

Public Policy, Economic Growth and Poverty Alleviation: A Study in the Indian States

By Ritwik Sasmal^{*}, Pinaki Das[±] & Joydeb Sasmal[°]

This paper examines the public policy and allocation of funds of the government and their effects on growth and reduction of poverty in the Indian context. Growth is very important for poverty alleviation but only growth is not always sufficient for reduction of poverty. The increase in income and economic growth need to be supplemented by distributive and welfare measures for the poor. The theoretical and empirical results of this study suggest that capital expenditure and public expenditure on infrastructure are more effective in promoting growth and reducing poverty compared to expenditures for social sector development. So, the major thrust should be on growth without undermining the policy measures for social welfare.

Keywords: capital expenditure, social expenditure, infrastructure, growth, direct benefits, poverty

JEL Classification: H₁₁, H₅₄, O₂₃

Introduction

The rapid economic growth and alleviation of poverty are the two main objectives in any developing country. The public policies are designed and the resources are allocated accordingly to achieve these goals. In India poverty has declined from 60% in 1950s and 1960s to 21.9% in 2011-12 (Source: Press Note of the Planning Commission on poverty 2011-12, Government of India, 2013). Poverty in head-count ratio varies from 9% to 34% across the states of India according to the estimates of 2011-12. Both economic growth and welfare measures of the government are attributed to this decline of poverty in the country. Poverty has been defined and measured in various ways. Sen's (1981) head-count ratio is a very commonly used measure of poverty. It is estimated on the basis of a poverty line. The poverty line is the minimum income of the household necessary to fulfill the basic needs of livelihood. If the income of the family is below this minimum level, the family is said to be poor. The World Bank takes 2 US dollar per person per day as the measure of poverty line. This line varies across countries depending on cost of living and other local factors. This paper is concerned with the policy measures of the government towards growth and poverty alleviation in the Indian context. Although this study is being conducted in the Indian context, it will have great policy relevance for similar countries of the developing world. It

^{*}PhD Scholar, Department of Economics, Vidyasagar University, India.

[±]Professor, Department of Economics, Vidyasagar University, India.

[°]Professor (Retired), Department of Economics, Vidyasagar University, India.

focuses on the role of public expenditure and public policy in accelerating growth and reducing poverty. How the composition and pattern of public expenditure impact growth is an important query of this study. Since economic growth is very important for poverty alleviation this study examines the effect of public expenditure on poverty through its effect on economic growth. There are two main approaches to poverty alleviation – (i) economic growth and (ii) direct attack on poverty through welfare and distributive measures. In the first approach, reduction of poverty is the outcome of economic growth. It hypothesizes that if there is growth, the benefits of higher income will trickle down to the poor in the form of meaningful employment, higher wage and income and higher productivity. As a result, poverty will decline. The second approach is considered to be a direct route to poverty alleviation. The benefits of economic growth do not always reach the poor due to various reasons or constraints. In that case, policy measures are required to provide socio-economic benefits to the poor directly through welfare and distributive schemes. India is experiencing high rate of growth in the last three decades (annual growth rate is 7-8% on an average) after the adoption of liberalized economic policy in 1991. Despite this growth nearly 30 crores or more population of the country are still under severe poverty (exact data on poverty in India after 2011-12 are not available). In this perspective, the planners and policy makers are continuously focusing on the requirement of inclusive growth. In designing such a model, the nature of public expenditure and public policy can play an important role and fiscal instruments can be effective in promoting growth and reducing poverty. It is suggested that side by side with adopting policies for accelerating growth there should be effective welfare and distributive measures for directly providing socio-economic benefits to the target groups. Many such welfare schemes have already been adopted in the country. So, the objective of this paper is (i) to examine the effect of public expenditure on economic growth and (ii) to see how economic growth and welfare measures of the government can help reduction of poverty. The research question here is basically the policy choice of the government to address the problems of economic growth and poverty alleviation using fiscal instruments. As per classification of the Reserve Bank of India (RBI) the total expenditure of the government is broadly divided in two parts: (i) capital expenditure and (ii) revenue expenditure. The first component of the expenditure helps long term economic growth through capital formation, development of infrastructure and technological progress. The revenue expenditure, on the other hand, includes salary, wage, pension, subsidy, allowances, direct transfers to the people and interest payment on public debt which are largely distributive in nature. The share of revenue expenditure in the total spending of the government both at the centre and in the states of India has increased to more than 80 per cent. The share of social sector expenditure in total spending is also very high in the country. In this background, to examine the effect of public expenditure on economic growth and poverty alleviation is very relevant and worthy for an in-depth study. The issues of public expenditure, growth and poverty will be addressed in this research both theoretically and empirically using state level data in the Indian context.

Literature Review

There is a rich literature on public expenditure, growth and poverty alleviation. We can have deeper insights from important studies in this area of research. Aschauer (1989) examines the effect of public expenditure on growth via its impact on productivity and the study shows that stock of public capital like roads and highways, airports, water management system are very important for productivity and growth in the economy. Barro (1990) shows in his important paper on endogenous growth with government spending that public expenditure enhances growth by increasing the efficiency of labour. Meltzer and Richard (1981) have defined size of the government by the ratio of public expenditure to GDP and using Median Voter theory, demonstrated that if inequality is high in the society, there will be demand for a larger government. To finance greater spending of the government, tax burden will be higher and this will adversely affect economic growth. Similar arguments have been put forward by Alesina and Rodrik (1994) and Persson and Tabellini (1994). The public expenditures on health, education, nutrition and community development helps growth side by side with increasing social welfare. In this context, Banerjee and Newman (1993) and Galor and Zeira (1993) have argued that if social expenditure can increase productivity and social development then it can help economic growth. Therefore the allocation of funds among various heads and the composition of public expenditure are very important both for growth and poverty alleviation. Devarajan et al. (1996) have shown in a study based on cross country data that the current expenditure of the government is more productive for growth than capital expenditure. Barro (1991) and Chen (2006) have, however, obtained opposite results and shown that capital expenditure of the government has greater impact on growth. Agenor (2008) shows that public expenditure can help economic growth only when it creates infrastructure for education and human skill formation. The formation of human capital has important role in economic growth (Lucas 1988). Using the framework of Lucas (1988) in modified form, Sasmal and Sasmal (2023) have shown that social expenditure of the government accelerate growth by facilitating human capital formation. Shafuda and De (2020) have examined the effect of public expenditure on the indicators of human development in Namibia and obtained mixed results. The literacy rate and net enrolment at the primary level have been found to be related with public expenditure. It is found that public expenditure on education and health has significant impact on GDP. Owino (2017) shows that public expenditure in the social sector, especially investment on education, has positive impact on per capita GDP. The expenditure on health and social security is, however, found to have dampened growth.

Leeper et al. (2010) have examined the effect of public investment on growth using a neoclassical theoretical framework. This study shows that public capital is important for growth but delay in implementation of public projects or not adopting proper method of financing public projects may have negative impact on growth. Afonso and Furceri (2010) have shown that size and volatility of revenues and expenditure of the government have negative impact on growth. Zhang (2015) has shown in a multi-sector endogenous growth model that the effect of public

expenditure on productivity is different in different sectors and this results in changes in factor prices and structural change. Some important works are available on the relationship between public expenditure and economic growth in the Indian context. Marjit et al. (2020) show that the government has a tendency to allocate more funds for distributive purposes to increase its electoral gain. Using theoretical model and econometric results in the Indian context this study concludes that capital expenditure has a greater positive impact on per capita income as compared to revenue expenditure. Mahapatra and Giri (2016) show that non-developmental expenditures and revenue expenditures have no significant effect on growth in India while the study of Gangal and Gupta (2013) finds positive impact of total public expenditure on GDP in the country. The time series analysis of Ahmad (2014) shows that public expenditure and GDP in India are cointegrated. But in the test of causality, it is found that GDP causes public expenditure, not the other way around.

Collier (1998) shows that social capital plays important role in growth and poverty alleviation. The collective action of the civil society, interaction and dissemination of information and knowledge among the individuals and greater trust among the people can enhance efficiency of public expenditure and reduce transaction cost in the society. This helps economic growth and reduction of poverty. Adjasi and Osei (2007) show that education and professional status are important in reducing poverty. This hints at the importance of higher efficiency and income in the reduction of poverty. Mauro (1995) shows that if corruption is higher in the society it will have adverse impact both on poverty and growth. The reason is the leakage of funds as a result of corruption. Although the debate on growth vs. direct measures persists in the literature and growth is not always sufficient for reduction of poverty economic growth is necessary and very important for reduction of poverty. Lustig (2002) shows that economic growth is a crucial factor in poverty alleviation but level of inequality and its evolution determine its impact on poverty. In a study of two-way causality between growth and poverty the author shows that growth can reduce poverty and poverty also can dampen growth. It is found that the formation of human capital from health and education leads to higher productivity and growth but there may be various constraints towards human capital formation. However, mere increase of per capita income may not be successful in reducing poverty if growth process bypasses the geographic areas or sectors in which the poor are concentrated. Thus this study signifies that where and for whom the growth is taking place is very important for poverty alleviation.

Son and Kakwani (2004) demonstrate how the relation between growth and poverty can change with the initial levels of development and inequality. They have used the concept of 'poverty elasticity of growth' which measures the extent to which poverty declines as a result of economic growth. This study shows that the initial development conditions and the degree of inequality have significant impact on the reduction of poverty. The emerging consensus is that growth alone is rather a blunt tool for poverty reduction. Along with growth the policies to ensure redistribution of income and wealth have become increasingly more important. So, the policy towards the goal of poverty alleviation through growth

must incorporate the mechanism of redistribution. Different countries have different initial conditions and the trade-off between poverty and growth can be explained by initial conditions of development and the degree of inequality in the countries. The measure of inequality is an important basis for estimating poverty in the growth process. The growth can be termed as pro-poor if it reduces inequality and it indicates that poor people are more benefitted from growth than the non-poor section of the population. Even pro-poor growth may fail to reduce poverty unless appropriate strategies are adopted to reduce inequality in the growth process. In a study on poverty and public policy Bhagwati (1988) mentions two ways of reducing poverty: (i) indirect route: it is a way of addressing poverty through economic growth. It suggests the use of resources to accelerate growth and thereby impact poverty through higher income and better standard of living of the poor. (ii) The second method is direct route – it is the public provision of providing minimum need based health, education, nutrition, housing facilities to the poor. In both approaches, there is biasing or targeting. In his view, an optimal mix-up of these two approaches is very important. The questions of gainful employment and rise in productivity are also associated with this policy. The economic and political factors may constrain the effectiveness of growth in reducing poverty. Therefore, it is suggested that the growth process needs to be supplemented by suitable public policies to prevent unpleasant outcomes.

Mulok et al. (2012) have shown that poverty has significantly declined in Malaysia in the last five decades. While focusing on the relationship between growth and poverty, their study finds that in the reduction of poverty, growth explains much, but not all. Their assertion is that economic growth is necessary but not sufficient for reduction of poverty. The study suggests that if reduction of poverty is the goal, both growth and poverty alleviation should be taken into consideration simultaneously. Economic growth increases per capita income but unless the income is distributed properly, poverty cannot decline even with growth. So, the degree of inequality is very important in determining the size of reduction of poverty. Ahluwalia (1976) has conducted a multivariate regression on the relationship between income distribution and development using data from 60 countries. It was found that relative inequality had increased with rise in per capita income in the process of economic development. Such development is unlikely to reduce poverty. Anand and Kanbur (1993) have further digressed on the relationship between growth and inequality using the Kuznets process. Kuznets has discussed the process of population shift from traditional sector to modern activities as the basis of distributional change and this has impact on the relationship between economic growth and income inequality. This work has the implication that as population are shifted from low-productive agriculture to modern sectors during the growth process, the pattern of income distribution changes and it determines the level of poverty. Ravallion and Chen (1997) have shown in a cross-country analysis that one per cent increase in per capita income results in 3.1 per cent decline in the size of population below poverty line. This indicates that growth has very significant impact on poverty alleviation. The importance of growth in the reduction of poverty has been further highlighted by Chen and Ravallion (2004) in a similar study. This has shown that poverty has declined by 200 million population

worldwide at the end of 20th century compared to the figure 20 years ago and growth has played an important role in this reduction of poverty. With respect to the role of macro policy in poverty reduction Ames et al. (2001) have analysed the role of monetary, fiscal and trade policies in growth and reduction of poverty. In respect of fiscal policy, in particular, this study states that not only the appropriateness of spending programmes for reduction of poverty, but also the various aspects of growth and distributional change should be given equal importance. In the study of Sasmal and Sasmal (2016) in the Indian context, it is found that economic growth has significant negative effect on poverty and to accelerate growth public expenditure on infrastructure has a vital role. The present work will address these issues by providing a theoretical mechanism to explain growth from public expenditure and verifying the theoretical arguments by empirical findings in the Indian context.

The Research Gaps and Scope for Further Studies

1. The existing studies have analysed the issues like public expenditure and growth, growth and poverty, public expenditure and poverty separately although these issues are closely interlinked with each other. So, it will be worth-doing to address and analyse these issues in an integrated framework.
2. There are theoretical models on the relationship between public expenditure and growth. But there is hardly any theoretical structure to provide mechanism through which growth leads to reduction of poverty or government measure directly impacts poverty.
3. There is good number of studies on this issue in the Indian context but almost all of them are lacking theoretical backup on the basis of which empirical studies can be analysed.
4. India is an important emerging country in the world that has recorded 7-8% annual growth (at constant prices) in the last three decades and in recent times the economy is growing at a rate of above 6% per annum when most of the countries are struggling to achieve 2-3% growth annually. In addition to this, a large number of welfare schemes are being implemented in the country for the betterment of the weaker section of the population. Despite that, a sizeable portion of the total population is still poor and depending largely on the government for free food, housing, and medical facilities. So, definitely there is scope and need for deeper investigation into this problem.
5. India is a vast country with its huge potential and resources for future growth. The results based on theoretical arguments and empirical findings in the Indian context in this study can suggest policy formulation for growth and poverty alleviation in other countries by using fiscal instruments.

The Theoretical Framework

The Model

Following Barro (1990), Agenor (2008) and Marjit et al. (2020) a production function has been considered in Cobb-Douglas form with CRS as

$$Y = AK^\alpha G_1^\beta (LG_2)^{1-\alpha-\beta} \quad (1)$$

Where Y is output, K is private capital and L is labour. G_1 is public expenditure on productive services for long-term growth and it helps economic growth through capital formation, infrastructure, technology and scientific knowledge. G_1 may be considered as capital expenditure of the government. G_2 increases social welfare and also helps economic growth by enhancing efficiency of labour. It includes expenditures on health, education, human skill formation and social development. G_2 may be conceived as revenue expenditure of the government and it has a dual role in socio-economic development. Apart from enhancing production through higher productivity of labour, G_2 directly renders utility to the households. Following Barro (1990) L may be assumed to be constant. A is given technological efficiency in production. The parameters α , β and $1 - \alpha - \beta$ are production elasticities of K , G_1 and G_2 respectively.

As in growth models of Barro (1990), Devarajan et al. (1996) and Agenor (2008) it is assumed that the government follows a balanced budget expenditure policy although in practice, most of the countries in the world follow deficit budget and resort to the policy of public debt. So, here the total tax revenue (T) is equal to total expenditure of the government (G). It is also assumed that tax is collected from income only at a constant tax rate τ . Therefore, $T = \tau \cdot Y$. Now, total tax proceeds is allocated between G_1 and G_2 . In countries like India, a greater share of development expenditure is allocated to G_2 . This may be due to high levels of poverty and social backwardness. There may be some political compulsions also (Marjit et al., 2000). Let the share of G_1 in total public expenditure be λ . Then,

$$\lambda G_1 + (1 - \lambda) G_2 = G = T = \tau \cdot Y \quad (2)$$

In the same way the fund may be allocated between (i) infrastructure and (ii) social sector development also. The households derive utility from consumption (C) and G_2 .

The utility from G_2 may be derived both in separable and non-separable forms with consumption. Following Bruce and Turnovsky (1999), we consider utility function of the household in non-separable form as

$$U = \frac{(CG_2^\varphi)^{1-\theta}}{1-\theta} \quad (3)$$

where C is consumption and $\sigma = \frac{1}{\theta}$ is the constant elasticity of substitution in intertemporal consumption. Actually the households derive utility from private consumption jointly with various government facilities and benefits. φ is the measure of utility derived by the households from G_2 . The government may allocate a greater share of the available fund to G_2 if the households derive higher utility from G_2 and there is greater social demand for distributive and welfare measures from the government. The budget constraint of the household is

$$Y = C + \dot{K} + T \quad (4)$$

Here, $\dot{K} = \frac{dK}{dt} = I$

Equation (4) follows from $Y = C + S + T$, where $S = I$ and $T = \tau \cdot Y$

Again, equation (4) can be expressed as the dynamics of capital accumulation:

$$\dot{K} = (1 - \tau) Y - C \quad (5)$$

Given τ and λ the objective of the household in a decentralized framework is the maximization of discounted total utility in a dynamic perspective over an infinite planning horizon, i.e.,

$$\text{Max } V = \int_0^{\infty} \left[\frac{(CG_2^\varphi)^{1-\theta}}{1-\theta} \right] e^{-rt} \cdot dt \quad (6)$$

s.t. $\dot{K} = (1 - \tau) Y - C$
and transversality conditions.

i.e., the households maximize discounted total utility (V) in an infinite planning horizon subject to the constraints and transversality conditions.

Here, r is the rate of discount of future utility. This dynamic optimization problem can be solved by using maximum-principle of optimal control theory. Now following Chiang (1992), we can take the current-value Hamiltonian as

$$H = \frac{(CG_2^\varphi)^{1-\theta}}{1-\theta} + \eta \left[(1 - \tau) A K^\alpha G_1^\beta (LG_2)^{1-\alpha-\beta} - C \right] \quad (7)$$

Here, K is the state variable and η is the costate variable. η is the shadow price of K and C is the control variable.

The F.O.C.s for maximization of H are:

$$\frac{\partial H}{\partial C} = (CG_2^\varphi)^{-\theta} \cdot G_2^\varphi - \eta = 0 \quad (8)$$

$$-\frac{\partial H}{\partial K} = \dot{\eta} = r\eta - \eta \left[(1-\tau) \frac{\partial Y}{\partial K} \right] \quad (9)$$

$$\frac{\partial H}{\partial \eta} = \dot{K} = (1-\tau)Y - C \quad (10)$$

The transversality conditions are:

$$\eta(T) \geq 0 \text{ and } \lim_{T \rightarrow \infty} \eta(T) K(T) = 0$$

The S.O.C. is satisfied by strict concavity of H in C and K jointly.

Condition (8) determines optimal C at each point of time. It implies that marginal utility from C will be equal to the shadow price of capital (η) at each point of time. Equations (9) and (10) show the rate of change of η and K respectively over time. Given τ , λ and other parameters, the equations (8) – (10) along with transversality conditions trace out the optimal paths for C, K and other variables.

From (8) we get

$$(CG_2^\varphi)^{-\theta} \cdot G_2^\varphi = \eta \quad (8)'$$

Taking log of (8)' and differentiating w.r.t. time we get

$$-\theta \cdot \frac{\dot{C}}{C} + \varphi(1-\theta) \cdot \frac{\dot{G}_2}{G_2} = \frac{\dot{\eta}}{\eta} \quad (11)$$

In balanced growth, C and G_2 will grow at the same rate. So, $\frac{\dot{C}}{C} = \frac{\dot{G}_2}{G_2}$.

$$\text{Then, } \frac{\dot{C}}{C} \{\theta - \varphi(1-\theta)\} = -\frac{\dot{\eta}}{\eta} \quad (11)'$$

Similarly, equation (9) can be expressed as

$$-\frac{\dot{\eta}}{\eta} = (1-\tau) \frac{\partial Y}{\partial K} - r \quad (12)$$

From equations (11)' and (12) we get the growth rate of C as

$$g = \frac{\dot{C}}{C} = \frac{\{(1-\tau)MP_K - r\}}{\theta - \varphi(1-\theta)} \quad (13)$$

g is the growth rate of consumption. Given the tax rate, allocation of funds between G_1 and G_2 and other parameters, the growth rate depends on the marginal productivity of capital.

In balanced growth, income, consumption, private capital, government spending and other related variables will grow at the same rate, i.e.,

$$\frac{\dot{C}}{C} = \frac{\dot{Y}}{Y} = \frac{\dot{K}}{K} = \frac{\dot{G}_1}{G_1} = \frac{\dot{G}_2}{G_2} = g \quad (14)$$

Therefore, the growth rate in the economy becomes

$$g = \frac{\{(1-\tau)MP_K - r\}}{\theta - \varphi(1-\theta)} \quad (14)'$$

From equation (1) we get

$$MP_K = A\alpha K^{\alpha-1}G_1^\beta (LG_2^{1-\alpha-\beta}) \quad (15)$$

Equation (15) can be expressed as

$$MP_K = B \cdot \alpha \left(\frac{K}{G_2}\right)^\alpha \cdot \left(\frac{G_1}{G_2}\right)^\beta \cdot \left(\frac{G_2}{K}\right) \quad (17)$$

where $B = A \cdot L^{1-\alpha-\beta}$.

Since, K , G_1 and G_2 will grow at the same rate in balanced growth, $\left(\frac{K}{G_2}\right)$, $\left(\frac{G_1}{G_2}\right)$ and $\left(\frac{G_2}{K}\right)$ will be constant. So, MP_K will be constant. Therefore, it satisfies the requirement of endogenous growth.

Now, the growth rate is:

$$g = \frac{\{(1-\tau)(B\alpha K^{\alpha-1} G_1^\beta G_2^{1-\alpha-\beta}) - r\}}{\theta - \varphi(1-\theta)} \quad (17)$$

$$\frac{\partial g}{\partial G_1} = \frac{\{(1-\tau)(B\alpha K^{\alpha-1} \beta G_1^{\beta-1} G_2^{1-\alpha-\beta})\}}{\theta - \varphi(1-\theta)} > 0 \quad (18)$$

Similarly,

$$\frac{\partial g}{\partial G_2} = \frac{\{(1-\tau)(\alpha K^{\alpha-1} G_1^\beta (1-\alpha-\beta) G_2^{-(\alpha+\beta)})\}}{\theta - \varphi(1-\theta)} > 0 \quad (19)$$

From (18) and (19), it follows that both G_1 and G_2 have positive effect on the growth rate. However, out of G_1 and G_2 which one will be more productive in growth depends on their respective production elasticities β and $1-\alpha-\beta$.

If $\beta > 1 - \alpha - \beta$, growth rate will increase if greater share of the available government fund is allocated to G_1 and if economic growth has sufficient trickle down effect it will have a strong effect on poverty alleviation. Then the government policy will be to allocate greater share of the funds to G_1 to reduce poverty. On the other hand, if the social or distributive expenditure G_2 has greater impact on growth, i.e., $(1 - \alpha - \beta)$ is high, the government may increase the share of public expenditure on social sector development.

Another interesting result of this model is that $\frac{\partial g}{\partial \varphi}$ may be positive or

negative. The implication is that if the value of φ is high, it means, the households get higher utility from G_2 . Then the government may be forced to allocate more funds to G_2 whatever may be its effect on growth and poverty alleviation. There will be some political compulsion to allocate more funds to distributive purposes at the cost of long term growth. Whether the growth rate will increase or not depends on $1 - \alpha - \beta$.

For estimation of the production function at the per capita level we can write equation (1) as

$$\frac{Y}{L} = \frac{AK^\alpha G_1^\beta (LG_2)^{1-\alpha-\beta}}{L}$$

or,

$$y = A' K^\alpha G_1^\beta G_2^{1-\alpha-\beta} \quad (20)$$

where y = per capita income, $A' = A \cdot L^{-(\alpha+\beta)}$ and A' is constant.

Taking log of (20) we can write

$$\log y = \log A' + \alpha \log K + \beta \log G_1 + (1 - \alpha - \beta) \log G_2 \quad (21)$$

In (21) α , β , $(1 - \alpha - \beta)$ are production elasticities of y w.r.t. K , G_1 and G_2 respectively. These parameters can be estimated from data on y , K , G_1 and G_2 .

This theoretical analysis provides analytical framework for the nature of public expenditure and its impact on growth. It also reflects the priorities and policy orientation of the government. The growth has impact on poverty. Also the distributive and social expenditure denoted by G_2 will have direct impact on poverty along with its effect on growth.

Growth and Poverty

Poverty line is defined as the minimum income of the household necessary to meet the basic requirements of livelihood. Let this minimum income be \bar{C} . It is assumed that there is certain portion of the total population whose income is below \bar{C} . They are poor. The income of the poor households is W and $0 < W \leq C$. If W rises as a result of economic growth and W exceeds \bar{C} i.e., $W > \bar{C}$, then poverty declines. If v is the ratio of population below poverty line, then

$$\frac{dv}{dW} < 0 \text{ if } W > \bar{C}$$

From equation (20), per capita income (y) is defined as

$$y = A' K^\alpha G_1^\beta G_2^{1-\alpha-\beta} \quad (22)$$

W can be expressed as a function of y and social expenditure (S) as

$$W = \varepsilon \cdot y^\gamma + \xi \cdot S^\delta \quad (23)$$

where γ is the measure of effect y on W . ε is the indicator of trickle-down effect of growth. If there is growth, y will rise. Then to what extent the benefit of higher y will reach the poor depends on ε . Here it is assumed that $0 \leq \varepsilon \leq 1$ and $0 < \gamma < 1$. Similarly, δ is the measure of effect of G_2 or S on W . It indicates to what extent the social sector expenditure (S) can help the poor. ξ is a coefficient of S that indicates to what extent the benefits of S reach the poor people. Here also, $0 < \delta < 1$ and $0 \leq \xi \leq 1$. These four given parameters will determine whether growth and welfare measures will reduce poverty or not.

In equation (20), per capita income (y) is a positive function of both G_1 and G_2 and their marginal effects on y and β are $1 - \alpha - \beta$ respectively. So,

$$\frac{\partial y}{\partial G_1} > 0, \frac{\partial y}{\partial G_2} > 0.$$

Now, to examine the effect y on W we differentiate (21) w.r.t. y and get

$$\frac{\partial W}{\partial y} = \varepsilon \cdot \gamma \cdot y^{\gamma-1} \quad (24)$$

$\frac{\partial W}{\partial y} \geq 0$. That means, whether W will rise due to rise in y (as a result of growth)

depends on the parameters ε and γ . If the values of ε and γ are high, the increase in y will lead to significant rise of W . As a result, growth will have significant negative impact on poverty. On the other hand, if the benefits of growth does not reach the poor for various reasons, growth will fail to reduce poverty. In that case ε is zero or almost zero.

Similar effects of S on W can be derived from (20). Here also, to what extent social welfare measure will be effective in reducing poverty depends on δ and ξ .

Since $\frac{dv}{dW} < 0$, poverty declines if $\frac{\partial W}{\partial y}$ and $\frac{\partial W}{\partial S}$ are sufficiently positive.

Data and Methodology

The variables used in the panel regressions are: per capita net state domestic product at constant prices ($\ln_pc_nsdp_cnsdp$), capital expenditure (\ln_cap_exp) and revenue expenditure (\ln_rev_exp) of the government, gross capital formation at constant prices (\ln_gcf_cnsdp), the share of public expenditure on infrastructure in total spending of the government (pub_exp_infr), share of industry in net state domestic product (ind_nsdp), social expenditure of the government (\ln_social_exp), poverty ratio (pov_hcr), population density per square kilometre in the state (pop_den_sqm) and literacy rate. The share of agriculture in net state domestic product ($agri_nsdp$), the share of services in net state domestic product ($service_nsdp$), ratio of state gross fiscal deficit to net state domestic product ($sgfd_nsdp_ratio$), ratio of revenue expenditure in total spending of the state ($ratio_re$) and productivity in agriculture per hectare ($agri_prod_hc$) are other important variables or controls. Some variables have been taken in log to estimate elasticity between the variables. Some variables are in ratio or fraction. The sources of these data are 'Handbook of Statistics on State Government Finances', RBI, and 'State Finances – A Study on Budgets', RBI (several issues). Four rounds of state level poverty data are available for panel regression. To avoid the problem of endogeneity, the public expenditures have been taken in 3 years lag in the panel regressions. These have been done in panel regressions of per capita nsdp and poverty on different components of public expenditure like cap_exp , rev_exp , $social_exp$ and pub_exp_infr . To supplement the result of the effect of per capita income on poverty ratio, the average monthly per capita consumption expenditure in rural areas ($ampce_rural$) has been regressed on per capita income (pc_nsdp_cnsdp) and literacy rate using NSS data.

In methodology, panel regression has been done to estimate the effect of government expenditure on per capita income and poverty in the major states of India. The effect of per capita income on poverty has also been estimated along with other controls. Following Wooldridge (2009) both fixed-effects and random-effects models have been estimated. Appropriate model has been selected by Hausman test. Robust standard error test has been done to avoid the problem of heteroscedasticity.

The fixed-effects model has been specified as $Y_{it} = \alpha_0 + \alpha_1 X_{it} + e_{it}$ where Y_{it} is the dependent variable of the i th individual in period t and X_{it} is the i th independent variable in period t and e is the error term. In fixed effect model, the independent variable X and unobserved individual heterogeneity of the i th entity are correlated. In random-effects model, they are uncorrelated although specification of the equation is same.

The following equations have been estimated:

$$(i) \ln_pc_nsdp_cnsdp = \alpha_0 + \alpha_1 \ln_gcf_cnsdp + \alpha_2 \ln_cap_exp + \alpha_3 ind_nsdp + e$$

$$(ii) \ln_pc_nsdp_cnsdp = \alpha_0 + \alpha_1 \ln_gcf_cnsdp + \alpha_2 \ln_rev_exp + \alpha_3 ind_nsdp + e$$

$$(iii) \ln_cap_exp = \alpha_0 + \alpha_1 sgfd_nsdp_ratio + \alpha_2 ind_nsdp + e$$

$$(iv) pov_hcr = \alpha_0 + \alpha_1 \ln_pc_nsdp_cnsdp + \alpha_2 agri_nsdp + \alpha_3 pop_den_sqm + e$$

$$(v) pov_hcr = \alpha_0 + \alpha_1 pub_exp_infr + \alpha_2 \ln_social_exp + \alpha_3 ind_nsdp + e$$

$$(vi) pov_hcr = \alpha_0 + \alpha_1 pop_den_sqm + \alpha_2 service_nsdp + \alpha_3 agri_prod_hc + e$$

$$(vii) \ln_social_exp = \alpha_0 + \alpha_1 sgd_nsdp_ratio + \alpha_2 agri_nsdp + \alpha_3 ratio_re + e$$

$$(viii) ampce_rural = \alpha_0 + \alpha_1 pc_nsdp_cnsdp + \alpha_2 literacyrate$$

These equations have been estimated in panel regressions in Tables 2-6.

Empirical Results and Discussion

Table 1 shows per capita net state domestic product at constant prices (pc_nsdp_cnsdp) and the ratio of poverty in total population in the major states of India at different points of time. It is found that per capita income has increased in all the states in the last three decades. In some states like Haryana, Gujarat, Maharashtra, Tamil Nadu, Karnataka, Kerala and Himachal Pradesh, the increase in per capita income is very remarkable. In some of these growing states poverty has significantly declined whereas in some important states like Maharashtra, Gujarat, Karnataka where growth is very high, poverty has not declined to that extent. Punjab and Rajasthan have done well in poverty alleviation. The performance of Odisha is impressive in respect of growth but its poverty is still very high. The states like Tamil Nadu, Kerala, Himachal, Andhra Pradesh and Rajasthan have done very well both in growth and poverty alleviation. There has been no official survey on poverty after 2011-12. So, whether poverty has declined or not in the states with growth in the later phase is not clear. In states like Bihar, Uttar Pradesh, Assam and also in West Bengal, per capita income is low and poverty is high.

Table 1. Per Capita Net State Domestic Product at Constant Prices and Ratio of Poverty in the Major States of India at Different Points of Time

States	Per capita net state domestic product (nsdp) at constant prices (Rupees) #			Poverty ratio as total population in the state (%) **	
	Year			Year	
	1991-92 (base: 1980-81)	2011-12 (base: 2011-12)	2018-19 (base: 2011-12)	1993-94	2011-12
Andhra Pradesh	2134	69000	108853	44.6	9.2
Assam	1575	41142	59943	51.8	32.0
Bihar	1105	21750	29092	60.5	33.7
Gujarat	2381	87481	154887	37.8	16.6
Haryana	3499	106085	166747	35.9	11.2
Himachal Pradesh	2213	87721	136288	34.6	8.1
Jammu & Kashmir	1779	51775	69183	26.3	10.4
Karnataka	2262	90263	148645	49.5	20.9
Kerala	1826	97912	147347	31.3	7.1
Madhya Pradesh	1538	38497	59000	44.6	31.7
Maharashtra	3399	99597	142063	47.9	17.4
Odisha	1530	48387	75421	59.1	32.6
Punjab	3825	85577	115592	22.4	8.3
Rajasthan	1755	57192	73529	38.3	14.7
Tamil Nadu	2270	93112	141844	44.6	11.3
Uttar Pradesh	1627	32002	42333	48.4	29.4
West Bengal	2267	51543	68212	39.4	20.0
All India	7690 *	63462	92133	45.3	21.9

Source: Handbook of Statistics on Indian Economy, RBI, 2009-10, 2022.

*Figure in 1993-94 at 1993-94 prices (in the absence of All India figure at base price of 1980-81).

**Source: Ahluwalia (2011), Economic and Political Weekly, 46 (21) and Press Note on Poverty Estimates, 2011-12, Planning Commission, Government of India, July, 2013.

In Table 2 panel regression of per capita income at the state level (pc_nsdp_cnsdp) has been regressed on capital expenditure and revenue expenditure (rev_exp) of the government ($capl_exp$), gross capital formation at constant prices (gcf_cnsdp) and industrialization in the state in two separate equations. Since rev_exp and cap_exp are correlated separate equations have estimated to avoid the problem of multicollinearity. Since pc_nsdp_cnsdp , $capital_exp$ and gcf_cnsdp are in log, their regression coefficients give elasticity of state per capita income w.r.t. capital expenditure and gross capital formation. The estimated values are 0.45 and 0.27 respectively. That means, both capital expenditure and gross capital formation have significant positive impact on per capita income. Industrialisation has no significant impact on per capita income. Therefore, it follows that both capital expenditure of the government (G_1) and gross capital formation (K) have been helpful for growth and increase of per capita income. The effect of industrialization is insignificant. It may be due to moderate industrial growth in most of the states of the country or because of the fact that capital expenditure and capital formation have subsumed the effect of industrial growth.

Table 2. Panel Regression of Log of per Capita Net State Domestic Product ($ln_pc_nsdp_cnsdp$) on Log of Capital Expenditure (ln_cap_exp) and Log of Revenue Expenditure (ln_rev_exp) Along with Other Explanatory Variables
Dependent Variable: $ln_pc_nsdp_cnsdp$

Explanatory variables	(1)			(2)		
	Coeff.	t	P > t	Coeff.	Z	P > Z
ln_gcf_cnsdp	0.27	4.96*	0.000	0.18	3.41*	0.001
ln_cap_exp	0.45	8.56*	0.000			
ln_rev_exp				0.43	7.02*	0.000
ind_nsdp	-0.38	-0.28	0.778	0.52	0.42	0.674
constant	3.28	5.81*	0.000	3.42	5.90*	0.000
	R ² : within = 0.79 between = 0.07 overall = 0.38 FEM [#] , F(3, 48) = 63.84 Prob > F = 0.000 n = 68, Group = 17			R ² : within = 0.78 between = 0.12 overall = 0.42 REM ^{##} wald chi2 = 127.22 Prob > chi2 = 0.000 n = 68, Group = 17		

* significant at 1% level.

Hausman test accepts fixed-effects model.

Hausman test accepts random-effects model.

Source: Estimation of the authors from RBI data.

The equation (2) in Table 2 gives the estimates of elasticity of state per capita income w.r.t. gcf_cnsdp and revenue expenditure of the government (rev_exp). The estimates are 0.18 and 0.43 respectively. The coefficients of ln_gcf_cnsdp and ln_rev_exp are positive and statistically significant. That means, revenue expenditure and gross capital formation both have significant positive impact on per capita income in the states. In equation (2) also, the degree of industrialization has been found to be insignificant. The same reason as mentioned above may be applicable here for this result. The point to be noted here is that both capital

expenditure (G_1) and revenue expenditure (G_2) of the government have significant positive effect on per capita income (an indicator of growth) but G_1 has little stronger effect on growth than G_2 . The effect of gross capital formation (K) is significant and positive. Since growth has significant negative impact on poverty, allocation of greater share of funds to capital expenditure may be more effective in reducing poverty via its effect on growth.

The debt burden of a state has resource constraints to allocate funds for development. So, the ratio of state gross fiscal deficit to net state domestic product (sgfd_nsdp_ratio) has been used to explain capital expenditure in Table 3. The results of panel regression show that debt burden has negative effect on capital expenditure. It implies that if the state is more indebted, less fund will be available for development purposes after meeting the obligation of debt-servicing.

Table 3. Panel Regression of Log of Capital Expenditure (*ln_cap_exp*) on the Ratio of State Gross Fiscal Deficit to Net State Domestic Product (*sgfd_nsdp_ratio*). #
Dependent Variable: *ln_cap_exp*

Explanatory variable	coeff.	Z	P > Z
<i>sgfd_nsdp_ratio</i>	-0.123	-2.29*	0.022
<i>ind_nsdp</i>	1.386	0.62	0.533
<i>constant</i>	8.505	13.46*	0.000
		R ² : within = 0.10 between = 0.03 overall = 0.07	
		# wald chi2(3) = 5.71 prob > chi2 = 0.057	

* significant at 1% level.

Hausman test accepts random-effects model

Source: Estimation of the authors from RBI data.

In Table 4 panel regression of poverty on state per capita income (pc_nsdp_cnsp), share of pub expenditure on infrastructure (pub_exp_infr), social expenditure of the government (ln_social_exp) and share of services in net state domestic product (service_nsdp) along with controls in three separate equations. This regression examines how important growth is in reducing poverty. The result shows that the coefficient of ln_pc_nsdp_cnsp is negative and highly significant. That means, increase in per capita income significantly reduces poverty. It establishes that growth is very important for reduction of poverty. The share of agriculture in net state domestic product (agri_nsdp) is found to have positive effect on poverty. It can be explained by the fact that greater dependence on agriculture means economic backwardness. Naturally, poverty will be higher in that state. The Indian economy is experiencing high rate of growth largely banking on service sector. So, both agriculture and industry are found to be less important in growth and reduction of poverty.

The public expenditure can be further classified as expenditure on infrastructure and social development. Infrastructure like roads and highways, railways, sea and air ports, electricity, irrigation projects significantly accelerates growth and investment. So, the public expenditure on infrastructure which accelerates growth is highly significant in reducing poverty in equation (2) of Table 4. The public

expenditure on social sector such as health, education and social welfare enhances social development and increases efficiency of labour. In equation (2) of Table 4, social expenditure is found to have significant negative effect on poverty. The public expenditure both on infrastructure and social sector development has significant negative impact on poverty. But the coefficient of infrastructure is much higher than social expenditure. This suggests that greater allocation of resources to the development of infrastructure will be more effective in reducing poverty because its effect on growth is higher compared to social expenditure. The policy implication is very clear. If the government spends more on infrastructure, per capita income will increase significantly and as a result, poverty will decline. As before, industrialisation is found to have no effect on poverty. Since industrial growth in India is very moderate and employment of labour in the industrial sector, especially in the formal organized sector, is very limited, it could not play important role in growth and poverty alleviation in the country. But social expenditure has significant negative effect on poverty.

Table 4. Panel Regression of Poverty (*pov_hcr*) on Log of per Capita Net State Domestic Product (*ln_pc_nsdpcnsp*), Log of Social Expenditure (*ln_social_exp*), Share of Services in Net State Domestic Product (*service_nsdpcnsp*) Along with Other Explanatory Variables. Dependent Variable: *pov_hcr*

Explanatory variables	(1)			(2)			(3)		
	Coeff.	Z	P > Z	Coeff.	t	P > t	Coeff.	Z	P > Z
<i>ln_pc_nsdpcnsp</i>	-13.34	-11.27*	0.000						
<i>agri_nsdpcnsp</i>	17.77	1.65**	0.098						
<i>pop_den_sqm</i>	0.003	0.49	0.623				0.029	4.45*	0.000
<i>pub_exp_infr</i>				-29.91	-2.66*	0.011			
<i>ln_social_exp</i>				-8.88	-9.85*	0.000			
<i>ind_nsdpcnsp</i>				30.26	1.48	0.145			
<i>service_nsdpcnsp</i>							-91.24	-8.75*	0.000
<i>agri_prd_hc</i>							-0.013	-7.06*	0.000
<i>constant</i>	151.88	11.10*	0.000	106.17	14.90*	0.000	95.08	16.24*	0.000
	R ² : within = 0.84 between = 0.43 overall = 0.63 REM# wald chi2(3) = 287.00 Prob > chi2 = 0.000 n = 68, Group = 17			R ² : within = 0.82 between = 0.09 overall = 0.13 FEM## F(3, 48) = 76.24 Prob > F = 0.000 n = 68, Group = 17			R ² : within = 0.69 between = 0.66 overall = 0.67 REM# wald chi2(3) = 142.53 Prob > chi2 = 0.000 n = 68, Group = 17		

* significant at 1% level.

** significant at 5% level.

Hausman test accepts random-effects model

Hausman test accepts fixed-effects model

Source: Estimation of the authors from RBI data.

Another striking result is that the share of services in nsdp (*services_nsdpcnsp*) has highly significant negative effect on poverty. This is consistent with the fact that India has achieved remarkable GDP growth largely banking on service sector growth. While the share of agriculture in GDP is sharply declining and industrial growth is moderate, the growth of the service sector is very high (more than 60% of GDP) and it has been highly effective in promoting growth and reducing poverty. Another revealing result is that productivity in agriculture (*agri_prod_hc*) has significant negative effect on poverty. This is explained by the fact that

although the share of agriculture in GDP has declined to 15% nearly half of the labour force of the country are employed in agriculture. This is a serious problem of the country. Now, if the productivity in agriculture rises, the income of the rural population increases and this leads to decline in poverty.

The coefficient of the density of population per square kilometer is positive and statistically significant. That means, if population density is high, poverty will be high. It can be explained by the fact that if the population density is high, per head availability of land for cultivation is low. So, the farmers are poor. Besides, the shortage of land in some states has become a serious constraint to industrialization. Naturally, both agriculture and industry suffer in such states. Now, if service sector does not develop that way, and the population are largely dependent on agriculture, poverty will be higher.

The effect of social expenditure of the government on the reduction of poverty is very significant although public expenditure on infrastructure has greater negative impact on poverty. The same is true for capital expenditure. So, the empirical findings suggest the policy that major thrust should be on economic growth without undermining the direct welfare schemes of the government. At the same time the governance and delivery mechanism of direct benefits should be improved so that benefits of welfare schemes reach to the target groups.

So far as allocation of funds for social sector development is concerned, interesting results have been obtained from Table 5. Here, in panel regression of Table 5 the burden of public debt (*sgfd_nsd_ratio*), *agri_nsdp* and share of revenue expenditure in total spending of the government (*ratio_re*) have significant negative effect on social expenditure. Although the social expenditure is effective in reducing poverty, the state will not be able to allocate adequate funds for social development if debt burden of the state is high or the state is largely dependent on agriculture or the share of revenue expenditure in total spending of the government is high. So, side by side with optimum allocation of funds, the availability of funds is also very important from the viewpoints of growth and welfare.

Table 5. Panel Regression of Log of Social Expenditure (*ln_social_exp*) on the Ratio of State Gross Fiscal Deficit to Net State Domestic Product (*sgfd_nsd_ratio*) and Other Variables. # Dependent variable: *ln_social_exp*

Explanatory variable	coeff.	t	P > t
<i>sgfd_nsd_ratio</i>	- 4.97	- 1.80**	0.079
<i>agri_nsdp</i>	- 10.31	- 10.88*	0.000
<i>ratio_re</i>	- 2.28	- 1.91**	0.063
<i>constant</i>	13.72	13.03*	0.000
R ² : within = 0.79 between = 0.11 overall = 0.44 FEM, F (3, 48) = 61.64 Prob > F = 0.000 n = 68, Group = 17			

* significant at 1% level.

** significant at 5% level.

Hausman test accepts fixed-effects model

Source: Estimated by authors from RBI data.

In order to supplement the result of the effect of economic growth on poverty ratio discussed above, an attempt has been made in Table 6 to examine the effect of per capita income and literacy on average monthly per capita consumption expenditure of the rural households in the Indian states (*ampce_rural*). In the panel regression of Table 6, it is found that per capita income has significant positive impact on per capita consumption expenditure. Similarly, literacy rate has also significant positive effect on *ampce_rural*. Both *pc_nsdp_cnsp* and *literacy_rate* are indicators of economic growth and both have favourable effects on consumption expenditure of the rural households. Therefore, the hypothesis that ‘growth reduces poverty’ is reinforced by these results.

Table 6. Panel Regression of Average Monthly per Capita Consumption Expenditure of the Rural Households (*ampce_rural*) on per Capita Net State Domestic Product (*pc_nsdp_cnsp*) and Literacy Rate # Dependent Variable: *ampce_rural*

Explanatory variable	coeff.	t	P > t
<i>pc_nsdp_cnsp</i>	0.026	13.17 *	0.000
<i>literacyrate</i>	14.589	4.11 *	0.000
<i>constant</i>	- 671.13	- 3.23 *	0.003
R^2 : within = 0.93 between = 0.49 overall = 0.81 FEM, F (2, 32) = 245.00 Prob > F = 0.000 n = 51, Group = 17			

* significant at 1% level.

Hausman test accepts fixed-effects model

Source: Estimation of the authors from NSSO data on household consumption expenditure.

Discussion

The empirical results show that poverty has significantly declined in the states of India over the period from 1993-94 and 2011-12. Both economic growth and direct welfare measures have largely contributed to this reduction of poverty in the country. So far as the effect of public expenditure on growth and the impact of growth on poverty are concerned, it follows from this study that capital expenditure and infrastructure have significant impact on per capita income and growth and the increase in per capita income has been highly effective in reducing poverty. The social expenditure is also found to have promoted growth and reduced poverty. As a policy measure it suggests that major focus should be on growth to reduce poverty and the strategy of growth should be combined with suitable distributive and welfare measures. Many new welfare schemes have been introduced in the country in the recent time in addition to the existing ones. These welfare schemes are related to food security, employment generation, direct transfers to farmers and women, facilities of health, rural housing for the poor, and direct financial helps to the students, especially girl children. These welfare programmes are being pursued by both central and state governments. All these schemes are likely to have

favourable impact on the goal of reduction of poverty and well-being of the poor. But the effects of these schemes could not be evaluated due to lack of data. The success of welfare measures also depends on effective delivery mechanism, proper implementation of the schemes and good governance. Besides, there are many socio-economic factors and constraints due to which the poor people can not avail or utilize the benefits of government programmes. These problems are also to be taken care of while designing policy for reduction of poverty.

Conclusions

Poverty is one of the major problems in the developing countries. In India also poverty was very high in 1950s and 1960s. It has come down to 21.9 per cent in 2011-12 at the national level although poverty ratio varies from 9% to more than 30% across states of the country. The main two approaches to poverty alleviation are: economic growth and direct welfare benefits to the poor. There is a debate on which policy the government should emphasize on to reduce poverty. Both growth and direct welfare measures are related to public expenditure. This paper examines the impact of public expenditure on economic growth and poverty alleviation and also examines the effect of growth on poverty. Various studies on poverty suggest that growth is very important for reduction of poverty but growth alone is not sufficient to reduce poverty. So, the strategy of growth needs to be supplemented by distributive and welfare measures. Specially, the distribution of income and the schemes of social welfare for the poor are very crucial for poverty alleviation. The public policy and expenditure pattern of the government should be designed in such a way that growth is promoted and the benefits of growth trickle down to the poor. This paper has addressed the issues of public expenditure, growth and poverty with the help of a theoretical model and using results of panel regressions based on state level data in the Indian context. The results of econometric analysis show that both capital expenditure and revenue expenditure have significant positive impact on per capita income and per capita income has significant negative impact on poverty. These results are consistent with the theoretical findings. The capital expenditure has greater impact on growth compared to revenue expenditure. Thus both types of public expenditures are effective in reducing poverty via their impact on growth although the effect of capital expenditure is stronger. There are other classifications of public expenditure: expenditure on infrastructure and expenditure on social development. The study finds that the expenditure on infrastructure has stronger effect on the reduction of poverty compared to social expenditure. This is because infrastructure plays an important role in growth. The formation of private capital is also found to have significant effect on growth and reduction of poverty. Literacy, an indicator of economic development and social expenditure have negative effect on poverty. Thus both economic growth and social sector development are helpful in reducing poverty although the effect of economic growth is stronger. This study also finds that the growth of the service sector has significant negative impact on poverty. In the states where the share of agriculture in state GDP is high, productivity in

agriculture is low and debt burden is high, poverty is high. It indicates that if the burden of public debt is high, the government cannot allocate sufficient fund for development and social welfare. Similarly, the greater dependence on agriculture is an indicator of economic backwardness. In such states, poverty will be higher. So, this paper concludes that welfare and distributive measures must be there. But the main focus of public policy should be on growth. So, public policy and public expenditure should be decided accordingly. The limitation of this study is that the effects of distributive benefits of welfare measures like direct payment to the farmers, subsidised food to the large section of the population, welfare schemes for rural housing, health provisions and financial benefits to the students, especially the girl children, introduced in the recent time at the centre and in the states could not be evaluated properly due to lack of data. There is scope for further studies on the effects of such welfare programmes on poverty.

References

- Adjasi CKD, Osei KA (2007) Poverty profile and correlates of poverty in Ghana. *International Journal of Social Economics* 34(7): 449–471.
- Afonso A, Furceri D (2010) Government size, composition, volatility and economic growth. *European Journal of Political Economy* 26(4): 517–532.
- Agenor PR (2008) Fiscal policy and endogenous growth with public infrastructure. *Oxford Economic Papers* 60(1): 57–87.
- Ahluwalia MS (1976) Inequality, Poverty and Development. *Journal of Development Economics* 3(4): 307–342.
- Ahluwalia MS (2011) Prospects and Policy Changes in Twelfth Plan. *Economic and Political Weekly* 46(21): 88–105.
- Ahmad M (2014) Government expenditure and economic growth: An econometric test for India. *International Journal of Social Science Humanities Research* 2(3): 79–88.
- Alesina A, Rodrick D (1994) Redistributive Politics and Economic Growth. *Quarterly Journal of Economics* 109(2): 465–490.
- Ames B, Brown W, Devarajan S, Izquierdo (2001) *Macro Economic Policy and Poverty Reduction*. IMF and World Bank.
- Anand S, Kanbur SMR (1993) The Kuznets Process and inequality-development relationship. *Journal of Development Economics* 40(1): 25–52.
- Aschauer D (1989) Is government spending productive? *Journal of Monetary Economics* 23: 177–200.
- Banerjee AV, Newman AF (1993) Occupational Choice and the Process of Development. *Journal of Political Economy* 101(2): 274–298.
- Barro RJ (1990) Government spending in a Simple Model of Endogenous Growth. *Journal of Political Economy* 98(5): 103–125.
- Barro RJ (1991) Economic Growth in a cross section of countries. *Quarterly Journal of Economics* 106(2): 407–444.
- Bhagwati JN (1988) Poverty and Public Policy. *World Development* 16(5): 539–654.
- Bruce N, Turnovsky SJ (1999) Budget Balance, Welfare and the Growth Rate : “Dynamic Scoring” of the Long-Run Government Budget. *Journal of Money, Credit and Banking* 31(2): 162–186.
- Chen BL (2006) Economic growth with an optimal public spending composition. *Oxford Economic Papers* 58(1): 123–136.

- Chen S, Ravallion M (2000) *How did the world's poorest face in the 1990's*. Policy Research Working Paper No. 2409, World Bank.
- Chiang AC (1992) *Elements of Dynamic Optimisation*. New York: McGraw-Hill Ins.
- Collier P (1998) *Social Capital and Poverty*. Working Paper No. 4. Washington DC: The World Bank, Social Development Family, Environmentally and Socially Sustainable Development Network.
- Devarajan S, Swaroop V, Zou H (1996) The composition of public expenditure and economic growth. *Journal of Monetary Economics* 37(2): 313–344.
- Galor O, Zeira J (1993) Income Distribution and Macroeconomics. *Review of Economic Studies* 60(1): 35–52.
- Gangal VLN, Gupta H (2013) Public expenditure and economic growth: A case study of India. *Global Journal of Management and Business Studies* 3(2): 191–196.
- Government of India (2013) *Press Note on Poverty Estimates 2011-12*. Planning Commission.
- Leeper EM, Walker TB, Yang SCS (2010) Government investment and fiscal stimulus. *Journal of Monetary Economics* 57(8): 1000–1012.
- Lucas RE (1988) On the mechanism of economic development. *Journal of Monetary Economics* 22: 3–42.
- Lustig N (2002) *Poverty Reduction and Economic Growth: A two-way causality*. Washington DC: Inter-American Development Bank, Sustainable Development Department, Technical Paper Series, and UNU, WIDER.
- Mahapatra G, Giri AK (2016) The composition of public expenditure and economic growth in India: Evidence from auto regressive distributed lag approach. *Journal of Economic Research* 21: 205–230.
- Marjit S, Sasmal R, Sasmal J (2020) Composition of public expenditure and growth of per capita income in Indian states: a political perspective. *Journal of Social and Economic Development* 21(Apr): 1–17.
- Mauro P (1995) Corruption and Growth. *Quarterly Journal of Economics* 110(3): 681–712.
- Meltzer AH, Richard SF (1981) A Rational Theory of the Size of the Government. *Journal of Political Economy* 89(51): 914–927.
- Mulok D, Kogid M, Asid R, Lily J (2012) Is economic growth sufficient for poverty alleviation? *Cuaderanos de Economia* 35(97): 26–32.
- Owino B (2017) Public Expenditure in the social sector and economic growth in Kenya. *Journal of Economics and Sustainable Development* 8(14).
- Persson T, Tabellini G (1994) Is Inequality Harmful for Growth? *American Economic Review* 84(3): 600–621.
- Ravallion M, Chen S (1997) What can New Survey Data tell us about recent changes in distribution and poverty. *The World Bank Economic Review* 11(2): 357–382.
- Reserve Bank of India. *Handbook of Statistics on State Government Finances* (several issues).
- Reserve Bank of India. *State Finances – A Study of Budgets* (several issues).
- Reserve Bank of India (2022) *Handbook of Statistics on Indian Economy*. 2009-10.
- Reserve Bank of India (2022) *Handbook of Statistics on Indian States*.
- Reserve Bank of India. *Handbook of Statistics on State Government Finances* (several issues).
- Sasmal R, Sasmal J (2016) Public expenditure, economic growth and poverty alleviation. *International Journal of Social Economics* 43(6): 604–618.
- Sasmal J, Sasmal R (2023) Public expenditure, human capital formation and economic growth in a modified Lucas framework. *Journal of Quantitative Economics* 21(4): 745–768.

- Sen A (1981) *Poverty and Famine: An Essay on Entitlement and Deprivation*. Oxford.
- Shafuda CPP, De UK (2020) Government Expenditure, Human Capital and Growth in Namibia: a time series analysis. *Journal of Economic Structures* 9(21).
- Son HH, Kakwani N (2004) *Economic Growth and Poverty Reduction: Initial conditions matter*. International Poverty Centre, UNDP, Working Paper No. 2.
- Wooldridge JM (2009) *Econometrics*. Mason: Cengage Learning.
- Zhang L (2015) A multi-sector model of public expenditure and growth. *Journal of Economics* 115(1): 73–93.

