Swaziland	37718.38	25895.41	17.4	8.2	-3.36	-6.57
80	E	E	M	Syrian Arab Republic	536839.61	507837.02	19.8	12.1	-0.50	-4.38
81	R	R	M	Thailand	2971681.86	727224.00	10.8	2.0	-12.01	-14.13
82	E	R	M	Trinidad and Tobago	43210.57	68129.10	11.2	13.6	4.23	1.76
83	R	E	M	Tunisia	120655.01	228870.91	5.1	7.2	5.99	3.24
84	E	R	M	Turkey	2708385.72	705112.80	13.5	2.6	-11.52	-13.99
85	E	E	M	Uruguay	131015.63	60948.88	11.5	4.6	-6.72	-8.10
86	R	R	M	Venezuela, RB	416817.65	1339287.60	7.4	16.2	11.19	7.33

Note: R= based on actual poverty rate value; E= based on predicted poverty rate value; L= Low income ; M= Middle income. Underlined figures are estimations.

Table A4 below gives the coverage of the world population reflected in figures in Table 4 in the text. Our estimates cover over 75 per cent of the world population, and over 90 per cent of the low and medium income country population. We consequently come to a figure of 534 million working poor in 1997. They constitute around 25 per cent of the employed population.

Table A4: Population Coverage

	1986	1997
1. World	100% 4905198592	100% 5817185792
2. Low & middle income	2 as a% of 1 = 83.31% 4086725632	2 as a % of 1 = 84,85% 4936308224
3. Low and medium income covered in Table 4	3 as a % of 1 = 76.55% 3 as a % of 2 = 91.87% 3754864947	3 as a % of 1 = 78.94% 3 as a % of 2 = 93.03% 4592289492

Note : Figures in parenthesis are absolute population figures.

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