INDIA'S POVERTY TRAP: ARE WE CLOSER TO SOLVE IT NOW THAN BEFORE? FURTHER ANALYSIS AND EVALUATION

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Abstract

While Malthusian population trap is popular in economic development literature, the poverty trap has also gotten attention in recent decades. A perpetual poverty is not only an undesirable stage of economic growth, but also an indication of inability of policy makers (to run out of options) to tackle it further. In economic literature, relationships between poverty levels, per capita incomes and inequality are studied in a large sample of low and middle income nations. The results, (which indicate the requirement of a per capita income not much below that currently registered in Mexico for poverty removal), are used to predict the year of the happy event of the eradication of poverty in India. The tentative finding is that the portals to a better material life for the people of India may open one by one only in the early 2030s, assuming that a healthy growth rate in real GDP of six or seven percent and above is diligently maintained. It is also observed that some countries like Azerbaijan and Kazakhstan have succeeded in poverty removal at low per capita income levels, which may be attributed to greater success in removing inequality and to praiseworthy performance in the realm of non-monetary indicators of poverty. However, these countries are small in size and the problems they faced were more manageable. India's conditions are different. Complex problems do not have easy solutions.

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I. Introduction

Considerable attention has been given in development economics literature to the phenomenon termed " the middle income trap", a specter that seems to be looming up unfailingly in the path of nations striving to reach high status. In this context, it is relevant to consider another pitfall on the growth path, a "poverty trap". For, just as is the case of the so-called middle income trap when countries get bogged down without completing the final stretch to reach the high income GDP per capita level, the elimination of poverty could turn out to be an elusive goal sometimes, despite fairly high rates of growth.

In this paper we focus on the progress achieved by India on these two fronts, viewed against the backdrop of the performance - both better and worse,- of some middle income nations. It may be added that the elimination of poverty usually occurs before the middle income trap is overcome, but in some instances it may be only a whisper between the accomplishment of these two achievements. Also, the paper concentrates on the conventional definitions of the poverty index, not venturing out to draw conclusions using the more involved definitions using non-monetary factors. Our emphasis is on trying to pinpoint stages and rates of economic growth linked to the reaching of the three milestones respectively defined as poverty elimination, middle income trap leapfrogging, and high income country status, being bypassed in that order.

Indian poverty trap is the point of discussion as well as serious study right from the 1970s when Dandekar-Rath study considered tremendous and voluminous statistics to prove the existence of such trap. Dandekar and Rath in 1971 used a daily intake of 2,250 calories per person to define the poverty line for India. They concluded from this study that 40 percent of rural residents and 50 percent of urban residents were below the poverty line in 1960–61. Of course those measures are long gone and we see almost everything in terms of per capita income these days. Also, the increase in per capita incomes of last 30 years has seen much decline in absolute and relative poverty in India, but some severe problems do persist.
Similar sequence and the pitfalls on the path are described by Kharas and Kohli (2015) who write that when a country escapes the poverty trap at low income levels and enters middle income levels, it may face growth stagnation and an inability to move up to the high income echelons, i. e., become meshed in the middle income trap.

The next section dwells a little on the background of the study, and is followed up by the presentation of the estimated models and empirical results. There is a further discussion section that compares our results with other related predictions for India in the literature. A subsequent section briefly touches upon the divergence noted between monetary and non-monetary indicators of poverty. There is also a final, concluding section.

II. Background of the study

What is the cycle of poverty in India?
The Government of India has classified the population Below the Poverty Line (BPL) into two categories according to rural or urban settlement – where the income of such a person residing

in **rural areas is below Rs. 816 per month** and that of one who stays in urban towns and cities is below Rs. 1000. (Dec 25, 2019, study by Government of India)

The U.N millennium goal, adopted also by India, envisages the elimination of poverty by the year 2030. A laudable and highly coveted goal, it is also a stepping stone in the development path towards another desired goal, admission to the high income echelon of nations. On this growth path - as hinted at in the introduction above - there is yet another milestone, the successful de-fusion of the 'middle income trap.'

It is worth stressing that it is not possible to pinpoint an exact income (i. e., GDP per capita) level as the development stage at which one can proclaim the successful leapfrogging of the middle income trap. One only has to look at the experience of Argentina to see the relevance of such a postulate. So near, yet so far; the high income status slipped out of the Argentinian grasp after being tantalizingly close,

and the long sojourn at the middle income level with no further progress indicates that Argentina is entrenched in the middle income trap. And, Argentina is not the only example. Zhou and Hu (2020) write that of all the 101 countries classified as middle income economies in 1960, only 13 upgraded to high income status by 2008; not only that, some fell back into low income levels, highlighting the stark reality of the middle income trap.

In an earlier paper, authors (Kulkarni et. al., 2021) investigate the progress of some major developing countries in bypassing the middle income trap. The authors find that despite having a higher income level than India, Brazil and Indonesia may be considered to be in the middle income trap, using accepted definitions of the phenomenon (see Felipe, 2012 ; Bulman et.al., 2014). On the other hand, India, a poorer country seems poised to leapfrog the middle income trap if a high growth rate can be maintained. The finding in Kulkarni et. al., (2021) is that India can reach high income status around 2045-2050 with a sustained average growth rate of 8

percent (around 6% per capita). Malaysia and Mexico seem likely to follow Chile's example and advance to join the high income fraternity without getting meshed in the middle income trap.

Thus, there is no one to one correspondence between income level and the prospect of avoiding the middle income trap. Malaysia and Mexico, successful in this respect, have per capita GDO levels fairly close to the high income border of $12,236 per capita, but Argentina, also a whisper away from this border has been bogged down without advancement for many years.

The same seems true of the poverty trap, if we may so term the plight of many developing nations. It is generally agreed, amongst researchers that the growth rate of GDP per capita is the most important driver of poverty reduction. However, there are other factors also at work, not limited to the improvement in inequality captured by the Gini Coefficient. Thus, it will be difficult to nail down a particular level of income per capita as the threshold for poverty elimination. Still, Pritchett (2020) states that there may not be any example of a country eliminating poverty without having the reached the current mean income level of Mexico. This issue is further explored in what follows here.

In the next section we undertake a cross-country estimation of the relationships between the poverty level and income per capita, also including income inequality in the picture. The results are subsequently utilized to make predictions about possible fulfillment of the millennium goal by India, and if that is seen to be beyond grasp, of the probable eventual year of the fulfillment of that beautiful dream.

III. Estimated Models and Results.

Estimations of the influence of growth and inequality on the poverty level have been done for individual countries, for instance by Aggarwal (2020) for India, and Mulok, et. al., (2012) for Malaysia. Here we investigate these relationships using a cross-section sample of countries. Subsequently, these results are compared with historical developments as well as the outcomes of individual country studies to make inferences about the probable time period required for poverty elimination.

The following regressions are run, using data for 68 low and high middle income nations (the sample is listed in the appendix):

PVL = 18.67635*** - 0.0017***GDPC Adj. r^2 = 0.233 .. .. (1)

PVL = -2.96969 - 0.00193***GDPC + 0.56826**GINI Adj. r^2 = 0.33 ……(2)

The countries entering the sample are listed in table 1.

Table 1. Sample Used For Estimations

Brazil	South Africa	Botswana	Serbia
Indonesia	Russia	Honduras	Guatemala
Paraguay	Argentiuna	Namibia	Jordan

Nigeria	Ukraine	Tunisia	Algeria
Pakistan	Bangladesh	India	Tanzania
Senegal	Sri Lanka	Jamaica	Bulgaria
Seychelles	China	Colombia	Thailand
Costa Rica	Turkey	Malaysia	Philippines
Mexico	Chile	Albania	Montenegro
Gambia	Georgia	Azerbaijan	Peru
Bosnia H	Burkina Faso	Croatia	Iran
Kazakhstan	Kyrgiz Republi	Dominican Republic	Ecuador
Angola	Kenya	Benin	Bolivia
Lebanon	Lao Democratic Rep.	Cabo Verde	Ghana
Moldova	Cameroon	Congo Republic	Cote de Ivoire
Ethiopia	Morocco	Nicaragua	Vietnam
Nepal	Egypt	El Salvador	Panama

In Equations (1) and (2), PVL is the percentage of population deemed poor according to the World Bank poverty line at < 1.99$ / day. 'GDPC' is the GDP per capita in dollars, and 'GINI' is the Gini coefficient for the country. Three stars represent significance at the one percent level, two and one stars at the five and 10 percent level respectively. The r squares are not high, but this is common with cross-section runs.

From (1) it is seen that GDP per capita is a highly significant determinant of the poverty level. In another using only GINI, the Gini index did not turn out to be significant. However, in estimation (2) with both GDP per capita and GINI as independent variables, the Gini index turns significant.

We would like to add that the emphasis in this estimation process has been on noting the relationship between the poverty level and income per capita and inequality respectively, rather than on constructing a complete forecasting model for the poverty level utilizing even miniscule relationships.

We will now use the results of these cross-country estimations to pinpoint at what GDP per capita level India can expect to see a more or less complete elimination of poverty, reducing to 1% of the population (a level seen even in developed nations), given the current state of inequality, which may not see drastic changes (see Pritchett, 2020).

For this purpose, we proceed as follows: in equation (1), the poverty level on the left hand side is fixed at 1(%). Solving, the GDP per capita level = 10, 397.8 $. Thus, we will have to wait till the fairly high income level of 10397 dollars to be finally free of poverty in India.

However, the picture becomes a bit less dismal when inequality is brought into the picture. Inequality is brazen in India, but, in fact, the situation is better than in all South American countries and a number of European countries (and the U. S.). It is mainly the Northern European welfare economies that have a lower (read= better) Gini index than in India. Many of these high Gini index countries were included in our cross-country sample. Thus, it stands to reason that India's prospects for poverty elimination would look better when equation (2) in which the Gini index figures is used.

Indeed, using the minimum poverty level of one percent, and a GINI of 35 in equation (2) the GDP per capita level for India at which poverty is eliminated is solved out as 9284.67 dollars per capita.

Since South American nations are distinguished by having high GINI indices relative to the income levels, equation was rerun using a dummy (1/ 0) for these countries:

PVL = -10.2218 - 9.3775* dummy - 0.00171*** GDPC + 0.775*** GINI…… (3)

Adj. r^2 = 0.40

However, estimating the GDP per capita level for poverty removal from equation (3) gave a similar outcome, a level of 9300 $. The Gini index value used was 35 as before.
And, how long will we have to wait for this wonderful day, when poverty has been wiped out, to dawn? At a decidedly optimistic average GDP growth rate of around 8% (6 to 6.4 per capita growth), starting from the figure of 2099 $ in 2019, a per capita income of 9300$ is reached after 24 years. To reach 10300 per capita it would take 26 years.

Thus, based on the multiple country (cross-country) study, poverty eradication in India may occur only by the year 2043 assuming we keep up with the same growth trajectory.

Let us take a look at India's recent - lauded from many quarters- record in the reduction of poverty levels, focusing on the World Bank's < 1.90$ a day norm. The poverty level in India decreased at a rate of 2.2 % per year (from 37.6 percent in 2005-2006 to 21.9% in 2011-2012) during a high growth period which witnessed an average gross GDP rate of 7.7%. These results are roughly consistent from a prediction using Aggarwal's regression results. By the same

token, extending such a scenario, the poverty level can become negligible by 2035, i.e., without fulfillment of the millennium goal of poverty elimination by 2030.

However, results of the cross-country estimation show that poverty removal i India will not occur in India until the early 2040s. This result is based on the requirement (for poverty elimination) of around 9300$ per capita GDP that emerged out of the regression results. The picture does bleak when viewed through the lens of this result. Thus, there is a long wait for deliverance from poverty till the early 2040s. But then things happened quickly, as seen when the results of Kulkarni et. al.,(2021) are also brought into the picture. First, the poverty trap is defused; then the middle income trap is bypassed in another couple years, followed by the graduation to high income status in another two to three years, all this assuming a gdp growth rate of 8 percent (6 to 6.5 per capita growth). These results conform to the observation by Pritchett (2020) that it is hard to name countries that have eliminated poverty before reaching the current consumption per capita of Mexico.

Also relevant in this context is the observation that economic growth does not reduce the poverty level equally for all countries; in fact, the impact may differ for the same country at different stages of growth. Rodarte and Verbeek (2015) point out that the reduction in poverty levels is greater when the extreme poverty line lies to the right, or at, the peak of the income distribution (which is the statistical mode of per capita income).

But surely there is a caveat, an exception to such a rule, more than one in fact, as seen in table 1. It can be clearly noted there that Azerbaijan and Algeria, for instance, have reduced the poverty level to zero percent, despite having a per capita income of only about 4000 - 5000 dollars per capita. The same is true for Moldova and Ukraine. One is also reminded of the

manner in which Greece stood out among the present-day high-income nations, with poverty elimination and a high HDI index even at a low per capita income of 5000 dollars.

How did Azerbaijan and Algeria achieve this? The answer is not far to seek, lies camouflaged in our regressions. If we solve out for the GDP per capita level required for poverty elimination when the GINI Index is 26, as approximately for Azerbaijan and Algeria, the level obtained is around $5900 per capita. With an aggregate gdp growth rate of eight percent, India can reach this output level in 16 years, i. e., by 2035, starting 2019. Thus, the results projected based on the performance during the high growth period 2005 to 2012 are replicated.

But here comes the real, formidable caveat. It seems well-nigh impossible for India to push the GINI Index down to 26: the GINI Index for countries tend to be quite stable over time. It is noted in OECD (2019) that for the 19 countries for which data is available, the Gini index has been stable between the mid-1990s and 2016, and that this was also the case for the OECD-33 since the mid-2000s.

It is a bit paradoxical that countries with a high GINI coefficient and /or a low GDP per capita have low measured poverty levels. Such is the case with Azerbaijan, Peru, Bosnia, Croatia, Kazakhstan, Dominic Republic, Bolivia, Moldova, Paraguay, Jordan, Algeria, Ukraine, Tunisia, Morocco, El Salvador etc., (the list is not exhaustive)). Also relevant here is the observation that a number of high income countries (such as the U.S) have higher coefficients than for India and Bangladesh.

As Narayan and Murgai (2016) point out, a decline in the share of the two bottom quintiles in total consumption has occurred in India even during the 'best' years 2005-2012 even with an unchanged GINI index because the GINI is a broader measure of inequality that takes into

account the overall consumption distribution. Growth would have been more inclusive, benefitting the poorest in society, if consumption growth in the lowest quintiles had exceeded the average for the population. As it turned out, consumption growth in India for the bottom 40% of the distribution has been lagging slightly behind the average growth for the population.

Could it be the case that focusing more narrowly on certain income groups will give a better indication of poverty levels than suggested by the GINI index? Table 2 below makes such an attempt.

Table 2. Income Shares of lowest 10% etc.

Country	**GDP/capita$**	**GINI Index**	**Lowest10%**	**Poverty%**	**Lowest20%**	**Top 10%**
Azerbaijan	4793.1	26.6	4,8%	0	10.8%	24.2%
Algeria	3974	27.6	4	0.4	9.4	22.9
Argentina	9912.3	41.2	1.8	1.3	4.7	31
Bangladesh	1855.7	32.4	3.7	6.8	8.6	26.8
Brazil	8717.2	53.3	1	4	3.1	4.2
Chile	14896.5	46.6	1.9	0.3	5.8	36.3
Costa Rica	12343.8	48.3	1.6	1.4	4.4	36.7
Croatia	14944.4	31.1	2.7	0.5	7.8	22.7
Bolivia	3552.1	44	1.2	4.5	5.1	30.8
Dom.Repub	8282.1	45.7	1.8	0.4	6.0	33.1
El Salvador	4187.3	38	2.5	1.5	6.3	29.8

India	2099.6	35.7	3.5	21.4	8.1	30.1
Indonesia	4135.6	38.1	2.9	3.6	6.9	29.9
Jordan	4405.5	33.7	3.5	0.1	8.4	27.5
Kazakhstan	9812.6	27.5	4.3	0	10.2	22
Malaysia	11414.2	41	2.3	0	5.8	31.3
Mexico	9946	48.3	1.8	1.7	5.4	36.4
Moldova	4494	25.9	4.3	0	10.2	22
Morocco	3204.1	39.5	2.7	1	6.7	31.9
Paraguay	5414.8	48.8	1.7	1.6	4.8	35.2
Peru	6977.7	43.3	1.7	2.6	5.2	31.1
Philippines	3485.1	44.4	2.3	2.7	6.2	33.5
Tunisia	3317.5	32.8	3.2	0.3	7.8	25.6
Turkey	9126.6	41.9	2.2	0	5.4	31.6
Ukraine	3659	25	4.3	0	10.1	22.3

It can be seen from the table above that for Azerbaijan, Algeria, Kazakhstan and Moldova and Ukraine, countries that have eliminated poverty at fairly low income power capita levels, the income share of the lowest income group is relatively high. It may be also noted that the income share of the top 10 percent group is around 22 for these countries, whereas for most other countries in the table sample, including India, this share is above 30%. This ought to be a lesson for India, the revelation that income distribution is not fully captured by the GINI index (see Gini index and lowest group income share of Croatia, for instance), so that special steps have to be taken to increase income shares of the poorest in society.

IV. Relevance of Non-monetary Indicators.

An extension of the present approach to include non-monetary indicators is beyond the scope of this paper. We may just note that poverty incidence country rankings based on non-monetary indicators may differ from that taking into account only monetary income. However, all countries may not reveal such a divergence. Thus, Baulch & Masset (2002) note that non-monetary poverty indicators for Vietnam paint a considerably different scenario for Vietnam than that taking into consideration only monetary income, while Etang & Tsimpo (2017) do not observe such a difference for Uganda.

Here we will briefly investigate whether the countries that have succeeded in reducing poverty levels below that seem consistent with their per capita income levels in an international comparison have also low non-monetary indicators of poverty. Specifically, we will look at Azerbajan, Algeria, Kazhakstan and Ukraine, which (as seen in table 2 above) have low poverty levels as well as a low Gini index, despite possessing only low per capita incomes (a little higher for Kazhakstan, but still lower than Mexico).

Now, a number of non-monetary indicators of poverty indicators are mentioned in the literature, but in our brief treatment here, we confine ourselves only to those relating to the female and child populations; these indicators have shown their vitality in other contexts, such as in the positive impact of female literacy in population control by reducing fertlity (see for instance Saurabh et. al, 2013).

Table 3. Data on Female and Children Well-being

Country	Female Literacy%	Female Labor	Infant	Incidence of

		Market Participation	Mortality	Malnutrition
Azerbajan	100%	63%	18%	3%
Algeria	75	17	20	3
Kazhakstan	100	63	9	3
Ukraine	100	47	7	3
India	66	21	28	15
Brazil	93	55	12	3

Source: World Bank databank

From Table 3, it can be seen that all the other middle income countries throw up better non-monetary indicators of poverty. In fact, the non- BRIC nations in the list, except Algeria, also do better than Brazil - which has a higher per capita income.

Now, viewing tables 2 and 3 together, we may first note that the poverty level is lower than in India and Brazil for the other countries entering the comparison here. Thus, one may draw a tentative conclusion that a good performance in. the realm of non-monetary indicators of poverty can bode well for poverty reduction in monetary terms. It is even plausible that a lagged effect is at work here; when the post-war miracle of Japan is discussed, it is often forgotten that the Japanese society was fully literate by the dawn of the twentieth century.

V. Concluding Remarks:

A high average GDP growth could, given past record, obliterate poverty in India by 2035. However, it has to be kept in mind that the GDP growth rate - poverty reduction relation can

change over time, becoming weaker a higher incomes per capita. So, the fond 2035 target will be difficult to meet unless there is a drastic improvement in the GINI index - or an increase in the income shares of the poorest quintiles. Without these developments, with business as usual, cross-country analyses point to the early 2040s as the probable time for poverty elimination in India, It could be an eventful decade then: poverty removal by around 2043, diffusion of the middle income trap two or three years later, followed by joining the hallowed high income fraternity another two to three years later. Such a scenario will also be consistent with the observation that the removal of poverty before reaching the current income per capita of Mexico is a rarity. However, it is conceivable that good efforts in the realm of non-monetary indicators of poverty can reduce measured poverty levels even at low per capita incomes

Thus, in answer to the pressing question about poverty eradication, 'when will that wonderful day dawn', we would venture to say that, unless there is a very sharp reduction in inequality, it would occur in the early 2040s; that would be the golden decade when the portals to a better material life open one by one.

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