Working Paper No.146
RUSID-CESS Working Paper No.1
February 2024

DEFINING AND MEASURING FOUR RECENTLY EVOLVED DEVELOPMENT CONCEPTS

Pro-poor growth, Pro-poor development, Inclusive growth, and Inclusive development

N. Kakwani
University of New South Wales, Australia

Zakaria Siddiqui
Gulati Institute of Finance and Taxation, India

CENTRE FOR ECONOMIC AND SOCIAL STUDIES
Begumpet, Hyderabad - 500 016

Working Paper No.146
RUSID-CESS Working Paper No.1
February 2024

DEFINING AND MEASURING FOUR RECENTLY EVOLVED DEVELOPMENT CONCEPTS

Pro-poor growth, Pro-poor development, Inclusive growth, and Inclusive development

N. Kakwani
University of New South Wales, Australia

Zakaria Siddiqui
Gulati Institute of Finance and Taxation, India

CENTRE FOR ECONOMIC AND SOCIAL STUDIES
(Planning Dept, Govt. of Telangana & ICSSR - Ministry of Education, Govt. of India)
Nizamiah Observatory Campus, Begumpet, Hyderabad – 500 016, Telangana, India
Phone: 040-23416610-13, 23402789, 23416780, fax: 040-23406808
Email: post@cess.ac.in, Website: www.cess.ac.in

Foreword

The Centre for Economic and Social Studies has been working on issues of agriculture and allied sectors, natural resources, food security, poverty alleviation, unemployment and MSME sectors, which contribute to the inclusive growth and development of the country. The Centre has also been focusing its research on issues of development, related to the marginalized groups like the scheduled castes and scheduled tribes, vulnerable groups like migrants, and from a gender perspective. Prof CH Hanumantha Rao, Honorary Professor at the Centre has been engaging himself for quite some time on the studies on Inclusive Development. ***'Rising Inequalities in Income in India: Key Role of Socio-political Factors'*** by Prof Rao is one such paper in the area of Inclusive development. Prof Nanak Kakwani has been approached to prepare a conceptual paper on Inclusive development. We are grateful to him for presenting the paper entitled '***Defining and Measuring four Recently Evolved Development Concepts: Pro-poor Growth, Pro-poor Development, Inclusive Growth, and Inclusive Development',*** jointly with Zakaria Siddique. This is the first in a series of papers on Inclusive Development brought out by the ***Research Unit for Studies on Inclusive Development*** **(RUSID)** at the Centre. This paper is useful to all those who are interested in working in the area of Inclusive development.

E Revathi
Director, CESS
February 2024

Defining and Measuring Four Recently Evolved Development Concepts

Pro-poor growth, Pro-poor development, Inclusive growth, and Inclusive development[1]

N.Kakwani,
University of New South Wales, Australia
Email: n.kakwani @unsw.edu.au

Zakaria Siddiqui,
Gulati Institute of Finance and Taxation. India
zakaria.jnu@gmail.com

Abstract

This paper views the concept of shared prosperity in a much broader sense. Economic growth enhances total prosperity, increasing the economic pie in society, but the pie distribution determines how the population shares it. Economists are deeply divided and some believe that society must focus on policies to enlarge the economic pie and then have policies to divide the it equitably. The belief is that, expanding the size of the economic pie and dividing the pie are mutually exclusive. We do not share this view; we view the two phenomena as interrelated. Based on a social welfare framework, we have developed an integrated methodology to evaluate growth and distribution simultaneously. Linking the two phenomena gives rise to four development goals: (i) pro-poor growth, (ii) inclusive growth, (iii) pro-poor development, and (iv) inclusive development. This paper defines the four goals, providing a methodology to operationalize them using real-world data. The paper provides a case study of India using state-level data. This empirical analysis informs whether growth and development in India have been pro-poor and inclusive over the past two decades.

JEL CODE: D63, D31, O11, O20, O47
Key Words: Development, Growth, Pro-poor, Inclusive, Inequality, India

1 We are grateful to Professors S Mahendra Dev, Sukhadeo Thorat, CH Hanumantha Rao, and E Revathi for providing helpful comments on an earlier draft of the paper whose thoughtful observations have been taken into account in this revised version. We would also like to acknowledge the useful comments by Indranil Datta, Kunal Sen, and Xiaobing Wong.

1. Introduction

In the 1950s and 1960s, trickle-down was the dominant development strategy for bettering people's lives. It assumed that economic growth was the dominant factor that would automatically enhance people's living standards. The growth process that results from market forces, generally benefits the wealthy first, and then in the second round, the poor benefit when the rich start spending their gains from growth. The trickle-down effect ensures a vertical flow of the benefits of growth from the rich to the poor. Thus, economic growth benefits the poor only indirectly through vertical flows from the rich. The trickle-down phenomenon however does not indicate the quantum of benefits of growth that will flow to the poor. The rich may reap huge benefits, but, the poor may receive only a meagre fraction of the total benefits.[2]

Thus, the view in development economics was that the government's strategy should promote investments, increase production capabilities, and enhance economic growth. The government need not be concerned with how this economic growth distributes benefits among the people, and the distribution was not considered a fundamental problem for serious study.

In the 1970s, many economists became skeptical about trickle-down development thinking. The World Bank economists Chenery, Ahluwalia, Bell, Duloy, and Jolly (1974) published an influential book entitled *Redistribution with Growth* with the vital message that "while growth policies have succeeded beyond expectations of the first development decade, the very idea of aggregate growth as a social objective is objectionable." Ahluwalia (1976) observed that despite high economic growth in developing countries, poverty remained high due to worsening income distribution. The relative shares of the growth benefits at the low end of the distribution were almost insignificant. In this context, Bhagwati's seminal paper "Poverty and Public Policy," published in the World Development 1988 also raised the possibility that high economic growth may even increase poverty. He called it 'immiserizing growth to the poor.'

Despite these concerns, the trickle-down development strategy continued until the new millennium. The World Bank economists Dollar and Kraay (2002) published a highly influential paper entitled "Growth is good for the poor" which concluded that "growth generally does benefit the poor, and that anyone who cares about the poor should favor

2 Jawaharlal Nehru, the first prime minister of independent India, was first to use the expression "Trickle-Down" as early as in 1933 in *Whither India* reprinted in "India's Freedom", Unwin Books, No. 29 (London: Allen and Unwin, 1962). He used the expression in connection with the British exploitation of India.

the growth-enhancing policies of the good rule of law, fiscal discipline, and openness to international trade." This paper implied that growth is good for the poor irrespective of the growth pattern. The possible immiserising growth of the poor may never happen. However, extreme poverty continues to exist worldwide, and economic growth alone may be insufficient to alleviate poverty. We require pro-poor growth favoring the poor to reduce poverty rapidly. Kakwani and Son (2022) point out that Dollar-Kraay derived their conclusions based on cross-country regression models, which suffer from conceptual problems, resulting in misleading conclusions.

Martin Bronfenbrenner published a seminal book in 1971 entitled *Income Distribution Theory*. He raised an important question, "Is distribution a sufficiently important problem for serious study, and if so, why?" Chapter 1 of his book presents a representative sample of divergent views of economists. Some economists viewed distribution as fundamental, while others thought that distribution was unimportant. We need not review this debate, but it is essential to draw attention to a quotation from the first prime minister of independent India, Pandit Jawaharlal Nehru's book *Glimpses of World History,* published in 1939, written when he was in prison.

"Democracy, if it means anything, means not merely equality of possessing a vote, but economic and social equality."

Bheemrao Ramji Ambedkar, the architect of India's constitution, echoing Nehru's perception of democracy, said on the 26th of January, 1950: “We are going to enter into a life of contradictions. In politics, we will have equality of one man and one vote. Still, we shall continue denying people equality in social and economic life because of our social and economic structure. How long shall we continue to live this life of contradictions? How long shall we continue to deny equality in our social and economic life?” He is essentially emphasizing the need to maintain a balance in political, social, and economic opportunities for the effective function of democracy.

Economic growth provides the means, but distribution is fundamental to achieving Nehru's and Ambedkar's economic and social equality vision. In this context, the following quotation from Sen and Dreze (1989) is helpful:

"Economic growth is very important as a means for bettering people's lives, but to go much faster, it has to be combined with devoting resources to remove illiteracy, ill health, under nutrition, and other deprivations."

The World Bank has recently proposed a new model of development focusing on the bottom 40 percent of the population. This model aims to achieve two objectives: (i) reduce extreme poverty in the globe to 3 percent by 2030, and (ii) foster economic growth that benefits the bottom 40 percent of the population (Rosenblatt and McGavock 2013). The second goal, targeting the bottom 40 percent of the population, is built on shared prosperity. The basic idea is that growth fosters shared prosperity if the bottom 40 percent of the population could benefit from economic growth.

In this paper, we view the concept of shared prosperity in a much broader sense. Economic growth enhances total prosperity, increasing the whole economic pie, but the distribution determines how the population shares the pie (prosperity). There is a deep division among economists: Some believe that society must focus on policies to enlarge the pie and then have policies to divide the pie equitably. The belief is that expanding the pie size and dividing the pie are mutually exclusive. We do not share this view; we view the two phenomena as interrelated. Mahendra Dev (2008) has also argued that growth and equity objectives should be pursued simultaneously. We propose to link the two phenomena that can translate to four development goals: (i) pro-poor growth, (ii) inclusive growth, (iii) pro-poor development, and (iv) inclusive development. This paper defines the four concepts, providing a methodology to operationalize them using real-world data. The paper provides a case study of India using state-level data. Based on a social welfare framework, we have developed an integrated methodology to simultaneously evaluate the size of the pie and its distribution. Our proposed social welfare framework links economic growth and distribution into a composite index, combining four development goals through this linkage. Through this framework, we can also determine the contributions of growth and distribution to social welfare and well-being. This decomposition is essential to understand the policy implications of shared prosperity.

Alleviating poverty and reducing inequality are two central goals of economic development. Poverty has existed in the world for centuries. But the awareness of its existence has increased recently in the western world. Social attitudes have changed, and many developed countries have achieved a level of affluence where they recognize that poverty can be alleviated without creating an adverse impact on economic growth.

The concern for rising income inequality has recently increased, and addressing rising inequality has become the top agenda for many governments and international development agencies. The widening income gap between the top 1 percent and the bottom 99 percent has recently become a political issue in the United States. The Nobel

Laureate Joseph Stiglitz wrote a provocative article in Vanity Fair in 2011, entitled "Of the 1% by the 1%, for the 1%", leading to political protests against 1%. Because of increasing public concerns about inequality, many governments have instituted redistribution policies through taxation and government transfer programs. Social welfare or safety-net programs have increased manifold. According to a World Bank report, *The State of Social Safety Nets 2015*, as many as 1.9 billion people are beneficiaries of safety net programs.[3]

Economists have long recognized that economic growth is necessary but insufficient to achieve rapid poverty alleviation and reduction of inequality. A significant shift toward distribution took place in the 1990s and the new millennium. The consensus among development economists is that there should be a mix of growth-enhancing and distribution policies to achieve the two central development goals. Pro-poor and inclusive growth are the new mantras to achieve such goals. This paper provides a social welfare function framework to define and measure pro-poor and inclusive growth. The two concepts are distinct but related and recent literature has failed to provide a clear distinction between the two.

Pro-poor and inclusive growth are measured in income space and providing means to better people's lives. Means are essential, but as Sen (1983, 1984, 1985, 1987) writes, "ultimately, the focus has to be on what life people lead, and what they can or cannot do or can or cannot be." Following this logic, Sen made a fundamental contribution in defining the standard of living or well-being in terms of functionings and capabilities. In his contextually relevant book, *Development as Freedom,* published in 1999, Sen viewed development as the freedom people have, to achieve the functionings they value. Thus, following Sen's idea, this paper considers development as the enhancement of people's well-being. The paper develops two new concepts: (i) pro-poor development and (ii) inclusive development. Measuring the two concepts requires generalizing the social functions to social well-being functions. The paper defines the pro-poor and inclusive well-being functions, providing methods for deriving the pro-poor and inclusive development indicators.

Finally, the paper provides a case study of India using state-level data. This empirical analysis informs whether growth and development in India have been pro-poor and inclusive over two decades.

3 Kakwani and Son (2016) have developed the idea of social rate of return, which is a new tool for evaluating social welfare programs.

2. What is Pro-poor Growth?

The term pro-poor growth is relatively new and emerged in the late 1990s. Many development practitioners began discussing it but did not offer a precise concept of pro-poor growth. International agencies such as the United Nations (2000) and OECD (2001) defined pro-poor growth as benefits to the poor and provided them with opportunities to improve their economic situation. *The Poverty Reduction Strategy* of the Asian Development Bank describes pro-poor growth as "labor-absorbing growth accompanied by policies and programs that mitigate inequalities and facilitate income and employment generation for the poor, particularly women and other traditionally excluded groups". These definitions are very broad and focused on policies aimed to achieve pro-poor growth. Before discussing policies, it makes logical sense to define pro-poor growth precisely. Broad policies are not a helpful guide in measuring pro-poor growth.

Kakwani and Pernia published their paper "What is Pro-poor Growth" in 2000. They explained the concept of pro-poor growth and argued that it represents a significant departure from the "trickle-down" phenomenon. They argued that pro-poor growth is biased in favor of the poor, meaning that the poor must enjoy higher benefits of growth than the non-poor. Based on this definition, they proposed an operational measure of pro-poor, which informed when one could say that growth is pro-poor. And if so, to what degree.

In 2008, Kakwani and Son proposed three alternative definitions of pro-poor growth. A brief review of these definitions is now provided.

i. **Relative definition: If the growth rate is positive, the growth process is pro-poor if it benefits the poor proportionally more than the non-poor. If the growth rate is negative, the growth process is pro-poor if the proportional loss of income from negative growth is less for the poor than the non-poor.**

Kakwani and Pernia (2000) proposed this definition, implying that growth results in income redistribution which favors the poor. This is a relative concept of pro-poor growth because the growth process reduces relative inequality.

ii. **Absolute Definition: If the growth rate is positive, the growth process is pro-poor if the poor enjoy greater absolute benefits from growth than the non-poor. When growth is negative, the growth process is absolute pro-poor if the absolute loss of income from negative growth is less for the poor than for the non-poor.**

Kakwani and Son (2008) proposed this definition, implying that growth results in the redistribution of income in favor of the poor, thereby contributing to a greater absolute gain of income for the poor than the non-poor. If the growth is negative, the redistribution of income due to growth leads to a smaller loss of absolute income for the poor compared to the non-poor. This is an absolute concept of pro-poor growth because the growth process reduces the absolute inequality of income. Kolm (1976) developed the idea of absolute inequality, which remains unchanged when everyone's income changes by the same amount. This paper has extended this idea to measuring absolute pro-poor growth.

iii. Poverty-reducing Growth: Growth is pro-poor if it reduces poverty

Ravallion and Chen (2003) proposed this definition, defining growth as pro-poor if it reduces poverty. Rauniyar and Kanbur (2009) also classify growth as pro-poor if it reduces income poverty. Kakwani and Son (2008) demonstrated that this is the weakest definition of pro-poor growth when growth is positive and the strongest definition when growth is negative. This definition also does not specify how much the poverty reduction should be to classify growth as pro-poor.

From international comparisons, we found that more than 95% of growth spells showed a poverty reduction when growth is positive, so we identify most growth spells as pro-poor when growth is positive, when growth is negative and there is still a reduction in poverty, (which is an improbable event) we will not identify growth as pro-poor in more than 99% of spells. Thus, classifying growth as pro-poor, based on whether it reduces poverty can lead to an erroneous conclusion about the pro-poor process of growth.

Economic growth generates people's incomes, so it would be intuitive to define pro-poor growth in terms of how the growth process results in the distribution of income among the poor and non-poor. In our formulation, we have defined pro-poor growth as indicating whether the poor receive proportionally more or absolute income benefits. Our social welfare framework revolves around these two definitions. Existing literature has suggested several alternative poverty measures, some of which may show a reduction in poverty while others may show an increase in poverty. Consequently, if our definition of pro-poor growth focuses on poverty measures we may run the risk of arriving at contradictory conclusions.

3. Poverty Equivalent Growth Rate (PEGR) Explained

The linkage between growth and poverty is complex and determined by changing dimensions of inequality. Thus, pro-poor growth provides the interrelationship between three factors: Poverty, Inequality, and Growth, known in the literature as the PIG axis (Sumner, 2003). Kakwani and Son (2008) developed the idea of a "Poverty Equivalent Growth Rate" (PEGR) that takes into account both the growth rate in mean incomes and how the benefits of this growth are distributed among the poor and non-poor. It encompasses the three definitions of pro-poor growth discussed in the previous section. This paper demonstrates that the PEGR satisfies an essential requirement that the magnitude of poverty reduction is a monotonically increasing function of the PEGR. Thus, the PEGR is an effective tool to reduce or alleviate poverty; maximization of the PEGR implies a maximum reduction in poverty. The government's social objective should be to maximize the PEGR.

Kakwani and Son (2008) derived the PEGR using the following poverty decomposition:

$$\delta = \gamma\eta + \zeta \qquad (3.1)$$

which shows that growth in poverty δ is the sum of the two components. The first term on the RHS captures two sources of growth in poverty given by $\gamma\eta$. It consists of the growth rate in average incomes γ multiplied by the growth elasticity of poverty η, defined as the percentage reduction in poverty with the increase in the mean by one percent, provided that inequality in income remains constant. This elasticity is also called inequality-neutral poverty elasticity of growth.

$\gamma\eta$ is the inequality-neutral growth of poverty contributed by the growth in mean income of γ. The second term in the right hand side ζ is poverty growth when inequality changes, but the growth in mean income remains the same. This may be called the inequality effect of poverty.

The growth effect of poverty denoted by $\gamma\eta$ is always negative, implying that it always reduces poverty. The growth process can redistribute income in favor of the poor or non-poor, and the inequality effect captures the redistributive impact on poverty. If growth redistributes income favoring the poor, poverty reduction will be more rapid with the same economic growth. Thus, one can define growth as pro-poor (anti-poor) if the inequality effect reduces (increases) poverty. That leads to the pro-poor growth index proposed by Kakwani and Pernia (2000):

$$\varphi = \frac{\delta}{\gamma\eta} \tag{3.2}$$

If the growth rate of mean income γ is positive, growth is pro-poor (anti-poor) in the relative sense if φ is greater (less) than one. Intuitively, the denominator in (3.2) is the proportional poverty reduction under the counterfactual that everyone in society receives the same proportional benefits of growth. The numerator in the equation is the actual proportional reduction in poverty. Suppose φ is greater than one; then the actual poverty reduction is higher than the poverty reduction occurring when the growth process provides the same proportional benefits to everyone. Thus, growth distributes benefits to the poor proportionally more than to the non-poor; growth is pro-poor. If the growth rate γ is negative, and φ is greater than one, the denominator in (3.2) is the proportional increase in poverty when everyone suffers the same proportional loss of income. The numerator is the actual increase in poverty, and if it is higher than the denominator, the poor suffer greater hardship than the non-poor. Thus, the recession is anti-poor. If φ is less than one, the poor suffer less hardship than the non-poor, so the downturn is pro-poor. It is a relative pro-poor index implying that pro-poor (anti-poor) growth reduces (increases) relative inequality.

Kakwani and Son (2008) also developed absolute pro-poor growth when the poor receive more absolute benefits than the non-poor. The poverty decomposition in (3.1) is the relative poverty decomposition; the absolute poverty decomposition is given by

$$\delta = \gamma\eta^* + \zeta^* \tag{3.3}$$

where η^* is the absolute elasticity of poverty, interpreted as the proportional change in poverty when the mean income grows by 1 percent, provided that the growth process does not change the absolute inequality (μ refers to the mean income). The second term on the RHS of (3.3), ζ^*, is the poverty growth when absolute inequality changes, but the growth rate in mean income remains the same. This may be called the absolute inequality effect of poverty.

Similar to the relative pro-poor growth index in (3.2), the absolute pro-poor growth index is obtained as

$$\varphi^* = \frac{\delta}{\gamma\eta^*} \tag{3.4}$$

Positive growth will be absolute pro-poor (anti-poor) if φ^* is greater (less) than 1, so the

poor will receive greater (smaller) absolute growth benefits than the non-poor. Similarly, negative growth will be pro-poor (anti-poor) if φ^* is smaller (larger) than 1, in which case, the poor will suffer the smaller (larger) loss of income due to the recession.

According to Ravallion and Chen (2003), growth will be pro-poor (anti-poor) if δ is negative (positive). Kakwani and Son (2008) have identified this situation as poverty-reducing (increasing) growth.

Both relative and absolute pro-poor growth indices φ, and φ^* help to know whether a growth process is pro-poor or not. However, these indices do not tell us how effective economic growth is in reducing poverty or, in other words, how much economic growth has contributed to poverty reduction. The PEGR developed by Kakwani and Son (2008) answers this question.

The impact of growth on poverty depends on two factors: (i) growth rate in mean income and (ii) distribution of growth benefits among the poor and non-poor. PEGR is a composite index of these two factors impacting poverty. It is the growth rate that would result in the same growth in poverty as the actual growth rate if the growth process had not accompanied any change in inequality. It would be the counterfactual growth rate if everyone in society received the same proportional benefits. The actual economic growth is γ, which results in the poverty growth rate of δ from a given income distribution. Suppose γ_R is the distributionally neutral growth rate when inequality does not change, which leads to the growth of poverty equal to $\gamma_R\eta$, then this growth rate in poverty must equal δ . Thus, solving this equation yields

$$\gamma_R = \frac{\delta}{\eta} = \varphi\gamma \tag{3.5}$$

which is the relative PEGR.

Similarly, the absolute PEGR will be given by

$$\gamma_A = \frac{\delta}{\eta^*} = \varphi^*\gamma \tag{3.6}$$

The following hypothetical example can provide an intuitive explanation of the PEGR. Suppose the actual growth rate is 7 percent, which has reduced poverty by 10 percent, meaning that $\delta = -.10$ and $\gamma = 0.07$ Suppose the growth elasticity of poverty is $\eta = -1.2$, interpreted as 'a 1 percent increase in mean income reduces poverty by 1.2 percent, provided the relative inequality had not changed', then the

growth in poverty under the counterfactual that inequality had not changed would be $-1.2 \times 0.07 = -0.084 \approx -8.4$ percent. The actual poverty reduction is 10%, meaning that the actual poverty reduction is higher than the reduction that would have occurred if growth were inequality neutral, which gives a pro-poor index $\varphi = \frac{(-.10)}{(-.084)} = 1.19$. Hence the poor enjoy 19 percent higher benefits than the non-poor, so growth is pro-poor. The $PEGR = 0.07 \times 1.19 = 0.08 \approx 8$ percent, which is higher than the actual economic growth rate of 7 percent. Thus, there is a gain of 1 percent in the growth rate because growth is pro-poor.

Suppose the economy suffered a recession, so the economic growth rate declined by 5 percent, implying $\gamma = -0.05$, which led to an increase in poverty by 7%, giving $\delta = 0.07$. If the recession were inequality neutral, poverty would have increased by $-1.2 \times (-0.05) = 0.06 \approx 6$ percent. The actual increase in poverty is 7 percent, which yields the pro-poor index $\varphi = \frac{7}{6} = 1.17$. It means that the poor suffer a 17 percent higher loss of income than the non-poor; therefore, the recession is anti-poor. Thus, the $PEGR = -0.05 \times 1.17 = -0.059 \approx -5.9$ percent, which is lower than the actual growth rate of -5 percent. Therefore, society suffers a loss of growth rate equal to 0.9 percent. A similar interpretation applies to the absolute PEGR.

This hypothetical example has a critical message. It shows that pro-poor growth contributes to a gain in the growth rate in poverty reduction, while anti-poor growth results in the loss of the growth rate in poverty reduction. This result is intuitive and can be more readily conveyed to policymakers.

4. Poverty Social Welfare Approach to Pro-poor Growth

The PEGR requires the specification of poverty line and an aggregate poverty measure, and several poverty measures are available in the literature based on alternative assumptions. The PEGR can be calculated for any poverty measure, a general method encompassing any poverty measure. Any household level income and expenditure survey can be used to operationalize the technique. This technique requires the estimation of growth elasticity of poverty η, and Kakwani and Son (2008) proposed to estimate the elasticity using the poverty decomposition proposed by Kakwani (2000). Many researchers have found the estimation of this elasticity rather difficult. This section offers an alternative method of estimating pro-poor growth using the poverty social welfare approach.

Suppose z is the poverty line, the income below which individuals cannot satisfy their minimum needs. Persons are identified as poor if their income x is below the poverty line.[4] We develop below a general class of poverty social welfare functions and show how it can drive a class of pro-poor growth indices.

Suppose v_k (z, x) is the weight given to a poor person with income x, defined as

$$v_k(z,x) = \frac{(k+1)}{H}\left[\frac{H-F(x)}{H}\right]^k \quad if\ x < z$$
$$= 0\ \ if\ x \geq z \qquad (4.1)$$

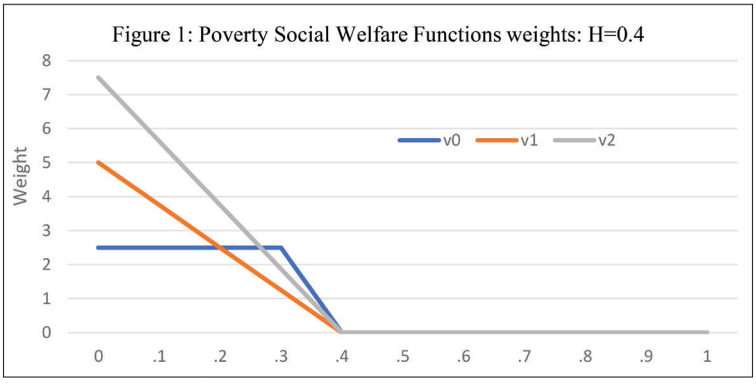
F(x) is the probability distribution function, which is the probability of a person with income less than x. H is the proportion of poor identified by the poverty line z.

The total weight in the domain of *x* adds up to 1:

$$\int_0^H v(z,x)f(x)dx = \frac{(k+1)}{H}\int_0^H \left[\frac{H-F(x)}{H}\right]^k f(x)dx = 1 \qquad (4.2)$$

The poorest person gets the maximum weight of *(k+1),* which decreases monotonically as income increases and becomes 0 when the income of the poor increases to the poverty line z. Thus, all the weight is given to the poor, and the non-poor receives zero weight, which characterizes poverty social welfare functions. Figure 1 depicts the weights assigned to the poor; H is assumed to be 0.4.

The figure depicts the three alternative weighting schemes. When k = 0, every poor person receives the exact weight of 2.5 until the income of the poor equals the poverty line so that all the non-poor receive zero weights.



4 This approach of identifying the poor was suggested by Rawintree as early as in 1901. Most recently, using the consumer theory, Kakwani (2011) developed a new model of calculating the poverty line that satisfies persons' caloric needs and basic non-food needs.

When k = 1 or = 2 , the weight decreases monotonically as the income of the poor increases, attaining the value 0 when the poor cross the poverty line. This weighting scheme leads to the following class of poverty social welfare functions:

$$x^*(k) = \frac{1}{H}\int_0^z xv(z,x)f(x)dx = \frac{(k+1)}{H}\int_0^z x\left[\frac{H-F(x)}{H}\right]^k f(x)dx, \qquad (4.3)$$

which is the money metric poverty social welfare function measured in income currency such as Dollar or Rupees. This social welfare class depends on the income ranking of the poor. Sen (1976) proposed the idea of rank order ranking from the viewpoint of capturing the relative deprivation experienced by persons when they compare their economic circumstances with others in society. The basic intuition behind the rank ordering is that the lower a person is on the welfare scale, the higher this person's sense of deprivation. Intuitively, the person experiencing the highest deprivation must receive the most importance, thus, the largest weight.

When = 0 , $x^*(k)$ becomes

$$x^*(0) = \frac{1}{H}\int_0^z xf(x)dx, \qquad (4.4)$$

which equals the mean income of the poor. It is the most straightforward poverty social welfare function. This social welfare function has one limitation, though; it gives equal weight to all the poor irrespective of economic circumstances. All poor cannot be identical; they have different incomes, so they must have different weights. Figure 1 shows that when k > 0, the importance given to the poor decreases linearly as their income increases. As k increases from 1 to 2, Figure 1 also shows that the weight function becomes steeper, giving relatively greater weight to the poorer persons among the poor. It means that the parameter k is interpreted as the inequality aversion parameter; as k rises, more and more importance is given to transfers among the poor at the lower end of the distribution and less weight to the transfer at the top. This is a desirable property if society is concerned with giving greater importance to poorer persons among the poor. Thus, it would be more appropriate to measure pro-poor growth using the general class of poverty social welfare functions in (4.3) for k >0 ; the higher the value of k, the greater society's inequality aversion.

Suppose $\gamma = \Delta\ln(\mu)$ is the relative growth rate of the mean income of the society, which can be shown to give equal proportion weight to everyone in society. Further, suppose

$\gamma(k) = \Delta \ln(x^*(k))$ is the growth rate of the social welfare $x^*(k)$, which gives all the weight to only the poor, with the poorest getting the maximum weight. We may now define the pro-poor index as follows.

If $\gamma(k) > \gamma$, the growth will be pro-poor because the growth will benefit the poor proportionally more than the non-poor. That leads to a relative pro-poor index $\rho(k)$ given by

$$\rho(k) = \frac{\Delta \ln(x^*(k))}{\Delta \ln(\mu)} = \frac{\gamma(k)}{\gamma}, \tag{4.5}$$

where $\gamma(k)$ is the relative growth rate of the poverty social welfare $x^*(k)$. Since poverty social welfare function gives the highest weight to the poorest person in society, and the weight decreases monotonically with income, the growth will be pro-poor if the growth in social welfare $\gamma(k)$ is higher than the growth in the mean of society γ.

Suppose $\gamma > 0$; growth will be pro-poor (anti-poor) if $\rho(k)$ is greater (smaller) than 1. If $\gamma > 0$, the growth will be pro-poor (anti-poor) if $\rho(k)$ is smaller (greater) than 1 because people experiencing poverty suffer a smaller (smaller) loss of income due to the downturn in the economy.

The pattern of relative growth is determined by

$$\gamma(k) = \gamma + (\rho(k) - 1)\gamma \tag{4.6}$$

which immediately shows that *there will always be a gain (loss) in the relative growth of poverty social welfare if the growth process is pro-poor (anti-poor).* The decision rule regarding the gain or loss in growth rate is straightforward to explain to the policy makers: the gain signifies pro-poor growth, and the loss the anti-poor growth.

Similar to the relative pro-poor index in (4.3), we can also define an absolute pro-poor index for the class of social welfare function $x^*(k)$ as

$$\rho^*(k) = \frac{\Delta x^*(k)}{\Delta \mu} = \frac{\gamma_A^*(k)}{\gamma_A} \tag{4.7}$$

From definition (ii), the growth is absolute pro-poor with an absolute positive growth rate γ_A, the poor receive greater absolute benefits than the non-poor, implying that $\rho^*(k)$ is greater than 1. Similarly, if γ_A<0, the growth is pro-poor if the absolute loss of growth for the poor is smaller than that of the non-poor, implying that $\rho^*(k) < 1$.

The pattern of absolute growth is determined by

$$\gamma_A^*(k) = \gamma_A + (\rho^*(k) - 1)\gamma_A \qquad (4.8)$$

which immediately shows that *there always will be a gain (loss) in the absolute growth of social welfare if the growth process is absolute pro-poor (anti-poor).*

5. What is pro-poor development?

First, we need to clarify what development is. It is a complex issue, having different meanings for different people, and economic growth is commonly perceived as development. If a country achieves high economic growth, it is applauded as a country with a high level of development. Economic growth is measured in income space, which provides people with the means to lead a better life. Means are necessary but insufficient to give people the quality of life they must have.

According to Nobel Laureate Amartya Sen (1983), economic development has to be concerned with the kind of life people can lead; what they can or cannot do, for example, whether they are well nourished, get an education, or able to escape avoidable morbidity. His idea of development relates to enhancing people's well-being (or standard of living). He developed the most comprehensive framework of well-being through functionings and capabilities. While functioning is people's achievement, capability is their ability to achieve. Functionings are directly related to what life people lead, whereas capabilities are related to people's freedom in choosing the functionings they value. Thus, development is a multidimensional concept defined in terms of capabilities that reflect the extent of freedom people have in determining the life they wish to lead. Following this framework, we describe development as enhancing peoples' capabilities.

Economic growth generates people's incomes which are the means enabling people to have a command over commodities. But Sen's idea of well-being relates to the kind of life people can lead. Thus, well-being is the people's ultimate achievement, which we call ends, whereas means generated by economic growth enable people to achieve these ends. We define development as ends, whereas economic growth means. Means and ends have different characteristics; means can impact ends, so they are related, but still distinct, and policies to enhance means will differ from those that enhance ends.

The UNDP's human development index (HDI) is widely used globally to measure each country's social and economic development. It focuses on the following four factors; life expectancy at birth, expected years of schooling, mean years of schooling, and

gross national income (GNI) per capita. The first three indicators are the well-being indicators, reflecting the countries' ultimate achievements, called ends. The GNI is the proxy for income, an aggregate measure of means, and the HDI is a composite index of means and ends. Our concern is whether we can combine the means and ends to obtain a composite well-being index. This paper defines and measures four development goals; pro-poor and inclusive growth based on means, and pro-poor and inclusive development based on the ends. So, we treat them as different development goals.

Well-being is a multidimensional concept reflecting many aspects of people's lives. Several indicators measure well-being and constructing a composite index to measure overall well-being is not essential. The construction of a composite well-being index suffers from many conceptual issues, well-documented in the literature [Kakwani and Son (2022)]. Unfortunately, the HDI combines different dimensions of well-being, including per capita GDP, to arrive at a composite index of development. Constructing a composite index requires weights to be assigned to various dimensions of well-being, and no meaningful method exists for determining the weights. The HDI gives the weights to different dimensions on an ad hoc basis, which has attracted massive criticisms of the HDI. We have retrained from constructing composite indices of pro-poor development. Our conclusions on pro-poor development derive from the individual development indicators, which are sensible approaches to formulating policies.

Economic growth creates opportunities that enhance well-being. For instance, growth generates employment, which provides people with means to enjoy a higher standard of living. Economic growth generates resources in the form of tax revenue which the government can use to create opportunities for the people in education, health, nutrition, and living conditions, such as providing clean water, electricity, and sanitation. Opportunities are thus, a process that has a direct bearing on well-being. In this paper, we retain such opportunities as components of development.

Pro-poor development concerns the performance of the poor in achieving development relative to the non-poor. We propose the following two definitions of pro-poor development:

iv. **Relative pro-poor development:** The poor enjoy a proportionally higher increase in well-being than the non-poor.

v. **Absolute pro-poor development:** The poor enjoy an absolute higher well-being than the non-poor.

How can we operationalize pro-poor development? The following section discusses the measurement of pro-poor development.

6. The measurement of pro-poor development

Suppose $\omega(x)$ is the well-being indicator of a person with income x; several indicators characterize the overall well-being. For ease of presentation, $\omega(x)$ will be referred to as well-being

We propose generalizing the poverty social welfare function in (4.3) to achieve this objective. This generalization will be called Poverty Social Well-being Function (PSWF) given by

$$\omega_P^*(k) = \frac{(k+1)}{H}\int_0^z \omega(x)\left[\frac{H-F(x)}{H}\right]^k f(x)dx \qquad (6.1)$$

which links the well-being with the economic circumstances of the poor

when $k = 0$, $\omega_P^*(k)$ collapses to $\bar{\omega}_z$ given by

$$\bar{\omega}_z = \frac{1}{H}\int_0^z \omega(x)f(x)dx \qquad (6.2)$$

which is the mean well-being of the poor.

This is the most straightforward poverty social well-being function. Its main limitation is that the well-being of all the poor gets the same weight irrespective of their economic situation. However, if $k > 0$, the weight given to the well-being of the poor varies with their income. The well-being of the poorest gets the highest importance.

The **pro-poor relative development index** for the (PSWF) is given by

$$\tau_P(k) = \frac{\Delta Ln(\omega_P^*(k))}{\Delta Ln(\bar{\omega})} = \frac{\sigma_P(k)}{\sigma} \qquad (6.3)$$

where $\sigma_P(k)$ is the relative growth rate of poverty social well-being and σ is the relative growth rate of the well-being of the whole population. The development, based on definition (iv), will be relative pro-poor (anti-poor) if $\tau_P(k)$ is greater (less) than 1. The pattern of pro-poor development is described by

$$\sigma_P(k) = \sigma + (\tau_P(k) - 1)\sigma \qquad (6.4)$$

which immediately shows that *relative pro-poor development leads to a gain in relative well-being growth rate, while anti-poor development results in a loss in relative well-being growth rate.* Thus, we propose to measure the degree of relative pro-poor development by the gain or loss of relative growth in a well-being indicator.

The **pro-poor absolute development index** for the (PSWF) is given by

$$\tau_P^*(k) = \frac{\Delta(\omega_P^*(k))}{\Delta(\bar{\omega})} = \frac{\sigma_P^*(k)}{\sigma^*} \tag{6.5}$$

where $\sigma_P^*(k)$ is the absolute growth rate of poverty social well-being, and σ^* is the absolute growth rate of the well-being of the whole population. The development, based on definition (v), will be absolute pro-poor (anti-poor) if $\tau_P^*(k)$ is greater (less) than 1. The pattern of pro-poor development is described by

$$\sigma_P^*(k) = \sigma^* + (\tau_P^*(k) - 1)\sigma^* \tag{6.6}$$

which immediately shows that *absolute pro-poor development leads to a gain in absolute well-being growth rate, while anti-poor development results in a loss in well-being growth rate.* Thus, we propose to measure the degree of absolute pro-poor development by the gain or loss of absolute growth of a development indicator.

7. What is inclusive growth, and how did it evolve?

What is the origin of the term inclusive growth? Our simple answer is that we do not know, and our Google search did not help. Development literature, however, has integrated the concept of inclusive growth into policymaking. In the new millennium, there has been widespread debate on the idea, still providing no clear definition of what inclusive growth is and how it differs from other development ideas proposed in the literature. The concept remains elusive, as pointed out by Ranieri and Romos in a One-pager publication of the International Policy Centre for Inclusive growth published in 2013. A careful review of various ADB documents revealed many conflicting definitions of inclusive growth, as pointed out by Klassen (2010). He concluded that some concepts are vague and do not allow easy quantitative operationalization. Further complicating matters, the World Bank defines inclusive growth in ways that are at odds with the ADB concept.

India's eleventh five-year Plan (2007/08 -2011/12) officially adopted inclusive growth as its development strategy. The implied meaning of inclusive growth is a growth process that yields broad-based benefits and ensures equal opportunity for all. This broad vision

of the Eleventh Plan includes several inter-related components: rapid growth that reduces poverty and creates employment opportunities, access to essential services in health and education, especially for the poor, equality of opportunity, empowerment through education and skill development, employment opportunities underpinned by the National Rural Employment Guarantee, environmental sustainability, recognition of women's agency and good governance. The plan document identified 27 indicators for achieving the inclusive growth target. Of these 27 targets, 13 were to be monitored at the state level. These targets broadly relate to (i) poverty, (ii) education, (iii) health, (iv) women & children, (v) infrastructure, and (vi) environment.

Inclusive growth continued to be the focal point of the Twelfth Five-Year Plan (2012–2017). It defined inclusive growth from multiple perspectives in terms of 'poverty reduction, group equality, regional balance, inequality reduction, empowerment, and employment generation.' It lists inclusive achievements of the Eleventh Five-Year Plan in terms of conventional development outcome evaluation indicators such as gross domestic product (GDP).

Interestingly none of the targets mentioned in the 11th Five-Year Plan relate to growth in employment generation. However, a large chunk of academic writing focuses on employment growth in assessing India's inclusive growth [Sheila Bhalla (2006), Mehrotra et al (2012), and Mitra (2012)]. Kannan (2022) discussed broader criteria for evaluating the inclusiveness of economic growth in India by invoking access to social security for masses of the working poor in India along with the growth of employment opportunities. Kannan (2022) also laments the official definition of inclusive growth, which ignores the growing inequality as it only concerns reducing absolute poverty.

The debate on inclusive growth advanced in India. Unfortunately, it did not clarify what inclusive growth is. Inclusive growth includes a cocktail of policies, which could lead to inclusive growth, but we do not know where we are heading. We cannot precisely measure inclusive growth without a precise definition, and policies do not define inclusive growth if they do not define the direction in which growth is headed. We can only evaluate policies if they achieve inclusive growth, provided we know our achievement function. The following sections define inclusive growth and development, two distinct concepts.

8. Defining and Measuring Inclusive Growth

The pro-poor growth is deliberately biased in favor of the poor, and its primary purpose is rapidly reducing poverty. In the previous sections, we developed a framework for pro-poor growth employing poverty social welfare functions, and these functions assign entire weight to the poor. The non-poor receive zero weight, meaning society is only concerned with the benefits of growth going to the poor and not with how the growth impacts the non-poor. In contrast, inclusive growth is broad-based growth, benefiting everyone, not just the poor. If the growth results in high inequality, some people receive excessive benefits, and others receive meager benefits. Recently, many countries have achieved rapid economic growth accompanied by a sharp increase in inequality, and we cannot classify such a growth process as inclusive. Discrimination based on gender, religion, caste, or ethnicity may exclude many social groups from participating in growth. Inclusive growth ensures that all social groups participate in economic activities and receive benefits to lead a decent life. Sukhadeo Thorat has made significant contributions to measuring social inequality in India. In their paper published in the Economic and Political Weekly 2012, Sukhadeo Thorat and Amaresh Dubey examined a critical question "Has Growth Been Socially Inclusive During 1993-94-2009?" In India, the caste system is crucial in excluding social groups such as scheduled caste and scheduled tribes from participating in the growth process. It would be challenging to link the discrimination suffered by the social groups to the inclusive growth developed in the paper. That would be our future project. The operationalizing of inclusive growth is produced below.

There is a one-to-one linkage between equality and social welfare function. How we measure equality depends on the social welfare function we choose, and we measure equality in income space using a class of social welfare functions. Since inclusive growth is broad-based growth, yielding benefits to everyone, not just the poor. Hence, social welfare must assign positive weight to everyone's income so everyone participates in the growth process and benefits from it.

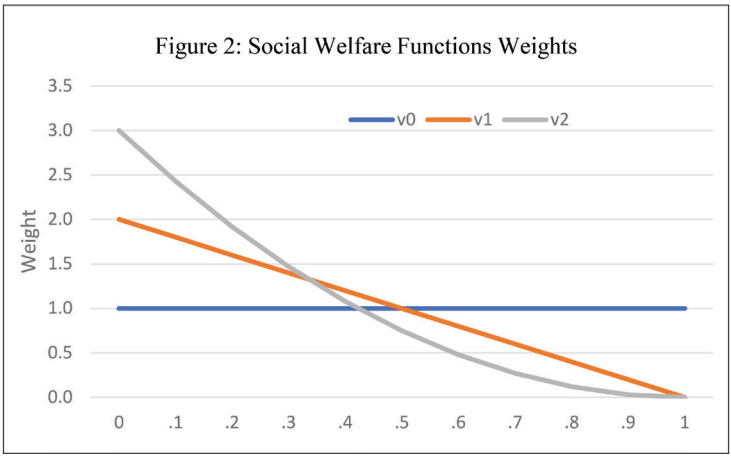
We propose to utilize a class of inclusive social welfare functions to measure inclusive growth given by

$$w(k) = (k+1)\int_0^\infty x[1-F(x)]^k f(x)dx \qquad (8.1)$$

F(x) is the probability distribution function, interpreted as the proportion of persons with income less than or equal to x . The total weight given to everyone's income adds to 1:

$$(k+1)\int_0^{\infty}[1-F(x)]^k f(x)dx=1 \qquad (8.2)$$

We propose to use a class of social welfare functions to draw conclusions based on society's different value judgments. Figure 2 depicts the weighting scheme of assigning weight, underlying the class of social welfare functions in (8.1). When $k = 0$, everyone in society gets a weight equal to 1, in which case the social welfare $w(k)$ reduces to the average income of the society. In this scenario, society would have no concern for inequality. When $k > 0$, The social welfare function in (8.1) ensures that the poorest person gets the highest weight, decreasing monotonically as income increases. Hence, the wealthiest person receives the least importance. This property is desirable for any social welfare function to capture income equity.



If k = 1, the social welfare function $w(k)$ reduces to the social welfare function proposed by Sen (1974). As k increases from 1 to 2, the weight function becomes steeper, implying that the higher the value of k , the greater importance is given to the poorer person in society. k is interpreted as the inequality aversion parameter; as it increases, society gives greater importance to the incomes of the more impoverished.

Like pro-poor growth, inclusive growth can be relative and absolute. The index of **relative inclusive growth** is determined by

$$\delta(k) = \frac{\Delta Ln(w(k)}{\Delta Ln(\mu)} = \frac{\emptyset(k)}{\gamma}, \qquad (8.3)$$

where $\emptyset(k)$ is the relative growth rate of social welfare $w(k)$, and γ is the relative growth rate of the mean income. If $\delta(k) > 1$, it captures the equity in growth, so we define growth to be relatively inclusive if $\delta(k)$ is greater than 1. The growth will not be inclusive if $\delta(k)$ is less than 1.

The pattern of relative inclusive growth is determined by

$$\emptyset(k) = \gamma + (\delta(k) - 1)\gamma \tag{8.4}$$

which immediately shows that *there will be a gain (loss) in the relative growth of social welfare if the growth process is relative inclusive (non-inclusive).*

Similar to the relative inclusive growth index in (8.3), we can also define an **absolute inclusive growth** index for the class of social welfare function w (k) in (8.1) as

$$\delta^*(k) = \frac{\Delta(w(k)}{\Delta(\mu)} = \frac{\emptyset^*(k)}{\gamma_A} \tag{8.5}$$

where $\emptyset^*(k)$ is the absolute growth of social welfare, and γ_A , the absolute growth rate of the mean income. $\delta^*(k)$ captures the absolute equity in the growth process. The growth is absolute inclusive when $\gamma_A > 0$, and $\delta^*(k) > 1$, absolute non-inclusive if $\delta^*(k) < 1$. If the absolute growth is negative, $\gamma_A < 0$, it would be absolute inclusive if $\delta^*(k) < 1$, implying that the poorer a person, the smaller will be their loss of income due to recession.

The pattern of absolute inclusive is determined by

$$\gamma_A^*(k) = \gamma_A + (\rho^*(k) - 1)\gamma_A \tag{8.6}$$

which immediately shows that *there will be a gain (loss) in the absolute growth of social welfare if the growth process is inclusive (non-inclusive).*

9. Inclusive Development

As discussed, economic growth is measured in income space, which provides people with the means to lead a better life. Means are necessary but insufficient to give people the quality of life they must have. Inclusive development concerns the broad-based enhancement of the well-being of the population. The measurement of inclusive development requires generalizing the social welfare function given in (8.1). We refer to this generalization as Inclusive Social Well-Being Function (ISWBF), defined as

$$\omega^*(k) = (k+1)\int_0^\infty \omega(x)[1-F(x)]^k f(x)dx \qquad (9.1)$$

where $\omega(x)$ is the well-being of a person with income x, when all the persons are arranged in ascending order of their income. In this function, the well-being of the poorest person in society is assigned the maximum weight of $(k+1)$, decreasing monotonically to 0 as income increases.

The relative inclusive development index for the (ISWBF) is given by

$$\tau(k) = \frac{\Delta Ln(\omega^*)(k))}{\Delta Ln(\overline{\omega})} = \frac{\sigma(k)}{\sigma} \qquad \tau(k) \qquad (9.2)$$

where $\sigma(k)$ is the relative growth rate of social well-being, and σ is the relative growth rate of the well-being of the whole population. $\tau(k)$ captures the equity in the well-being of the society. The development will be relative inclusive (non-inclusive) if $\tau(k)$ is greater (less) than 1. The pattern of pro-poor development is described by

$$\sigma(k) = \sigma + (\tau(k) - 1)\sigma \qquad (9.3)$$

which immediately shows that *relative inclusive development leads to a gain in well-being growth rate, while non-inclusive development results in a loss in well-being growth rate.*

The absolute inclusive index for the (ISWBF) is given by

$$\tau^*(k) = \frac{\Delta(\omega^*(k))}{\Delta(\overline{\omega})} = \frac{\sigma^*(k)}{\sigma^*} \qquad (9.4)$$

where $\sigma^*(k)$ is the absolute growth rate of social well-being, and σ^* is the absolute growth rate of the well-being of the whole population. $\tau^*(k)$ captures the absolute equity in well-being. The development will be inclusive (non-inclusive) if $\tau^*(k)$ is greater (less) than 1. The pattern of pro-poor development is described by

$$\sigma^*(k) = \sigma^* + (\tau^*(k) - 1)\sigma^* \qquad (9.5))$$

which immediately shows that *absolute inclusive development leads to a gain in absolute well-being growth rate, while absolute non-inclusive development results in a loss in absolute well-being growth rate.*

10. Nature of Growth in India: An Illustration

This paper has provided a methodology to measure the four goals of economic development, namely: (i) pro-poor growth, (ii) pro-poor development, (iii) inclusive growth, and (vi) inclusive development. This section applies the methodology to determine if India has achieved the four development goals and the extent to which it has been achieved in the first two decades of the 21st century.

Pro-poor and inclusive growth is measured in the income space, whereas the pro-poor and inclusive development is measured in the well-being space. Well-being is measured in terms of functionings and capability formulated by Sen. This section analyzes pro-poor and inclusive growth and development, utilizing the individual indices of well-being. Separate indices are more revealing in the formulation of policies to characterize well-being. A critical question arises about how we choose the well-being indicators. There can be numerous well-being indicators, so it is not plausible to analyze well-being, using a large number of indicators mentioned in the literature. According to Sen's capability approach, we must focus on some basic functioning. What are these basic functionings and the corresponding capabilities? How can they be identified? An answer to these questions requires value judgments. The solution also depends on how society prioritizes different capabilities. These priorities also rely on a country's economic resources. This issue sparked a sharp exchange between Nussbaum (2003) and Sen (2004) but no clear answers have emerged.

In this case study, we have focused on the following prominent development indicators:

1. Infant mortality rate (or infant survival rate)
2. Life expectancy at birth
3. Literacy rate
4. The percentage of children under five free of stunting and wasting (two indicators)

These five indicators can adequately capture four dimensions of well-being: child mortality, longevity, education, and child nutrition. Stunting and wasting refer to chronic (long-term) and acute (short-term) indicators of the prevalence of nutritional deficiency in children below five years of age. Stunting refers to shortness of height for a given age from a standard size that the healthy and well-nourished child is expected to achieve. Similarly, wasting refers to a child's inability to gain sufficient weight for a given height compared to the standard weight that a healthy and well-fed child of similar height should achieve. The World Health Organization (WHO 2006) has

developed these standards from a sample of 8440 healthy breastfed infants and young children from Brazil, Ghana, India, Norway, Oman, and the United States.

Pro-poor and inclusive growth are measured in income space. Per capita income or consumption is ideal for measuring pro-poor and inclusive growth. But to do so requires nationally representative household income or expenditure surveys. Such surveys are available in India only for selected years, which preclude calculating trend growth rates over time. Given this data limitation, we have carried out the analysis using Indian states as a unit of analysis to obtain a consistent time trend to examine the direction of pro-poorness and inclusiveness. The main limitation of the state-level analysis is that it ignores the variations of pro-poorness and inclusiveness of growth within states. While presenting the state-level analysis of pro-poor and inclusive development, we capture the inter-state variations and obtain a broad picture of pro-poorness and inclusiveness at the national level. Since we have not utilized nationally representative household surveys to capture the distribution effects, we regard this illustration as preliminary, warranting a more detailed study.

We have used real per capita Net State Domestic Product (NSDP) in 2011 prices to proxy for the state's real per capita income. It determines the economic situation of a state, providing its ranking. The ranking is required to calculate the social welfare functions discussed in the paper.

Growth rates can have wide yearly fluctuations, so it is essential to draw inferences based on trend growth rates. The least squares method applied to a semi log regression model commonly calculates the trend growth rates [World Bank's World Development Reports]. Kakwani (1997) has demonstrated that it has welfare implications, which are intuitively not appealing. In this section, we have used Kakwani's method to calculate trend growth rates, which have all the essential properties of a social welfare function.

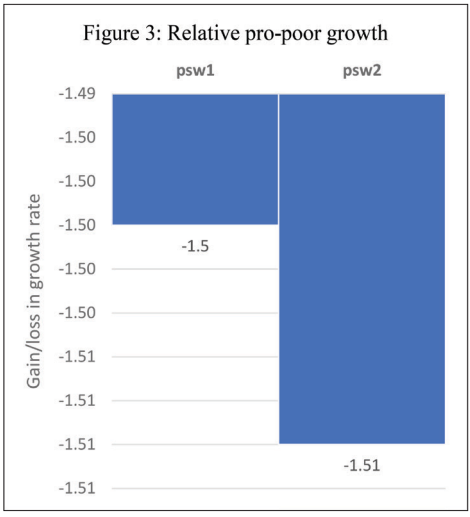
Table 1, presenting the trend growth rates of various indicators at the national level, shows that India's real per capita NSDP has been increasing annually at a real growth rate of 6.14 percent over the two decades, i.e., 2001-2019. Table 1, while indicating a relative growth rate, also offers absolute growth rates, which show that the real per capita NSDP at the national level has been rising at an annual rate of Rs. 3463 (in 2011 prices). Hence India's prosperity has been snowballing. However, our main concern is whether this prosperity has been shared widely across all the states, among the poor and non-poor states. We answer this question by analyzing whether India's economic growth across states has been pro-poor and inclusive.

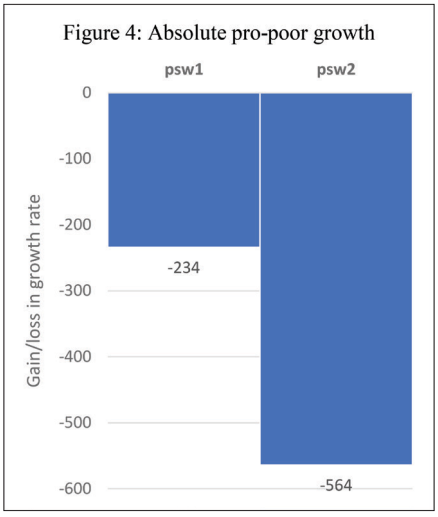
Table1: Trend growth rates of poverty and inclusive social welfare and well-being

Indicators	Relative growth rates	Absolute growth rates
Real Per capita NSDP: PC_NSDP	6.14	3463
Infant survival: ISR	0.21	2.03
Life expectancy at birth: LEB	0.57	0.38
Literacy rate: LR	3.03	1.04
Share of children free of stunting: CFS	1.54	0.92
Share of children free of wasting: CFW	0.12	0.1

Measuring pro-poor growth requires ranking the states from the poorest to the richest. We identify a state as poor if it belongs to the bottom 40 percent of the poorest states. The choice of 40 percent is arbitrary; we have chosen it because the World Bank used this figure in its recently proposed development model described in Rosenblatt and McGavock (2013). The ideal method of constructing a poverty line in each state based on household income and expenditure surveys could not be followed due to the limited availability of surveys.

Figures 3 and 4 provide the answer as to whether India's real per capita NSDP growth rate has been pro- or anti-poor. We have used the two social welfare functions, PSW1, and PSW2, which have the inequality aversion of 1 and 2 among the poor, respectively. Figure 3 shows that there has been a loss of relative growth rate of 1.50 and 1.51 percent for psw1 and psw2, respectively. It concludes that India's growth has not been relatively



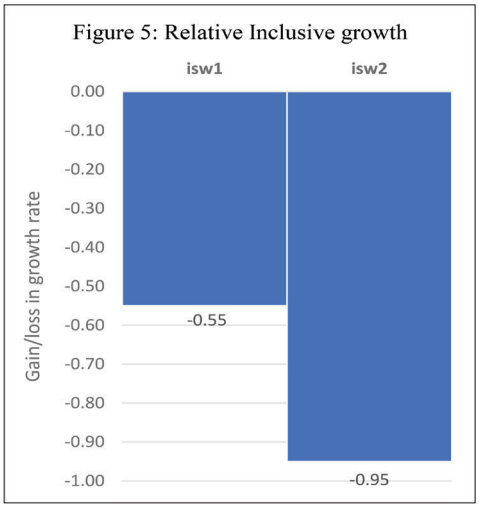


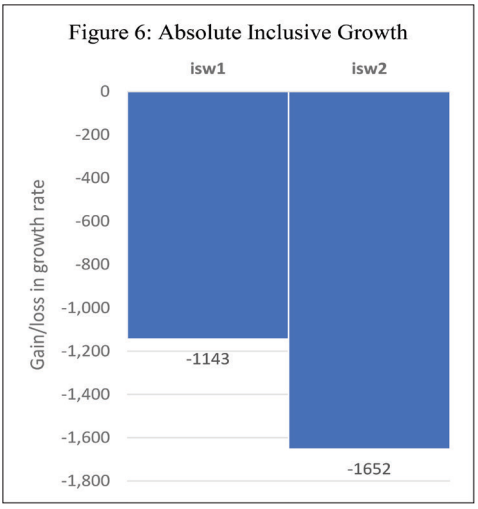
Source: Economic and Political Weekly Research Foundation Database

pro-poor; the result holds for both social welfare functions. Figure 4 depicts absolute pro-poor growth, showing per person per annum loss of absolute growth rates of Rs 234 and 564 for social welfare functions psw1 and psw2, respectively. Thus, the emerging conclusion is that India's growth had not been pro-poor, relatively and absolutely.

Figures 5 and 6 show whether growth was relative and absolute inclusive. This conclusion is based on the two inclusive social welfare functions, isw1, and isw2, with inequality aversion parameters 1 and 2, respectively. Figure 5 shows the loss of relative growth rates of 0.55 and 0.95 for isw1 and isw2, respectively. Similarly, Figure 6 shows the absolute per-person loss of real growth rates of Rs 1143 and Rs 1652 per annum, respectively. The losses of growth rates are higher for the social welfare functions with higher inequality aversion parameters. That suggests that the poorer the state, the smaller the benefits of growth. The losses of growth rates from Figures 5 and 6 indicate the growth in India had not been inclusive, relatively, and absolutely.

This section has presented the patterns of economic growth in India, suggesting that growth has neither been pro-poor nor inclusive. India has achieved high and sustained growth in per capita GDP in the two decades, generating total prosperity, but it cannot be termed as shared prosperity.

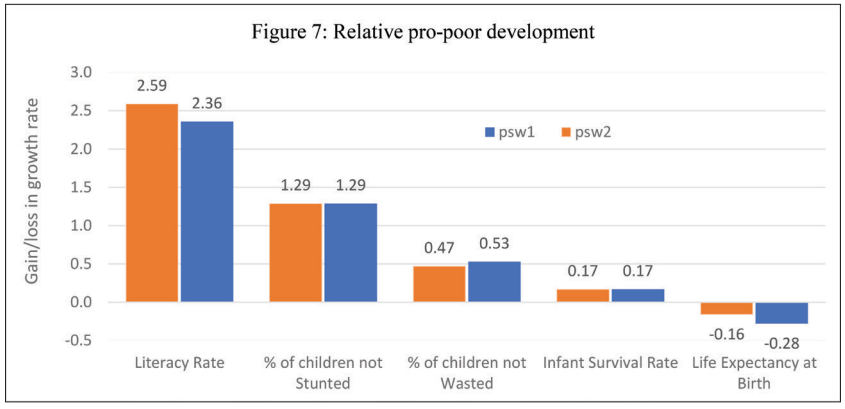




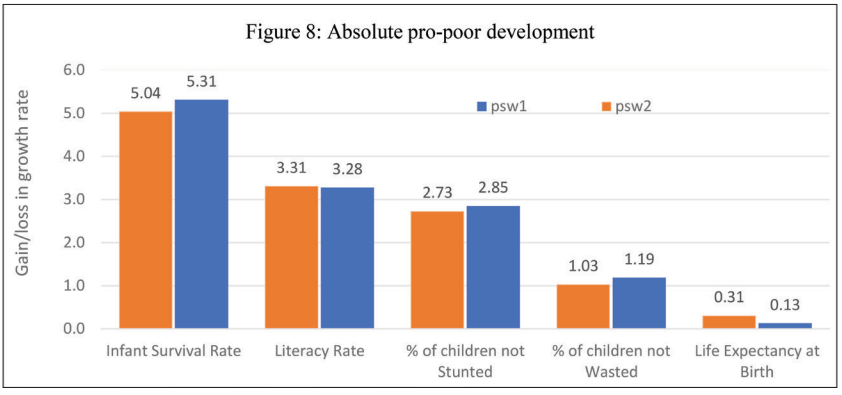
Source: Economic and Political Weekly Research Foundation Database

How has India performed in achieving well-being? To answer this question, we look at the pattern of development. Table 1 shows that all development indicators have had positive trend growth rates. Among them, adult literacy rate has the highest trend growth rate.

We may conclude that higher economic growth could have helped in achieving increased well-being. But, some government policies might have had an overall impact on well-being. A pertinent question is whether the development has been pro-poor and inclusive. Figure 7 shows that, except for the life expectancy at birth, all well-being indicators achieved a gain in relative pro-poor development growth rates in well-being. Figure 8 shows all well-being indicators have achieved a gain in absolute pro-poor growth rates, with no exception. Among the five well-being indicators that signify that development had been relatively pro-poor except for the life expectancy at birth, but absolute pro-poor among all five indicators, implying that the poorer states have more or less achieved relatively and absolutely, a higher performance in well-being. However, the degree to which development is pro-poor varies significantly across well-being indicators (Figure 7). For instance, progress in reducing illiteracy and stunting has been highly pro-poor relatively. Still, progress in improving life expectancy and reducing IMR and wasting has been much less so in a relative sense.

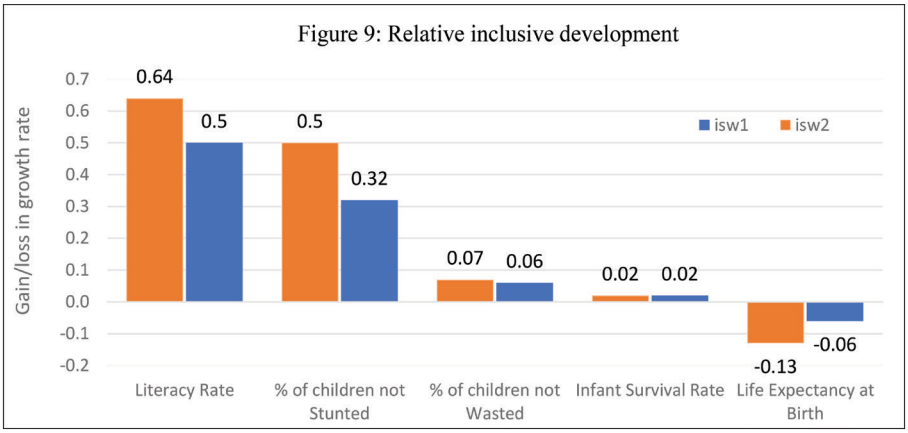


Source: Economic and Political Weekly Research Foundation Database

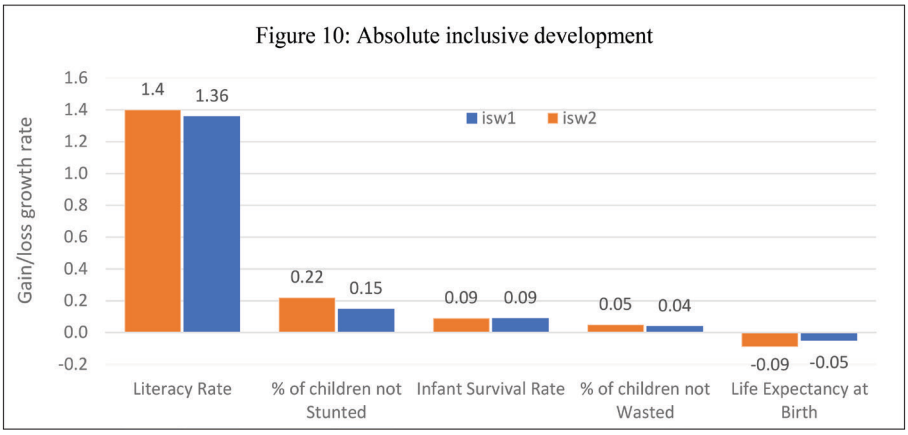


Source: Economic and Political Weekly Research Foundation Database

Figures 9 and 10 depicted below indicate whether the development was inclusive. Again except for life expectancy at birth, development was broad-based and inclusive, relatively and absolutely.



Source: Economic and Political Weekly Research Foundation Database



Source: Economic and Political Weekly Research Foundation Database

We have identified that the life expectancy at birth has been neither pro-poor nor inclusive. That is a relatively long-term indicator of development, so the impact of rising or falling income on it would be realized in the long run.

We conclude from this section that although economic growth has been neither pro-poor nor inclusive, except for life expectancy at birth, development among the five well-being indicators has been both poor and inclusive, relatively and absolutely. As pointed

out, our development concept is restricted to well-being indicators. The literature (for instance, the UNDP human development index) includes both income (means) and well-being indicators (ends), which cause lots of confusion in defining 'Development'. We distinguish the means and ends, which we must not mix. Growth and development are measured in different spaces, possibly giving conclusions in opposite directions. The two spaces have different characteristics, which we explain as follows.

The income has much wider variations, ranging from zero to approaching infinity. In some situations, the income of some individuals may even be negative. The well-being indicators, unlike income indicators, have asymptotic limits, reflecting physical and biological maxima. For instance, the life expectancy at birth has a maximum limit of not more than 85 years because people cannot live forever. Another essential characteristic, as articulated by Kakwani (1993), is that as the standard of living or well-being reaches progressively higher levels, it becomes increasingly difficult to achieve the same degree of improvement further. Thus, at a higher level of well-being, an incremental improvement would represent higher levels of achievement than a similar incremental improvement from a lower base. So, the relationship between achievement and values of well-being indicators cannot be linear.

Consequently, the observed difference in the values of indicators does not reflect the actual achievement in well-being between different individuals. Thus, we must interpret pro-poor and inclusive development with caution. Kakwani (1993a) has provided a method of measuring the actual achievement of well-being indicators. Future research must utilize Kakwani's method of measuring pro-poor and inclusive development based on achieved well-being.

The empirical analysis is presented in the paper to illustrate how we can apply our methodology to conclude the pro-poorness or inclusiveness of growth and development. Ideally, we must use nationally representative household surveys to do such analysis, which we could not do due to lack of institutional support. This paper focuses on defining and measuring the four development goals as identified. Using the methodology developed in the paper, India's researchers must conduct a thorough study to know whether economic growth and development are pro-poor and inclusive.

11. Concluding Remarks

The World Bank has recently proposed a new model of development focusing on the bottom 40 percent of the population. This model aims to achieve two objectives: (i)

reduce extreme poverty globally to 3 percent by 2030, and (ii) foster economic growth that benefits the bottom 40 percent of the population. The second goal targeting the bottom 40 percent of the population, is built on shared prosperity. The basic idea is that growth fosters shared prosperity if the bottom 40 percent of the population could benefit from economic growth.

This view of shared prosperity is somewhat restricted. This paper has viewed shared prosperity in a much broader sense. Economic growth enhances total prosperity, increasing the national economy/ economic pie, but the distribution of the pie determines how the population shares it. Economists are deeply divided, and some believe that society must focus on policies to enlarge the economic pie and then have policies to equitably distribute the pie. The belief is that expanding the size of the economic pie and dividing the same, are mutually exclusive. This paper does not share this view; it views the two phenomena as interrelated.

Based on a social welfare framework, the paper has attempted to develop an integrated methodology to evaluate growth and distribution simultaneously. We have attempted to interrelate the two phenomena and define the four concomitant development goals that emerge as a result, namely, (i) pro-poor growth, (ii) inclusive growth, (iii) pro-poor development, and (iv) inclusive development. The paper has significantly contributed to defining the four concepts, providing a methodology to operationalize them using real-world data. These four development goals together constitute shared prosperity. The paper has applied this methodology to determine if India has achieved the four development goals and the extent to which they could be achieved in the first two decades of the 21st century. This empirical study is preliminary and based on Indian states as the unit of analysis, which has many limitations.

The empirical analysis presented in the paper shows that India's growth pattern is neither pro-poor nor inclusive. India has achieved high and sustained growth in per capita GDP in the two decades, generating total prosperity, but it cannot be called shared prosperity.

Notwithstanding the above finding, the paper concludes that overall development has been both pro-poor and inclusive, relatively and absolutely. What could explain this conclusion? One possible explanation is as follows:

The well-being indicators, unlike income indicators, have asymptotic limits, reflecting physical and biological maxima, for instance, the life expectancy at birth, which has

a maximum limit not exceeding 85 years. A second essential characteristic is that as the standard of living or well-being reaches progressively higher levels, it becomes increasingly difficult to sustain the improvement. Thus, an incremental improvement at a higher level of well-being, would represent higher levels of achievement than a similar incremental improvement from a lower base. So, the relationship between achievement and values of well-being indicators is not linear.

Consequently, the observed difference in the values of indicators does not reflect the actual achievement in well-being between different individuals. Thus, interpretation of pro-poor and inclusive development should be done with caution. Kakwani (1993a) has provided a method of measuring the actual achievement of well-being indicators. Future research could successfully utilize Kakwani's method of measuring pro-poor and inclusive development based on achieved well-being.

The empirical analysis presented in the paper has been done only to illustrate how we can apply our methodology to conclude the pro-poorness or inclusiveness of growth and development. Ideally nationally representative household surveys need to be used for such analysis, but this could not be done for want of institutional support. This paper attempted to define and measure the four development goals as identified. The methodology developed in the paper can be effectively used by researchers in India to thoroughly study the pro-poor and inclusive nature of economic growth and development.

The paper defined inclusive growth as broad-based growth whereby every social group can participate in the growth process. Discrimination based on gender, religion, caste, or ethnicity may exclude many social groups from participating in growth. In India, the caste system is crucial in excluding social groups such as scheduled caste and scheduled tribes from participating in the growth process. Linking the discrimination suffered by the social groups to the inclusive growth indicators developed in the paper would be a challenge, but a viable priority for future research.

This paper has precisely defined and provided a methodology for measuring the four development goals. It would be worthwhile for India's policymakers and researchers to assess the impact of various policies on measures of the four development goals.

There is a close relationship between economic growth and environmental deterioration. Ecological deterioration has a massive impact on people's well-being. Including pro-environment growth in the four development goals explored in the paper would be worthwhile.

References

Ahluwalia, M. S. (1976). Inequality, poverty, and development. *Journal of development economics*, *3*(4), 307-342.

Bhagwati, J. N. (1988). Poverty and public policy. *World Development*, *16*(5), 539-555.

Bhalla, S. (2007). Inclusive growth? Focus on employment. *Social Scientist*, 24-43.

Bronfenbrenner, M. (2017). *Income distribution theory*. Routledge.

Chenery, H., Ahluwalia, M. S., Duloy, J. H., Bell, C. L. G., & Jolly, R. (1974). *Redistribution with growth; policies to improve income distribution in developing countries in the context of economic growth*. Oxford University Press.

Dollar, D., & Kraay, A. (2002). Growth is Good for the Poor. *Journal of economic growth*, *7*, 195-225.

Dreze, J., & Sen, A. (1989). *Hunger and public action*. Oxford University Press, Oxford URL: https://academic.oup.com/book/2070

Kakwani, N(2011), "A new model of constructing poverty thresholds" in *the Measurement of Individual Well-being and Group Inequalities*, (Editors) Joseph Deutsch and Jacques Silber, Pages 261-279, Routledge: London and New York.

Kakwani, N. (1993). Poverty and economic growth with application to Côte d'Ivoire. *Review of income and wealth*, *39*(2), 121-139.

Kakwani, N. (1993a), "Performance in Living Standards: An International Comparison." Journal of Development Economics, Vol 41, pp 307-336.

Kakwani, N. (1997). Growth rates of per-capita income and aggregate welfare: An international comparison. *Review of Economics and Statistics*, *79*(2), 201-211.

Kakwani, N. (2000). On measuring poverty growth and inequality components with application to Thailand. *Journal of quantitative economics*, *16*(1), 67-80.

Kakwani, N., & Son, H. H. (2008). Poverty equivalent growth rate. *Review of Income and Wealth*, *54*(4), 643-655.

Kakwani, N., & Son, H. H.(2016), Social Welfare Functions and Development: Measurement and Policy Applications, Palgrave Macmillan. London

Kakwani, N., & Son, H. H. (2022). *Economic Inequality and Poverty: Facts, Methods, and Policies*. Oxford University Press.

Kannan, K. P. (2022). India's Elusive Quest for Inclusive Development: An Employment Perspective. *The Indian Journal of Labour Economics*, *65*(3), 579-623.

Klassen, Stephan (2010), "Measuring and Monitoring Inclusive Growth: Multiple Definitions, Open Questions, and Some Constructive Proposals, 'ADB Sustainable Development Working Papers Series.

Kolm, S. C. (1976). Unequal inequalities. I. *Journal of Economic Theory*, *12*(3), 416-442.

Lok Sabha (2014) "Constituent assembly debates (Proceedings): Vol XI" Reprinted by Lok Sabha secretariat, New Delhi, Sixth Reprint. URL: https://loksabha.nic.in/writereaddata/cadebatefiles/C25111949.html

Mahendra Dev, S. (2008). *Inclusive Growth in India: Agriculture, Poverty, and Human Development*. Oxford University Press

Mehrotra, S., Gandhi, A., Saha, P., & Sahoo, B. K. (2012). Joblessness and formalization: Challenges to inclusive growth in India. *IAMR occasional paper*, *9*, 2012.

Mitra, A. (2012). Introduction in Mitra, A. (ed) *Insights into inclusive growth, employment and well-being in India*. Springer Science & Business Media.

Nehru, Jawaharlal (1939). Glimpses of world history, Lindsay Drummond, London

Nussbaum, M. (2003). 'Capabilities as Fundamental Entitlements: Sen and Social Justice.' *Feminist Economics*. 9 (2-3): 33 – 59.

OECD (2001). 'Rising to the Global Challenge: Partnership for Reducing World Poverty.' Statement by the DAC High-Level Meeting, 25-26 April. Paris: OECD.

Planning Commission (2008). *Eleventh Five Year Plan 2007-12 Volume I: inclusive growth.* Planning Commission, Government of India. Oxford University Press, New Delhi

Planning Commission (2014). *Twelfth Five Year Plan (2012–2017) Faster, More Inclusive and Sustainable Growth Volume I*. Planning Commission, Government of India, SAGE Publications India, New Delhi

Rauniyar, G., & Kanbur, R. (2009). Inclusive growth and inclusive development. Occasional paper, 8. Independent Evaluation Department, Asian Development Bank, Manila

Ravallion, M., & Chen, S. (2003). Measuring pro-poor growth. *Economics Letters*, *78*(1), 93-99.

Rosenblatt, D., & McGavock, T. (2013). A note on the simple algebra of the shared prosperity indicator. *World Bank Policy Research Working Paper*, (6645).

Sen, A. (1974). Informational bases of alternative welfare approach: aggregation and income distribution. *Journal of Public Economics*, *3*(4), 387-403.

Sen, A. (1983). Development: Which way now? *The Economic Journal*, *93*(372), 745-762.

Sen, A. (2004). 'Capabilities, Lists, and Public Reason.' *Feminist Economics*, 10(3): 77-80

Sen, A. K. (1976) Poverty: An ordinal approach to measurement. *Econometrica* 44:219-231

Sen, A. K. (2019). *Development as Freedom*, New York: Alfred A. Knopf

Stiglitz, J. (2011). Of the 1%, by the 1%, for the 1%. May 2011 issue, *Vanity Fair*.

Thorat, S., & Dubey, A. (2012). Has growth been socially inclusive during 1993-94-2009-10? *Economic and Political Weekly*, 43-53.

United Nations (2000). *A Better World for All*. New York: United Nations.

Working Papers from CESS

Working paper **Paper No.**

Institutional Interventions and Farm Profits: Evidence from Rain fed Agriculture Systems in Telangana, India
Dayakar Peddi, Suresh Reddy B. and Revathi E. *January, 2024...* 145

Absentee Landowning Households in Agrarian Structure and their Implications on Agrarian Economy: A Study in Andhra Pradesh and Telangana States.
Sreenivasulu,Y. *March, 2020 ...* 144

Agriculture in Tribal Areas (Scheduled Areas) of Madhya Pradesh: A Socio-Economic Analysis.
Reddy Suresh, B. *June, 2018 ...* 143

Patterns of Agricultural Transition in Tribal Areas of Madhya Pradesh: A Macro and Microanalysis.
Reddy Suresh, B. *May, 2018 ...* 142

Life Cycle Assessment of Second Generation Bioethanol from Sorghum and Pearl Millet feedstocks.
Reddy, Gopinath M. and Reddy, Suresh B. *January, 2018. ...* 141

Productivity Growth in Organized Manufacturing in Telangana
Alivelu, G and D.P Priyadarshi Joshi. *December, 2017 ...* 140

Educational Status of De-notified Tribes: A Study of Telangana
Vijay Korra *September, 2017 ...* 139

Socio-economic and Educational Staturs of De-notified Tribes: A Study of Undivided Andhra Pradesh
Vijay Korra *April, 2017 ...* 138

Role of MGNREGA(S) in Seasonal Labour Migration: Micro Evidence from Telangana State
Vijay Korra *April, 2015 ...* 137

Reduction of GHG Emissions and Attainment of Energy Security through Sustainable Production of Biofuels: Is it a Viable Option? A Review of Experiences
M. Gopinath Reddy, B. Suresh Reddy, Steven Raj Padakandla *October, 2014 ...* 136

Liberalizing Lease Market: The Andhra Pradesh Land Licensed Cultivators Act
E. Revathi *July, 2014 ...* 135

Books from CESS

Revathi, E and Reddy, Suresh B. ***Economics and Technology of Soybean Cultivation in Central India.*** New Delhi: Academic Foundation, 2022

Ch, Bala Ramulu. Marginalised ***Communities and Decentralized Institutions India: An Exclusion and Inclusion Perspective.*** U K: Routledge, 2021

Rao, Hanumantha CH. ***Rising Inequalities in India: Key Role of Socio-Political Factors, Research Paper.*** Hyderabad: CESS, 2021

Indrakant, S. ***A Confused Professor and His Students.*** Paramount Publishing House, ISBN 978-93-88808-34-7, 2020

Reddy, Srinivasa M. ***Climate-Drought Resilience in Extreme Environments.*** Switzerland AG Basel: Springer Nature, 2020, (with V R Reddy and Y V M Reddy)

Saleth Maria, Galab.S, and Revathi, E.(Eds). ***Issues and Challenges of Inclusive Development: Essays in Honour of Prof. R. Radhakrishna.*** Springer, 2020

Korra, Vijay. ***Forgotten Communities of Telangana and Andhra Pradesh: A Story of De-notified Tribes.*** Singapore: Palgrave Macmillan, 2019

Radhakrishna R. ***Essays on Agriculture, Food Security and Nutrition, New Delhi,*** Academic Foundation, 2019

Radhakrishna R. ***Essays on Growth, Poverty and Wellbeing.*** New Delhi: Academic Foundation, 2019

Radhakrishna R. ***Essays on the Econometrics of Consumer Behaviour.*** New Delhi: Academic Foundation, 2019

Radhakrishna R. ***Essays on the Econometrics of Inflation, Consumption and Welfare.*** New Delhi: Academic Foundation., 2019

Radhakrishna R. ***Essays on Indian Economy,*** New Delhi: Academic Foundation, 2019

Reddy, Gopinath M and Walter Fernandes, NafisaGoga, D'Souza and Palla Thrinadha Rao. ***Displacement and Marginalisation in Andhra Pradesh and Telangana.*** *1951-2010.2019.* Vishakhapatnam: Social Research Centre, Guwahati & Laya Resource Centre, 2019

CENTRE FOR ECONOMIC AND SOCIAL STUDIES

(Planning Dept, Govt. of Telangana & ICSSR - Ministry of Education, Govt. of India)

Nizamiah Observatory Campus, Begumpet, Hyderabad – 500 016, Telangana, India

Phone: 040-23416610-13, 23402789, 23416780, fax: 040-23406808

Email: post@cess.ac.in, Website: www.cess.ac.in