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Pandemic-induced Poverty in India after the First Wave of COVID-19: An Elaboration of Two Earlier Estimates

S. Subramanian

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Politics and Public Policy

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Photo Caption: A philanthropist distributing food to migrant workers rendered jobless due to COVID-19 lockdown restrictions in Vijayawada on July 01, 2020.
Photo: K.V.S. Giri/The Hindu Archives.

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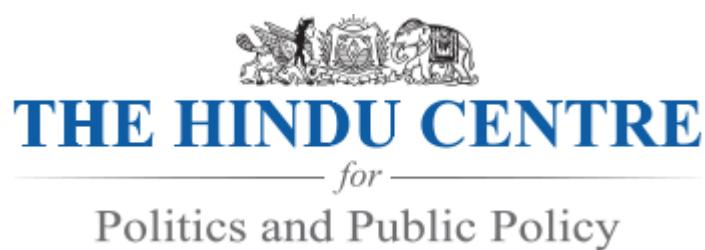
TABLE OF CONTENTS

ABSTRACT

Policy making, to be effective, requires assessments of magnitudes and trends of major events based on evidence. One of the objectives of government policy interventions is—or should be—to pick up and stem slides in standards of living when they occur. For a stubbornly poverty-stricken country such as India, this function of the state assumes even greater significance when calamities, such as the COVID-19 pandemic, descend on the populace. Although the Government of India is yet to release data on the population pushed into poverty as a result of the pandemic, research organisations—both national and international—have attempted to study this important link. These studies throw light on the important issue of arriving at estimates of the numbers of people that might have been pushed into poverty as a consequence of COVID-19, and therefore on the magnitude of the problem confronting any conscientious policy-maker.

The first of the two estimates assessed in this essay is due to researchers at the Pew Research Centre (PRC) in the U.S., and the second to researchers at the Centre for Sustainable Employment at Azim Premji University (APU) in India. In this Issue Brief, **S. Subramanian, Economist, and author of *Inequality and Poverty: A Short Critical Introduction,*** and other books on poverty, seeks to reconstruct the assumptions and data inputs that have gone into the making of the estimates under review. Analysing the estimates, which suggest vastly differing outcomes, he discusses the manner in which poverty figures are arrived at to provide a quantitative picture of economic deprivation. In the immediate context, and on the basis of such data as are available, he concludes that it could be reasonably estimated, in line with the APU study, that anywhere upward of 200 million people may have slid into poverty after the first wave of the COVID-19 pandemic. This finding assumes importance as an aspect of evidence-based assessment of the economic devastation that has accompanied the pandemic. It points even more specifically to the role of the state, or its relative absence, in safeguarding its peoples from a once-in-a-century, long-drawn out catastrophe which has persisted for over a year.

Behind these numbers are real people, whose predicament would have been better served by a state with a mind to basing policy intervention on evidence, not least when such research evidence is available in the public domain. Even based on a partial assessment, the two main pandemic

responses by the government – a hastily declared lockdown and reluctantly ad-hoc relief measures – have resulted in "grievously harsh" consequences for India and its fight against poverty. By highlighting the outcomes of two earlier significant research efforts, Subramanian invites attention to importantly required numbers that would enable policy makers to get a sense of the enormity of the deprivation that has been caused by the COVID-19 pandemic.

I. INTRODUCTION

T his will be, for the most part, a data-and-methodology-related essay concerned with a seemingly antiseptic assessment of the possible impact of the first wave of the coronavirus pandemic on the magnitude of income-poverty in India. The concern is not only with a pandemic of historic magnitude, but also of a policy orientation that may have resulted in anywhere upwards of 200 million Indians sliding into poverty as a result of COVID-19 and the response to it.

The focus of this essay will be on numbers and counting, and on the assumptions underlying these in an environment of scanty data accessed from different sources. In order to tell a narrative involving numbers, one can either focus on the manner in which they are derived, or shine the spotlight on the story that lies behind, and is reflected by, the data. In the present essay, the relative weight of emphasis is laid on the first of these two orientations, just so that the restricted focus of the exercise is preserved in the manner of its treatment. I shall confine commentary to a few observations, and not least because the numbers leave little room for any elaborately articulated opinion that is not immediately suggested by the quantitative evidence.

In what follows, I shall try and spell out, as clearly as I am able to, the method by which the poverty numbers dealt with in this essay can be derived. These poverty numbers relate to the estimates that have been advanced in two earlier studies.

1.1 Different estimates of people pushed into poverty

The first study is one by the Pew Research Center (PRC), Washington, D. C., USA (Kochhar, 2021), and the second is due to the Azim Premji University (APU), Bengaluru, India (APU, 2021). The two studies come up with vastly differing estimates of the additional numbers of people precipitated into poverty during the course of the first wave of the coronavirus pandemic in India. This, as might be expected, is on account of the differing data sets employed in the two studies. My effort is essentially to try and reconstruct these data sets, on the basis of the methodological guidelines available in the two respective studies. At one level, the effort may be justified simply in terms of the importance of keeping alive, in the public domain, the findings on pandemic and poverty revealed by the studies. They are of such vital contemporary significance that they must

not be allowed to simply slip into forgetfulness or past history. Apart from this, there is a case for a painstaking—even plodding—expository exercise aimed at enabling laypersons and younger researchers to get a sense of the manner and method by which estimates of the sort discussed here are arrived at. In this justification, the focus is on the intrinsic utility of explanation, appraisal, and criticism.

My reconstruction does not yield results identical to the studies' results, but the relevant sets of results are close enough to those in the originals. I should clarify, and reiterate, that the assumptions and input data sets I have attributed to the two studies are a product of *my* reconstruction of the methodological directions provided in the two studies, and any deviation there may be of my reconstruction from the actually employed methodology is certainly not due to wilful misattribution, but rather to obvious imperfections in my reconstruction. In particular, when I speak of the 'Pew Research Centre' and the 'Azim Premji University' data sets, I refer to *my* reconstructions of these data sets. Links to the studies by these organisations are provided under References.

1.2 Constructing poverty ratios

With these preliminary clarificatory remarks out of the way, it is useful to begin by asking: what, typically, are the data one would need in order to estimate the headcount ratio of poverty (the proportion of the population that is poor)? It is useful to address this question because there are software computing packages available which can convert the requisite data into processed summary statistics of relevance to one's interest.

One such package is a readily accessible programme maintained by the World Bank, 'POVCALNET', which enables its user to feed in certain relevant data, which the programme processes. It then returns, by way of output, the headcount ratio of poverty (apart from a host of other related statistics on measures of central tendency and dispersion, such as the mean, the Gini coefficient of inequality, and a number of poverty indices). There are, typically, three items of data which the POVCALNET programme seeks, as enumerated and explained below[1]:

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[1] For a sample illustration, see the POVCALNET web-page titled 'Estimate Your Own Distribution', *The World Bank* here: [http://iresearch.worldbank.org/PovcalNet/PovCalculator.aspx].

(a) *The Income Distribution (**D**).* There are different ways in which income distribution data can be presented. A particularly convenient form is one which indicates the cumulative income share of each cumulated decile of the population, arranged from poorest to richest. That is, the data are presented in such a way that we have information on the income share of the poorest 10 per cent of the population, the income share of the poorest 20 per cent, the income share of the poorest 30 per cent,…, and so on, until we have accounted for all 100 per cent of the population. The income distribution is thus essentially depicted in a two-column table in which the first column lists the cumulated deciles of the population in ascending order of income and the second provides the cumulated income share corresponding to each cumulated population share.

(b) *The Poverty Line (z).* The poverty line is a level of income such that all persons with incomes less than this level are considered to be *poor.*

(c) *The Mean Income of the Distribution (m).* This is just the average income of the reference population.

Once we feed these three inputs—namely D, z, and m—into the POVCALNET programme, it will tell us the associated headcount ratio of poverty for the given combination of income distribution, poverty line and mean income[2].

All of this is simple enough. The practical problem is to find the data on D and m, and to construct a reasonably convincing poverty line, z, which does the intended job of specifying a level of income that experience and judgement would endorse *as* an acceptable poverty line. These inputs are not readily available in the forms in, and for the time-periods for, which they would be required for constructing a picture of the impact of COVID-19 on the magnitude of poverty. Therefore, in order to assemble the needed information on the vital triad (D, z, and m) for any appropriate

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[2] Just for completeness of record, here is how the input data are converted into the corresponding output results. (This methodological summary can be ignored by the general reader without any significant loss in the narrative of this Issue Brief.)

The distributional data, D, are essentially in the form of distinguished ordinates of the *Lorenz curve*, and there is a software programme which uses these data to estimate the equation of the Lorenz curve; once that is done, it is a simple matter to derive the value of the Gini coefficient of inequality, which is just twice the area enclosed by the Lorenz curve and the diagonal of the unit square in which the curve is plotted.

As for the headcount ratio, the software programme exploits the fact that the slope of the Lorenz curve at any point corresponding to an income level of x is just x/m, where m, to recall, is mean income; so the headcount ratio of poverty can be inferred as that value on the Lorenz curve's horizontal axis at which the slope of the Lorenz curve (computable from the already derived equation of the Lorenz curve) is equal to z/m, z being, of course, the poverty line. The POVCALNET software resorts to two estimating equations of the Lorenz curve—the so-called General Quadratic Lorenz and the Beta Lorenz. All estimates in this note are based on the relevant General Quadratic Lorenz's.

period (in this instance, the pre- and post-pandemic periods), a researcher would need to make certain assumptions and have resort to alternative sources of data.

II. THE PRC ESTIMATE

A s noted at the end of the introductory chapter, any assessment of changes in poverty on account of COVID-19 would depend crucially on our precise choice of the data inputs D, z, and m. At least one earlier effort at such an assessment for India (and indeed for other countries and the world as a whole) is due to the work of social scientists at the PRC, an institution which describes itself as a 'non-partisan fact tank', located in Washington, D.C., U.S. (see Kochhar, 2021).

The income distribution employed in this study is India's 2011 consumer expenditure distribution, as available from the National Statistical Office (NSO), and the poverty line is taken to be the World Bank's international poverty line of $2 at 2011 Purchasing Power Parity prices (converted to national currency and updated to take account of inflation). The 'pre-COVID-19' mean income is calculated on the basis of the World Bank's (relatively optimistic) projection, made in January 2020, of the annual growth rate for 2019-2020. The 'post-COVID-19' mean is calculated on the basis of the World Bank's (considerably depressed) estimate of this growth rate, made in January 2021. On the basis of these assumptions regarding D, z, and m, the Pew study estimates that an additional 75 million Indians may have been pushed into poverty after the first wave of the COVID-19 pandemic.

The following three sub-sections present, in slightly greater detail, what I take to be the assumptions regarding the data inputs D, z, and m used in the PRC study.

2.1 The PRC Income Distribution Input

As is well known, there are no systematic data available on the distribution of incomes in India. What we do have is information, from the quinquennial surveys conducted by the Central Statistical Organization's (CSO's) NSO, on the distribution of household consumption expenditure[3]. The latest official survey data pertain to the 68th Round of the NSO for the year 2011-12. It is these distributional data which seem to have been employed in the PRC analysis as

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[3] Household consumption expenditure is "the sum total of monetary values of all the items (i.e. goods and services) consumed by the household on domestic account during the reference period." Expenses that are actually made only on consumption are included, and therefore, imputed expenses, such as rents of owner-occupied houses, or expenses incurred on productive enterprises are excluded. (Summarised from 'India - Household Consumer Expenditure, Type 1 : July 2011 - June 2012, NSS 68th Round', Technical Documents, Concepts and Definitions, P A-11.) [http://microdata.gov.in/nada43/index.php/catalog/1/related_materials].

a proxy for India's 2020 income distribution. It should be mentioned that the 68th Round survey employs three 'recall periods', referred to, respectively, as the 'uniform recall period' (URP), the 'mixed recall period' (MRP), and the 'modified mixed recall period' (MMRP). Recall periods are important building blocks as they provide information on the expenses incurred by a household over specific time blocs, say a month or a year[4].

I take it that the distributional data employed in the PRC study correspond to the MRP estimates. The distributions are assumed to be the same for both the pre-COVID-19 and the post-COVID-19 periods. Table 1, which is derived from the National Sample Survey Organization's 2011-12 data on rural and urban consumption distributions, summarises our data input on **D**.

Table 1: Imputed Rural and Urban Income Distributions for 2020 Based on Corresponding Consumer Expenditure Distributions from National Sample Survey Data for 2011-12 (PRC)

RURAL (D_{PRC}^{R})		URBAN (D_{PRC}^{U})	
Cumulated Population Share	Cumulated Income Share	Cumulated Population Share	Cumulated Income Share
.1	.0415	.1	.0306
.2	.0963	.2	.0731
.3	.1596	.3	.1249
.4	.2308	.4	.1867
.5	.3102	.5	.2585
.6	.3987	.6	.3414
.7	.4985	.7	.4383
.8	.6136	.8	.5548
.9	.7540	.9	.7029
1.0	1.0000	1.0	1.0000
G: .29		*G: .38*	

Note: *G* stands for the Gini coefficient of inequality. Gini coefficients range from 0 to 1, representing perfect equality and inequality, respectively. Therefore, the higher the Gini coefficient, the greater the inequality.

Source: Derived from data in Tables 1BR and 1BU of National Sample Survey (2014): *Level and Pattern of Consumer Expenditure 2011-12*, NSS 68th Round, National Sample Survey Office, MoSPI, GoI, February 2014.

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[4] The URP method refers to consumption data collected by asking "people about their consumption expenditure across a 30-day recall period" Under MRP, "data on five less-frequently used items are collected over a one-year period, while sticking to the 30-day recall for the rest of the items. The low-frequency items include expenditure on health, education, clothing, durables etc." Under MMRP "for some food items, instead of a 30-day recall, only a 7-day recall is collected. Also, for some low-frequency items, instead of a 30-day recall, a 1-year recall is collected. This is believed to provide a more accurate reflection of consumption expenditures." **Misra, U. 2015**. "Meaning URP, MRP, MMRP", *The Indian Express,* October 7.
[https://indianexpress.com/article/explained/meaning-urp-mrp-mmrp/].

It should be added that there are obvious caveats that must be issued about the use of consumption expenditure distributions as proxies for income distributions, which the PRC study acknowledges. For one thing, consumption distributions are typically less unequal than income distributions. For another, the *same* distributions are employed for both 'pre-COVID-19' and 'post-COVID-19' situations, which does not take into account the possibility that the impact of the pandemic on inequality might have been regressive. Thirdly, the consumption distribution data pertain to 2011-12, and the consumption distribution—especially in the urban areas of the country—has displayed a tendency to become more unequal over time. Having said this, there are situations in which—after a due observation of the attendant limitations of the exercise—one is constrained to employ the data that are available, in a spirit of not allowing the feasible 'mixed good' to defeat an unattainable 'first best'. On this score, at least, the PRC study cannot be faulted.

2.2 The PRC Poverty Line Input (z)

The World Bank's international poverty line is pegged at $1.90 per person per day at 2011 Purchasing Power Parity Exchange (PPP) rates. The PRC study employs a poverty line of $2.00. (A discussion of the merits of this poverty line is deferred to a later stage.) From Table 2.4 of World Bank (2015)[5], we find that $1 was equivalent, in PPP exchange terms, to ₹15.11 in 2011. An international poverty line of $2.00 would, therefore, translate to ₹30.22 per person per day, or, multiplying by 30 days, to ₹906.60 per person per month. This is taken to be the poverty line for both rural and urban India. Applying the Consumer Price Index of Agricultural Labourers (CPIAL), we obtain a rural poverty line of ₹1,478 per person per month at 2020 prices. Applying the Consumer Price Index of Industrial Workers (CPIIW), we obtain an urban poverty line of ₹1514 per person per month at 2019 prices. (The rural price index is estimated to have increased by a factor of 1.63 from 2011 to 2020, and the urban price index by a factor of 1.67 from 2011 to 2019: these factors are derived from RBI data on prices.[6]) Our reconstruction of the poverty line (*z*) input data in the PRC study is summarised in Table 2:

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[5] **World Bank. 2015**. *Purchasing Power Parities and Real Expenditures of World Economics: A Comprehensive Report of the 2011 International Comparison Program,* Washington, DC. © World Bank.
[https://openknowledge.worldbank.org/handle/10986/20526]. License: CC BY 3.0 IGO.

[6] For data on CPIAL, see https://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=13884 for 2011-12, and https://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=20342# for April 2020; and for data on CPIIW, see https://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=13882 for 2011-12, and https://rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=18666 for October 2019.

Table 2: Rural and Urban Poverty Lines per Person per Month (in ₹) in 2020 at Current Prices (PRC)

Rural Poverty Line	Urban Poverty Line
1,478	1,514

Source: Author's calculations.

2.3 The PRC Mean Incomes Input (m)

Here is my reconstruction of the PRC methodology for deriving rural and urban 'pre-COVID-19' and 'post-COVID-19' means for 2020, on the basis of my interpretation of the methodology as outlined in Kochhar (2021).

First, we note that the 68th Round NSO estimates of average per capita consumption expenditure in 2011-12, at 2011-12 prices, are: ₹1,287.17 for rural India, and ₹2,477.02 for urban India[7]. The PRC method consists, first, in using these estimates in the benchmark year, 2011-12, to estimate what their values might have been in 2019 if they had grown at the same rate as real per capita GDP over the period 2012 to 2019. World Bank data[8] suggest that India's per capita GDP at constant local currency units increased by a factor of 1.4644 from 2012 to 2019: applying this growth factor to the 2011-12 NSO estimates of mean consumption yields rural and urban estimates for 2019 of ₹1,885.58 and ₹3,628.59 respectively, at 2011-12 prices. It remains to proceed from 2019 to 2020, which requires us to consider the World Bank's projections in this regard.

In January 2020 before the outbreak of the pandemic, the World Bank projected a growth rate of 5.8 per cent on the 2019 per capita GDP for 2020, which, in the light of the economic effects of the outbreak, was revised downward to (-) 9.6 per cent in January 2021. We can now envisage a counterfactual situation of what the rural and urban means might have been in 2020 in the absence of the pandemic, by applying the growth-rate of 5.8 per cent to the estimated 2019 rural and urban means of ₹1,885.58 and ₹3,628.59 respectively, to yield ₹1,994.94 and ₹3,839.05 respectively, at 2011-2012 prices. By applying the inflation factors, mentioned earlier, of 1.63 for the rural areas and 1.67 for the urban areas respectively, we can postulate the counterfactual 'pre-COVID-19' means, in 2020 prices, to be ₹3,251 (= ₹1,994.94x1.63) for rural India and

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[7] Tables 1BR and 1BU of National Sample Survey (2014): *Level and Pattern of Consumer Expenditure 201-12*, NSS 68th Round, National Sample Survey Office, MOSPI, GOI, February 2014.

[8] **The World Bank. nd**. *GDP per capita (constant LCU) – India*.
[https://data.worldbank.org/indicator/NY.GDP.PCAP.KN?locations=IN].

Rs. 6410 (= 3839.05x1.67) for urban India. In similar manner, and after applying the growth rate of (-) 9.6 per cent to the 2019 estimates of means, followed by adjustment for inflation, we can obtain estimates of the 'post-COVID-19' means, in 2020, at 2020 prices, of ₹2,778 for rural India and ₹5,477 for urban India. Table 3 summarises what I take to be the PRC estimates of the rural and urban means in 2020, pre-and post-COVID-19:

Table 3: Pre- and Post-COVID-19 Rural and Urban Average Incomes (in ₹) in 2020 at Current Prices (PRC)

Pre-COVID-19 Rural Mean	Post-COVID-19 Rural Mean	Pre-COVID-19 Urban Mean	Post-COVID-19 Urban Mean
3,251	2,778	6,410	5,477

Source: Author's calculations as indicated in text.

2.4 Results from the PRC Input Data

I first summarise my reconstruction of the PRC study's input data in Table 4.

Table 4: Summary of PRC Study's Reconstructed Input Data on Distributions, Poverty Lines and Means: 2020

	Rural Pre-COVID-19	Rural Post-COVID-19	Urban Pre-COVID-19	Urban Post-COVID-19
Distributions	D_{PRC}^{R} (as in Table 1)	D_{PRC}^{R} (as in Table 1)	D_{PRC}^{U} (as in Table 1)	D_{PRC}^{U} (as in Table 1)
Poverty Lines (in ₹)	1,478 (as in Table 2)	1,478 (as in Table 2)	1,514 (as in Table 2)	1,514 (as in Table 2)
Means (in ₹)	3,251 (as in Table 3)	2,778 (as in Table 3)	6,410 (as in Table 3)	5,477 (as in Table 3)

Source: Based on the numbers in Tables 1-3.

The POVCALNET software programme returns the relevant headcount ratios, as furnished in Table 5, for the input data summarised in Table 4, from which one can calculate the changes in both the headcount ratios and aggregate headcounts attributable to the COVID-19 pandemic, separately for the rural and the urban areas. I have assumed an all-India population of 1,360 million for 2020, split between the rural and urban areas in the proportions of 65 per cent and 35 per cent respectively.

Table 5: Levels and Changes in Headcount Ratios and Aggregate Headcounts Attributable to COVID-19, using the PRC Study's Reconstructed Input Data

	Rural Pre-COVID-19	Rural Post-COVID-19	Rural Change	Urban Pre-COVID-19	Urban Post-COVID-19	Urban Change	Total Change
Headcount Ratio	.0723	.1499	.0776	0	.0162	.0162	.0561
Aggregate Headcount (in millions)	63.91	132.51	68.60	0	7.71	7.71	76.31

Source: Author's calculations based on the input data summarised in Table 5.

The incremental number of persons plunged into poverty by the COVID-19 pandemic is 76.31 million (final entry in Table 5), which tallies quite closely with the PRC study's estimate of 75 million. Further comments are reserved for a later part of this note. We now attempt to reconstruct the APU study's estimate.

III. THE APU ESTIMATE

T he APU estimate of incremental poverty attributable to the COVID-19 pandemic is contained in the report *State of Working India 2021: One Year of Covid* (APU, 2021). This remarkable production is the third in a series on the '*State of Working India*'; earlier reports having appeared in 2018 and 2019. The present (2021) edition places a special emphasis on the impact of and policy response to the COVID-19 pandemic.

Work on these reports has been carried out under the coordination of a group of researchers in Azim Premji University's Centre for Sustainable Employment (CSE). The engagement is with the condition of the labouring poor, and the 2021 report provides an extraordinarily detailed account of the general state of the economy, with a focus on lives, livelihoods, incomes, nutrition and living standards, as these have been affected by the pandemic, together with an analysis of policy response (mainly policy failure) and recommendations for meaningful government intervention.

This report, and the series of which it is a part, will stand out as an exemplary model of the collection, collation, processing and analysis of data drawn from diverse sources, and of serious scholarly application, humane engagement, and committed effort in the cause of understanding the condition of India's labouring poor. A particularly compelling measure of its worth is that the work in the report has been carried out in an environment of scanty and unreliable data, not to mention a generalised culture of official obfuscation and prevarication.

Returning to our more immediate concerns, the APU study's methodology is available in Chapter 5 of the *State of Working India 2021* report, and is discussed, in what follows, with respect to the input data employed in the study.

3.1 The APU Income Distribution Input (D)

The distributional data employed in the study are drawn from the Centre for Monitoring Indian Economy-Consumer Pyramid Household Surveys (CMIE-CPHS). What we earlier referred to as the 'pre-COVID-19' and 'post-COVID-19' periods correspond, in the APU study, to the eight-month period July 2019-February 2020 and the eight-month period March 2020-October 2020, respectively. The study accumulates the incomes in each income-class across the eight months in each period, to arrive at a consolidated picture of the 'pre-COVID-19' and 'post-COVID-19'

distributions. These data are not explicitly presented in the *State of Working India* report but have been kindly made available to me by the report's authors upon request. The relevant data are furnished in Table 6.

Table 6: Pre- and Post-COVID-19 Rural and Urban Income Distributions (APU)

RURAL				URBAN			
Rural Pre-COVID-19 (D_{APU}^{R1})		Rural Post-COVID-19 (D_{APU}^{R2})		Urban Pre-COVID-19 (D_{APU}^{U1})		Urban Post-COVID-19 (D_{APU}^{U2})	
Cumulated Population Share	Cumulated Income Share	Cumulated Population Share	Cumulated Income Share	Cumulated Population Share	Cumulated Income Share	Cumulated Population Share	Cumulated Income Share
.1	.0328	.1	.0307	.1	.0314	.1	.0280
.2	.0791	.2	.0757	.2	.0750	.2	.0693
.3	.1353	.3	.1311	.3	.1275	.3	.1202
.4	.2012	.4	.1963	.4	.1887	.4	.1804
.5	.2772	.5	.2721	.5	.2593	.5	.2504
.6	.3649	.6	.3591	.6	.3417	.6	.3331
.7	.4670	.7	.4603	.7	.4392	.7	.4323
.8	.5880	.8	.5807	.8	.5577	.8	.5540
.9	.7391	.9	.7313	.9	.7139	.9	.7140
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
G: .33		*G: .34*		*G: .36*		*G: .37*	

Note: *G* stands for the Gini coefficient of inequality.
Source: Data supplied to the present author by the authors of the APU study.

Some observations are in order. Surprisingly, (a) the APU estimates of the urban income-Gini in 2020 are slightly lower than the NSO urban consumption-Gini in 2011-12; and (b) there is only a minor suggestion of worsening of inequality from before to after COVID-19, in both rural and urban India.[9] Secondly, and as noted by the authors of the APU report, the earnings data in the CMIE-CPHS are substantially larger than those reported by the Periodic Labour Force

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[9] **Note:** However, in both cases, for each cumulated decile of the population, the cumulated income share in the pre-COVID-19 period is greater than or equal to the corresponding cumulated income share, post-COVID-19, reflecting a case of what in the technical literature is called 'Lorenz dominance'.

Employment-Unemployment Survey of 2018-19. This issue will be briefly revisited later in this article.

3.2 The APU Poverty Line Input Data (z)

The basis for the poverty lines employed in the APU study is explained thus in their report (APU, 2021: p.16):

> The Expert Committee on Determining the Methodology for fixing the National Minimum Wage (Ministry of Labour and Employment 2019) proposed a wage such that the expenditure on minimum recommended food intake, essential non-food items (namely clothing, fuel and light, house rent, education, medical, footwear, and transport) and other non-food items for the wage earner and their dependents can be met. The recommendation was ₹375 per day (₹104 per capita per day) for rural areas and ₹430 (₹119 per capita per day) for urban areas as of July 2018[10]. This works out to ₹2,900 per capita per month and ₹3,344 per capita per month respectively, after adjusting for inflation in Jan 2020 terms.

The poverty line input data are summarised in Table 7.

Table 7: Rural and Urban Poverty Lines per Person per Month (in ₹) in 2020 at Current Prices (APU)

Rural Poverty Line	Urban Poverty Line
2,900	3,344

Source: APU (2021)

Table 8, which combines data from Tables 2 and 7 shows that the APU rural and urban poverty lines are twice as large as the ones in the PRC study. This is a major source of deviation in the assessment of the impact of COVID-19 on poverty in India and calls for some discussion.

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[10] I take it that the recommended daily rural and urban allowances of ₹375 and ₹430, respectively, are for a household of four, so that the daily per capita allowances become ₹93.75 (or ₹2,812.50 per month) and ₹107.50 (or ₹3,225 per month) at 2018 prices. The reported daily allowances of ₹104 and ₹119 translate to monthly levels of ₹3,120 and ₹3,570 respectively at 2018 prices, in excess the poverty lines for 2020 specified in the Report. One suspects there is an error in reporting the daily per capita allowances.

Table 8: Rural and Urban Poverty Lines per Person per Month (in ₹) in 2020 at Current Prices (PRC and APU)

Rural Poverty Line (in ₹)		Urban Poverty Line (in ₹)	
PRC	APU	PRC	ACU
1,478	2,900	1,514	3,344

Source: From Tables 2 and 7.

3.2.1 A pragmatic assessment of the poverty norm

India's official poverty lines are derived on the basis of that level of consumer expenditure at which some stipulated calorific norm of food consumption is found to be achieved in some reference year, and the reference year poverty line is then 'updated' for other years by means of a consumer price index to reflect price changes. The World Bank's 'dollar-a-day' type poverty lines are based on the poverty lines of some of the income-poorest countries of the world many of which were prescribed by the World Bank itself.

Neither approach is based on any explicit accounting of commodity requirements (and their costing) for achieving a well-defined list of human functionings at levels that might be deemed to just avoid deprivation. The result is that both official Indian poverty lines and the World Bank's international poverty line have tended to understate the poverty threshold, by failing to provide a basis for these lines' adequacy in the matter of meeting a set of basic needs in a measure that could be construed as necessary to escape poverty. The serious limitations of working with the World Bank's international poverty line have been discussed by other commentators, including Reddy and Pogge (2010) and Reddy and Lahoti (2015), and will not be repeated here.

What is suggestive is that often a combination of practical knowledge and common sense is a more reliable guide to identifying the poverty line than methods which involve plotting graphs and reading off threshold levels, or squinting at scatter diagrams of some of the poorest countries' poverty thresholds. Most of us who are familiar with the environments in which we live must be expected to have a reasonably accurate idea of the income required to achieve some minimally acceptable standard of living.

In the spirit of pragmatism just alluded to, Jayaraj and Subramanian (2017) have made an attempt to derive a poverty line for urban Tamil Nadu for the year 2014-15. In doing so, they consider both food and non-food necessities. Based on nutrient requirements and recommended dietary

14

allowances for Indians as advanced by the Indian Council of Medical Research (2010) with reference to a low-cost 'Indian vegetarian balanced diet', the authors cost the items that might be expected to constitute the diet in question, while also taking account of the subsidiary ingredients that would typically enter a Tamil vegetarian diet of the type under consideration.

In the matter of non-food requirements, they make essentially conservative estimates of what it would cost to achieve some elementary standard of living with respect to shelter, education, energy needs, healthcare, transport and communication, clothing and footwear, entertainment and socialization, and personal hygiene. The costing is done on a monthly basis for a family of five, and the poverty line which the authors come up with amounts to ₹14,000 for such a family, which most urban residents of India would view, from personal experience and practical knowledge, as a by no means unreasonable figure.

On a per capita basis, the poverty line is a monthly income of ₹2,800—considerably higher than, for instance, the Rangarajan Committee's recommended urban poverty line which, at 2014-15 prices, would be of the order of just ₹1,600. The poverty line suggested here is admittedly a rough-and-ready one, but it probably relates to what we know about poverty better than one assiduously derived from employing slide-rule-and-compass, which however bears little obvious relation to poverty as we might be expected to understand that condition.

Continuing in this vein of uniform simple-mindedness, one could advance the cause of a poverty line (at 2014-15 prices) of ₹2,800 per person per month for urban India, and one for rural India of ₹2,240, which is 80 per cent of the urban poverty line: a swift (and brutal) concession to lower rural prices. Employing the CPIAL and CPIIW prices indices, the rural and urban poverty lines at 2020 prices are of the order of ₹2,839 per person per month for rural India, and ₹3,597 for urban India. These numbers are not far from the rural and urban poverty lines—₹2,900 and ₹3344 respectively—used in the APU study. The APU poverty lines surely appear to reflect a substantially more acceptable standard of what constitutes deprivation thresholds than the World Bank line adopted in the APU study (even allowing for the qualifier of 'extreme' for the poverty implied by the World Bank line).

3.3 The Mean Income Input (m)

The APU study's mean income estimates are based on a periodisation of pre- and post-COVID-19 India in two eight-month stretches—July 2019-February 2020 and March 2020-October 2020 respectively. The mean income for the pre-COVID-19 period is taken to be the average of the seasonally-adjusted monthly incomes from July 2019 to February 2020, and that for the post-COVID-19 period to be the average of the seasonally-adjusted monthly incomes from March 2020 to December 2020. The authors of the report state (APU, 2021: p.11):

> The seasonally-adjusted cumulative income in the months of March to October was 22 per cent less compared [with] the preceding eight months of July 2019 to February 2020. The cumulative decline was higher in urban areas than rural areas (26 per cent versus 21 per cent). For an average household in urban areas this amounts to losing 2.1 months of income (about ₹64,000 for a family of four) and in rural areas losing 1.7 months of income (about ₹34,000 for a family of four).

From the quoted paragraph, one can infer[11] the magnitudes of the per capita monthly average income in the pre- and post-COVID-19 periods, for each of the rural and urban areas, and these are summarised in Table 9.

Table 9: Pre- and Post-Covid Rural and Urban Average Incomes (in ₹) in 2020 at Current Prices (APU)

Pre-COVID-19 Rural Mean	Post-COVID-19 Rural Mean	Pre-COVID-19 Urban Mean	Post-COVID-19 Urban Mean
5,060	3,997	7,692	5,692

Source: Based on APU (2021), as explained in the text.

It is possible, as stated in Section 3.1, that the CMIE-CPHS estimates of income on which the APU study's estimates are based are uniformly exaggerated versions of the corresponding actual incomes—arising possibly from under-sampling of the poorest classes (see Dreze and Somanchi, 2021). However, the *declines* in average incomes on account of the pandemic appear to be realistic in relation to what one knows about the differential impacts of the pandemic and the lockdown

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[11] For example, for the rural areas, a 21 per cent loss of ₹34,000 suggests pre-and post-COVID-19 incomes of ₹161,905 (= 34000/.21) and ₹127,905 (= 161,905 – 34,000); on a per capita basis, given a family of four, this works out to ₹40,476 and ₹31,976 respectively; averaging out over eight months, yields per capita monthly means for the pre- and post-COVID-19 periods of ₹5,060 and ₹3,997 respectively. Similar computations can be made for urban areas.

on rural and urban livelihoods in the context of employment and earnings. The APU estimate points to a substantial difference between declines in average urban and rural incomes. The decline in average urban income, at 26 per cent, is higher than the decline in average rural income, at 21 per cent. In contrast, the PRC study suggests a single, undifferentiated, and much lower reduction in average income of 14.6 per cent for both the rural and the urban areas (see Table 3). In view of this, and in view of the restricted choices available, there is a case for favouring the APU study-based estimates in Table 9. The case against what one might call uniform 'data-nihilism' is also made by Dhingra and Ghatak (2021) when they say:

> 'Despite [certain] statistical concerns, the CPHS does provide consumption numbers for a large sample of individuals, which can provide insights into changes in consumption levels arising from the pandemic.'

3.4 Results from the APU Input Data

Table 10 summarises the reconstructed APU input data on distributions, poverty lines and mean incomes.

Table 10: Summary of APU Study's Reconstructed Input Data on Distributions, Poverty Lines and Means: 2020

	Rural Pre-COVID-19	Rural Post-COVID-19	Urban Pre-COVID-19	Urban Post-COVID-19
Distributions	D_{APU}^{R1} (as in Table 6)	D_{APU}^{R2} (as in Table 6)	D_{APU}^{U1} (as in Table 6)	D_{APU}^{U2} (as in Table 6)
Poverty Lines (in ₹, Table 7)	2,900	2,900	3,344	3,344
Means (in ₹, Table 9)	5,060	3,997	7,692	5,692

Source: Based on the numbers in Tables 7 and 9.

Table 11, following, presents the POVCALNET results on headcount ratios, aggregate headcounts, and changes in these, for the input data on distributions, poverty lines and mean incomes attributed to the APU study. (As earlier, we take India's 2020 population to be 1,360 million, with shares of 65 per cent and 35 per cent for the rural and urban areas respectively.) Table 11, relating to the 'APU results', corresponds to Table 5, which is a summary of the 'PRC results'.

Table 11: Levels and Changes in Headcount Ratios and Aggregate Headcounts Attributable to Covid-19, using the APU Study's Reconstructed Input Data

	Rural Pre-COVID-19	Rural Post-COVID-19	Rural Change	Urban Pre-COVID-19	Urban Post-COVID-19	Urban Change	Total Change
Headcount Ratio	.2646	.4187	.1541	.1631	.3391	.1760	.1618
Aggregate Headcount (in millions)	233.91	370.13	136.22	77.64	161.41	83.77	**219.99**

Source: Author's calculations based on the input data summarised in Table 10.

The reconstructed APU data are compatible with an estimate of an increased aggregate poverty headcount, attributable to the COVID-19 pandemic, of 220 million—which falls short of the APU study's estimate of 230 million, but not by much: the one estimate is nearly 96 per cent of the other.

IV. DIFFERENCES BETWEEN THE PRC AND APU ESTIMATES

Now, let us consider the incremental numbers of people pushed into poverty as a consequence of the pandemic and the accompanying lockdown. The APU estimate of this incremental number, at 230 million people, exceeds the PRC incremental estimate, at 75 million people, by a factor of 3! From what we know of the differential impacts of the pandemic-and-lockdown combination of events on rural and urban areas, it was the latter that were most severely affected. This is reflected in the reconstructed APU estimate which suggests that the incremental aggregate urban headcount (84 million) is about 38 per cent of the overall increase (220 million). The PRC estimate, on the other hand, suggests that the urban areas, with an additional (roughly) 8 million in poverty, account for less than 11 per cent of the overall change (76 million). This is not the only reason for judging the APU estimate as being vastly more plausible than the PRC estimate, as can be seen from the detailed evidence presented in the APU report on unemployment, job losses, losses in earnings, increased levels of hunger in the aftermath of the covid-inspired lockdown, and the extremely poor policy responses to these events of distress.

In terms of the impact of the input data employed on the resulting outputs, it would appear that the distributions employed in the two studies were least instrumental in explaining the differing estimates of the two studies; differences in the mean incomes data employed by the two studies have greater explanatory significance; and differing assumptions about the poverty lines the greatest influence. Thus, if we preserve the APU data inputs on mean incomes and poverty lines but vary only the distributions by switching to those employed in the PRC study, we find that the resulting estimate of the change is 233 million: if anything, changing the distribution causes the estimate of the incremental change to *increase*, but not by much.

If we preserve the APU data inputs on distributions and poverty lines but replace the APU mean incomes by the PRC mean incomes, we find a more substantial deviation in the change: it declines from 220 million to 147 million.

Finally, if we preserve the APU data inputs on distributions and mean incomes but switch from the APU poverty lines to the PRC poverty lines, we discover a massive fall in the estimate: from 220 million to just 76 million. Our reservations on the widespread use of the World Bank's international poverty line would seem to be well-founded: in the instant case, as in a general way, it is misleading to employ unrealistically low poverty lines, even when qualified by the notion of conveying a sense of 'extreme' poverty.

V.   CONCLUDING NOTE

Everything considered, a count of upwards of 200 million additional people plunged into poverty, as estimated by the APU study, seems eminently plausible. We are speaking only of the first wave of the pandemic which, by all accounts, was less devastating than the second wave. The outcome, even when confined to a partial assessment of the impact on poverty, has been grievously harsh, accompanied, as it has been, by aspects of government policy that have been a combination of misplaced over-zealousness in the matter of implementing an abrupt, draconian lockdown and immutable reluctance in the matter of affording relief to the country's affected citizens.

In this context, it is striking (even allowing for 'adaptive expectations') that we have not, apparently, had any state-sponsored attempt at providing or seeking evidence on the impact of COVID-19 on poverty. This is the more striking in the face of generalized and intense global awareness of, and concern with, the likely devastating consequences of the pandemic for national and international economic outcomes. Such engagement is easily seen in the research and opinion put out by various multilateral agencies such as the World Bank, the IMF and UNICEF, think-tanks like UNU-WIDER, professional journals like *The Economist*, and individual researchers. A small and illustrative list of studies on poverty and the pandemic would include: Kharas (2020), Kharas and Dooley (2021), Sumner et al (2020), Lakner et al (2021), IMF (2020), UNICEF (2020) (which contains both global and country-level studies on the impact of COVID-19 on child poverty in Africa, Europe and Central Asia, Latin America and the Caribbeans, South Asia, and East Asia and the Pacific), and several articles in *The Economist* (including in the issues of May 23, 2020; September 26, 2020; October 23, 2020; April 10, 2021; and May 15, 2021).

The evidence on the impact of COVID-19 on living standards can be only as sound as the data on which it is based. But what evidence there is, combined with informed general awareness and the application of common sense, suggests both the need for and the possibility of well-founded policy intervention. This is a major reason why the available evidence needs to be appraised, systematised, and repeatedly put out in the public domain. Hence also this essay, however forlorn might be the hope that inspires it.

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About the Author

S. Subramanian is a retired professor of Economics from the Madras Institute of Development Studies, and a former Indian Council of Social Science Research National Fellow. He has research interests in the fields of poverty, inequality, demography, welfare economics, social choice theory, and development economics. He is an elected Fellow of the Human Development and Capabilities Association, and was a member of the advisory board of the World Bank's Commission on Global Poverty (2015-16). He is the author of, among other books, *The Poverty Line* (Oxford University Press: 2012), *Inequality and Poverty: A Short Critical Introduction* (Springer: 2019), and *Futilitarianism* (Routledge, Delhi: 2020). He can be contacted at ssubramanianecon@gmail.com

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