Public Expenditure on Social Services and Its Impact on Inequality
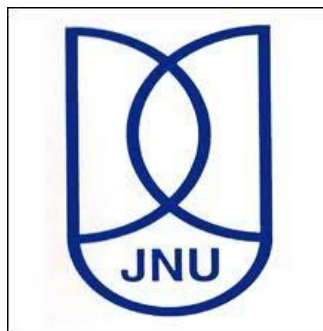
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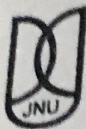
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DECLARATION

This is to certify that the dissertation entitled **"Public Expenditure On Social services and Its Impact on Inequality"** submitted by me in partial fulfilment of the requirements for the award of the degree of **Master Of Philosophy** is my original work and has not been previously submitted for any other degree of this or any other university.

Saad Bin Afroz

CERTIFICATE

We recommend that this dissertation be placed before the examiners for evaluation.

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ABSTRACT

Inequality has become one the most pressing issues of present times. Inequality in any form is repressive for an economy. The dissertation focuses on economic inequality. It analyses the impact of public expenditure on inequality. It aims to explain how the investment by government in social infrastructure helps to curb the increasing economic gap. We use the National Sample Survey Office (NSSO) consumption expenditure data as proxy for income and derive Gini co-efficient of inequality for 15 major states in India. This state level study uses the Random Effects Model and Fixed Effects Model to see how inequality has changed from 1991-2012 given the fluctuations in public expenditure on social services. The Random Effects Model estimates a significant and negative effect of public expenditure on inequality and is in agreement with a lot of available theoretical analysis.

Chapter 1

Introduction and Literature Review

INTRODUCTION

"We need to ask the moral questions: Do I have a right to be rich? And do I have a right to be content living in a world with so much poverty and inequality? These questions motivate us to view the issue of inequality as central to human living."

– Amartya Sen.

Inequality is one of the most pressing issues of all times. With globalization and the increasing integration of economies, developed nations have sought to exploit the cheaper land and labour in the less developed nations, increasing inequality across the globe. Tackling the problem of inequality is not just intrinsically but also instrumentally important for sustainable growth (Dev, 2016).

India has a vast topography along with a varied socio economic mass. Post liberalization the Indian economy has been growing rapidly but the benefits of growth still remain unequally distributed. Inequality has been on an increase despite improving growth figures. World Inequality Report[1] (2018) states that the inequality in India is at an all-time high with an income share of 22% accruing to top 1% earners while the share of the top 10% earners is 56%. This is in contrast to the first thirty years of independent India, pre-liberalization, where the income share of the bottom 50% grew faster than the national average. Economic growth seems to be a necessary but not a sufficient condition for tackling the problem of inequality. This is where government intervention is needed. The widening gap between the haves and have nots can be mitigated by public policies that tackle the issue of capability deprivation. In the absence of redistributive market forces it is the government's prerogative to develop a policy structure that renders a more egalitarian society and also safeguards macroeconomic stability. Give the present focus on the issue of inequality, economies are taking cognizance of the fact that the low standard of living of the poorer section and lopsided distribution of income are having a detrimental impact on the stability and future growth prospects of the economies (Schwartz and Ter-Minassian, 2000).

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[1] **World Inequality Report** is a report by World Inequality Lab at Paris School of Economics providing estimates of global income and wealth inequality

This dissertation undertakes a state-wise study of India and attempts to see how public expenditure on social services impacts inequality. The paper is divided into four chapters. The first chapter deals with the review of literature. The second chapter discusses the data sources and the conceptual framework of the study undertaken, followed by a study of different measures of inequality that can be used in the Indian context. The 3rd and 4th chapter present the empirical analysis. Chapter 3 tracks inequality, growth and public expenditure on social services in 15 major Indian states. Chapter 4 presents the regression model and its results. Finally we have the conclusion and policy recommendations.

LITERATURE REVIEW

Income inequality has become one of the major issues across the world. Economists around the world are trying to devise policies that gear the economy towards a more egalitarian one. The worst hit are the developing economies where the financially weaker section are trapped in a poverty trap and the affluent section continue to use their position to their advantage in capturing the bigger portion of the economic pie.

The reforms of 1991 were introduced with the aim of achieving macroeconomic stability and bringing about structural changes in the economy. Post liberalization Indian economy saw an increase in its growth rate but contrary to the expectations inequality increased or at best remained constant. There is a vast literature pertaining to growth, inequality and public expenditure. We try to review different India and world level studies to see how inequality is affected by growth and how public expenditure can act as redistributive tool to reduce inequality.

Piketty and Chancel (2017) provide an insight into how India has progressed in terms of income inequality. They consider a long period from 1922-2014, thereby accounting for the transition of the Indian economy from a colony, to a state driven one and finally into a liberalized market. The study gives insight into the data gaps that exist in India which makes calculating and evaluating inequality in India difficult. In their study they utilize data from NSSO[2] quadrennial rounds, tax rate, IHDS[3]

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[2] NSSO stands for the Nation sample Survey organization which conducts large scale sample surveys for different fields with an all India coverage.

survey and the national account database and combine them to produce a continuous measure of inequality for their period of study. They observe that post 1980's India has witnessed an increase in inequality. This increase has been sharper since the liberalization of the 1990's.

Anand and Thampi (2016) in their paper analyse wealth inequality in India from 1991 to 2012 using the All India Debt and Investment Survey (AIDIS) data as opposed to other paper analysing consumption inequality based on NSSO consumption expenditure data. The data poses certain shortcomings like wealth being under-reported and the under sampling of people in the top deciles, leading to underestimation of inequality. The study hypothesises the cause of the rising wealth inequality to be the neo liberal growth strategy being followed. The growth experienced post liberalization failed to create sufficient employment in the organised sector. The study shows that the wealth share of the rural areas has declined while the one in the urban areas has shown greater concentration. The reason for it has been cited to be the policy paralysis in the form of withdrawing of state support to the farmers in the form of cheap credit, agricultural subsidies and investment. Investment in the industrial and service sector failed to generate enough employment to absorb the rural labour force. Analysing wealth inequalities by deciles also show an increase in the wealth concentration in the top most deciles. The band of consolidation has been shrinking from top 20% between 1991 and 2002 to top 5% owning half of the wealth by 2012.

The anomaly between the persistent inequalities despite the rising growth rate has also been studied by Vaneman and Dubey (2013). In their study they make use of IHDS income data to compute inequality for making cross national and within country comparison in inequality. The cross country analysis shows that the level of inequality in the Indian states is higher than any high income country included in the Luxemberg Income Study (LIS) database, suggesting that income levels shape the level of inequality in the countries. On the other hand the same cannot be said for the within country analysis. Some states with high income levels show low inequality while some show high inequality. Low income states also tend to have low or high

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[3] IHDS- The Indian Human Development survey is a nationally representative, multi-topic survey of 41,554 households in 1503 villages and 971 urban neighbourhoods across India.

inequalities. This has been accounted to the fact that there is significant vertical inequality within the states. Horizontal inequalities across a state though being substantial are not as conspicuous as the vertical. [4]

Public expenditure on social services is a policy tool at the disposal of government by means of which it can orchestrate redistribution, given it is targeted judiciously. Sen (1996) in his paper explains that poverty alleviation can be a serious part of the agenda of economic reforms only if the reforms have redistributive content. It studies the impact of economic reforms undertaken in 1990s on the incidence of poverty. It points out that there was a significant decline in poverty from mid 1970s to the end of the 1980s, a decade and a half where public expenditure was on a rise. This rise could not be sustained owing to huge fiscal deficit and thus the 1990s reforms were introduced. He implies that there might be a stronger connection between public expenditure and poverty alleviation and government's effort to reduce public expenditure may only make the condition worse for the economically weaker sections.

Chatterjee and Turnovsky (2010) analyse the role of government spending programs – specifically on public infrastructure such as roads, healthcare, education, etc. – in stimulating economic growth and reducing inequality by developing a model in which public capital is both an engine of growth and a determinant of distribution of wealth, income and welfare. The analytical framework employed is an endogenous growth model in which the economy is characterized by transitional dynamics where both public and private capital is accumulated. A numerical simulation of the model is undertaken where dynamic adjustment of the economy under four alternative financing schemes where the long-run increase in government investment is fully financed by a (i) lump-sum tax (ii) capital income tax (iii) labor income tax, or (iv) consumption tax, is analysed. For all forms of financing the public expenditure and the resulting private accumulation have a positive effect on growth rates. The distributional effect on the other hand changes with the financing scheme. With a non-distortionary lump sum tax, inequality decreases in the short run but this decline is reversed in the long run and a gradual increase is observed. For the distortionary taxes

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[4] Stewart and Cobham (2009) Vertical inequalities refers to inequalities among individuals or households, horizontal inequalities on the other hand are defined as inequalities among different groups commonly- ethnic, religious or racial.

the result depends on the effect of two counteracting transitional paths. In general, the results of the analysis suggest that government spending on public capital will increase wealth inequality gradually, irrespective of how it is financed. The productivity of private investment tends to be enhanced by government expenditure.

With the more unequal distribution of private capital among agents compared to labour, wealth inequality tends to increase. Capital deprivation of certain classes manifests into a vicious circle of poverty and inequality. Ghosh (2015) in her paper describes India's growth in recent years as inequitable and rendering inequality. She explains the cause to be the resource rich private players who capitalise on the inherent social inequalities of our economy, by creating a labour market where the wages of certain marginalised categories are kept low to extract a greater profit margin. The paper also emphasises how the shift in the policy structure from a public expenditure induced growth to the one driven by private consumption and debt financing has driven India on to a fragile growth trajectory.

A country level analysis of Spain by Jurado et al. (2015), processes and imputes the benefits produced to the individuals' and households' well-being in Spain, by public service provision through its impact on inequality and poverty. The study takes into account the dynamic nature of public spending. The impact of public services is not limited to a specific moment in the life of individuals but extend overtime. The variables of public spending used in the study are education and health. The results show a significant reduction in inequality and poverty with the increase in government spending. The decrease is sharper in the regions located at the lower tail of income distribution, allowing them to converge. The study also takes account of the fact that Spain has a high degree of decentralization of political structure along with persistent regional disparities.

Holzner (2011) in his paper analyses the joint determinants of inequality and growth with a special focus on public spending, for a set of transition economies from central, east and southeast Europe in the late 1990 and 2000's. The model assumes that the exogenous process of political economy sphere determines the public spending. The research is based on the approach of Lundberg and squire (2003) and a broad range of different kinds of general government expenditures. It uses the methodology of Generalised Least Square (GLS) estimator to correct for heteroscedasticity and panel

specific autocorrelation. The chosen indicator for income inequality is the Gini index and that for economic growth is annual percentage growth rate of GDP per capita based on constant local currency. Variables for public spending include general public services, Defence, Public order and safety, economic affairs, housing and community amenities, health, recreation, culture and religion, education and social protection. The result of the research are mainly driven by the general conditions prevalent in central, east and southeast Europe in the late 1990 and 2000's. The results show that in periods in which subsidies were high there was a corresponding decrease in inequality. Expenditure on economic affairs (subsidies), expenditure for health and social protection were both negatively correlated with inequality. Regarding growth, government expenditures on housing and education were found to be negatively correlated. Also the transition countries that have specialized in manufacturing tend to have a lower level of inequality. The study shows a trade-off between growth and equity which finds its root in the inefficient targeting of government policies which aim at increasing the former and lowering the later.

Schwarts and Ter-Minassian (2000) dwell into the distributional effect of public expenditure policies, drawing mainly on the experience of Latin American economies. The paper tries to analyse the potential of expenditure policies as a redistributive tool without having adverse results on growth and efficiency, and see if it can be designed to improve both the distribution of income and the economic growth or if there necessarily is a trade-off. The paper recognizes that qualitative aspects of economic growth are probably more important than economic growth itself in tackling the problem of skewed income distribution or poverty. The trade-off lies not between economic growth and distributional equity but between polices that enhance cost efficiency and those that do not. It points out that devising the right expenditure policy becomes difficult owing to a number of analytical and technical problems like identification of beneficiaries, evaluating the benefits of the program, assessing the program cost, market imperfections and data limitations. Despite these limitations unfavourable income distribution is more often a problem of political pressure and institutional constraints that hamper the redistributive effort, than of policy design.

Public expenditure is one of the two important tools of fiscal policy, the other being taxation. Claus et al (2012) discusses the redistributive role of fiscal policies by means of quantifying the effects of taxation and public expenditure. A panel estimation of

150 countries shows that government expenditure is a more effective tool than tax systems for redistributing income. The paper dwells into the fact that despite rapid economic growth in Asia, poverty and inequality arising from unequal access to basic social services such as education and health continues to be a main challenge. It also discusses the pitfalls in the two redistributive tools under consideration. Incidence of tax is a major issue as more often than not the party paying the taxes is different from the one legally liable to do so. For example taxes to be paid by the employer are discreetly passed on to the employee. Similarly government expenditure fails to have the desired outcome owing to it being poorly targeted or difficulty of access to the poor. It suggests that spending programs on social welfare and social sectors are significantly capable of effecting income distribution only if they are targeted towards the poor and lower income groups. Data analysis in the study takes Gini coefficient as a measure of inequality. Current level of inequality is regressed on inequality levels for previous years, fiscal variables like tax and government expenditure and set of control variables to explain income inequality. The impact of taxation on equality is found to be small in Asia. On the other hand social protection expenditure has a differential distributive effect in Asia compared to the rest of the world. It increases inequality in Asia in contrast to the rest of the world, reason being social benefits like housing tend to benefit the higher income people more than the lower income ones. Also expenditure on education and health has a negative relation with inequality. The effect of public expenditure on inequality is also contingent on the inherent characteristics of the economies and the time period for which the research has been undertaken. Demography, political system and the stage of development of an economy are the elements which can shape out different results for similar fiscal policies.

Similarly Johansson (2016), in his paper studies the impact of public spending and taxation on long run growth and inequality. The research points out that the size of government matters for long term growth. The findings of the paper suggest that reallocation of public spending towards infrastructure and education raises income and growth in the long run and reduces inequality by redistributing income. The paper points that sustaining long term economic growth while addressing redistribution of income and ensuring a sustainable debt path is a key policy concern for most of the countries. To achieve the same it's essential that public resources should be optimally used and rightly targeted while cognisance should be taken of the fact that tax revenue

be collected in a way that minimizes cost of distortion. It lists the channels, through which public finance influences growth and inequality namely the size of government sector, composition and efficiency of government spending, tax system and fiscal framework.

Bhatti et al. (2015) study the link between fiscal policy tools and income distribution and suggest a judicious mix of the instruments. The study engages in a simple computable general equilibrium model developed in accordance with the static model structure constructed by Lofgren et al. (2001). Inequality effects are measured using Theil T, Theil L, Theil S. and Hoover's index. The study points out that fiscal policy can be an effective tool in bridging the gap between the haves and have-nots directly by affecting the disposable income and indirectly by future earning capacity building. The pattern of public expenditure along with the tax system can be structured to reduce income inequality. The results of the study show that a fall in income inequality is in congruence with high budget deficits, corruption and political unrest. The use of taxes or transfers alone can effect income distribution but have a deteriorating effect on budget deficit. Thus it suggests that a mix of fiscal policy instrument can have a positive effect on income distribution and budget surplus.

Laabas and Limam (2004) and in their paper attempt to reason out the highly debated question that whether public policies are at all efficient in alleviating poverty and improving social outcomes. Public policies have a dual role of achieving efficiency and equity in an economy. In the developing economies the distributive role is achieved through targeted government expenditure on public services like education health and housing. The study uses a modelling framework that accounts for simultaneity in determination of poverty, inequality and growth. This enables the policy makers to choose the combination of mutually beneficial and exclusive policies which have positive impact on all the variables. The study is performed for 77 countries representing 129 expenditure surveys. In this paper public policy stance is measured by the ratio of public expenditure to GDP and by the distribution of public spending on education, health, transfers and subsidies, social security and welfare, agriculture, and housing, the data for which is taken from Government Financial Statistics (GFS) of the IMF. The model incorporates the public social expenditure with a five year backward moving average from the date of survey since the effect of the variable is seen with time lag.

The results of the study show that poverty is affected by public policy indirectly by the medium of growth and income distribution. Also despite its distortionary impact on growth, the size of public expenditure seems to have a positive impact on income distribution and poverty. The results also reveal that among the social public spending, transfers fair out better in affecting income distribution and poverty.

Public expenditure on infrastructure is another much used tool to handle inequality. Infrastructure forms the basis of economic activities and its provision creates greater opportunities for all the sections of societies. Argentina and Brazil have witnessed a reduction in inequality owing to the reduced transportation and production cost by more developed roads Estache and Fay (1995).

Bajar and Rajeev (2015) study the impact of infrastructure provisioning on the income inequality levels in India. They use the NSSO consumption expenditure data to calculate the Gini coefficient as a measure for income inequality. The study uses data from 17 major states in India from a period of 1983-2010. This period of study is important as our country underwent a drastic economic transition towards a more liberalized regime. The findings of the paper are very interesting. While theory suggests that infrastructure availability and inequality should have a straight forward negative relation, the empirical results from the study show there is no conclusive evidence to support this theoretical premise. In fact, the empirical results show a positive relationship between the electricity provisioning and inequality. These results put forward a different research question: whether infrastructure investment yields higher returns in already resource rich areas with greater availability of private capital to complement the infrastructural investments, thus resulting in greater inequality. According to Ferreira (1995), expenditure on infrastructure can render increased or lowered inequality depending on the region pertaining to it. Expenditure in a highly developed area where the physical and human capital is in abundance can widen the gap between the highly developed and lesser developed area thereby increasing inequalities. On the other hand expenditure in the less developed region lacking facilities can generate economic opportunities for the otherwise disadvantaged population. It helps in building an even playing field and reducing inequality.

Public expenditure though being a powerful tool for redistribution, if not executed with care, often does not replicate the desired results in reducing inequality. Clements (1997) analyses the income distribution in Brazil and shows how public expenditure

on social services like education, health infrastructure and insurance has exacerbated the inequality. Concentration of wealth and assets in the hands of few is termed as one of the major cause of inequality in Brazil. This lopsided distribution resulted in the migration of the landless labourers in search of better opportunities only to create a pool of unskilled labour force and high wage differentials precipitating into greater inequalities. The skill differentials reflect the inability of the social expenditure to improve the quality of education for the marginalized section of the society. The reason for this is sighted as the greater portion of expenditure on education being used to fund the higher education. The benefits of which are primarily reaped by the higher income groups. Low investment in primary education culminates into a weaker base for the lower income groups. Health and Insurance benefits are such constructed that it benefits the higher income groups. Thus the policy paralysis in the sense of not being able to target the disadvantaged groups and helping the already equipped section of the society only heightens the level of inequality.

Similarly Davodi et al. (2003), in their paper present a benefit incidence analysis of 56 countries spanning the period 1960-2000 for health and education spending. Their study points out that these spending are often poorly targeted where most of the benefits are accrued to the middle and high income groups. The findings of the paper reveal that the overall spending on education is seen to be pro-poor whereas the spending on primary education is a better target to aid the poor. This is because spending on higher education primarily benefits the middle and high income groups. Expenditure on health services is also observed to be pro-rich. The lower income group benefits from the primary health care if targeted properly whereas the investment in health centres mostly benefit the middle and high income group owing to their fees, difficulty of access and specialized services. During the 1990s education spending has increasingly become pro-poor while health spending remained ill targeted. The study also shows that countries with pro poor spending on education also fair better in targeting health expenditure. A better information dissemination system also helps in better targeting of the social expenditure.

The available literature suggests that government expenditure on social services like education, health and infrastructure can be an effective tool towards a more equitable nation given the care is taken to maintain the macro-economic stability of the country

and is targeted in a way that uplifts the weaker section of the society and improves the growth path.

Chapter 2

Data, Conceptual Framework and Measuring Inequality in India

2.1 DATA

India is a composite of varied socio economic mass. The level of inequality differs from one region to another depending on the level of development the area has achieved. For a state level analysis the income data of different states is required. Due to the unavailability of the said data we use the National Sample Survey Office (NSSO) consumer expenditure data as a proxy for income to calculate the Gini coefficient. NSSO[5] conducts yearly survey on household consumer expenditures on a thin sample and quinquennial survey on a large sample of household. Household consumer expenditure is the sum total of monetary values of all the items (i.e. goods and services) consumed by the household on domestic account during the reference period. In our study we make use of the yearly data from 1991 to 2012 focusing on 15 major states.

The study focuses on the effect of public expenditure in social services on inequality, the expenditure data is taken from RBI'S Annual Study on State Finances (2012).

The control variables used in the study are literacy rates, state domestic product per capita, per capita power availability and sector wise contributions of State Domestic Product. The data for all these variables is taken from RBI's Handbook of Statistics of Indian States (2016).

2.2 CONCEPTUAL FRAMEWORK

 The purpose of our study is two-fold. Firstly, we aim to calculate and provide a measure of inequality. We will do a state level analysis and track how inequality has changed across states in the post-liberalisation era. We will use Gini coefficient[6] as a metric of inequality. We would try to obtain three different measure of inequality namely, consumption, income and wealth inequality and compare the results. Secondly, we wish to understand the interrelationship between growth, inequality and

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[5] https://data.gov.in/catalog/household-consumer-expenditure-national-sample-survey

[6] Gini coefficient is measure inequality of a distribution defined as the mean of absolute difference between all pairs of individuals for some measure.

social service expenditure. Public expenditure on social services is a tool that the government has at hand to carry out effective redistribution in the economy.

With adequate provision for education, health and infrastructure, the human capital can be fully realized leading to a more equitable distribution of income. To understand how inequality is interlinked with growth and social services expenditure we would do a state level trend analysis. To further understand the impact of social services expenditure on inequality a regression analysis would be used. The study focuses on 15 major Indian states and sees how the trend changes during the period 1991-2012.

2.3 MEASURING INEQUALITY IN INDIA

Inequality has various facets, some of which have been quantified through different surveys. Inequalities in income, consumption, asset holding, land and social standing are some of the most documented ones whose interplay determines the overall incidence of inequality in an economy. India though often mistaken as a low inequality country due to the calculations based on under reported consumption expenditure, has been found to be rampant by high levels of inequality as seen from the Income Inequality data of IHDS (Himanshu, 2015).

The aim of this section is to highlight the extent of inequality in the country and how it has changed over time. We also aim to point out the shortcomings in the available data which constrains our ability to generate an accurate estimate for inequality. We use three different survey's to generate different measures of inequality and try to establish a general trend in the path followed by inequality from 1991-2012.

Firstly, the study uses the Consumption Expenditure Survey (CES) conducted by the NSSO. Since this is the only annual survey, we would be using it in our regression and empirical analysis. The survey provides monthly consumption expenditure data for every household which is used to calculate the Gini coefficient (consumption) as a measure for inequality. The trends in inequality from 1991-2012 for the 15 major states are given in the table 2.1 below.

Table 2.1: Trends in Inequality from 1991-2012 for 15 Major States

Nss Round	Year	Andhra Pradesh	Assam	Bihar	Gujarat	Haryana	Karnataka	Kerela	Madhya Pradesh	Mahara	Orissa	Punjal	Tamil Nadu	Uttar Pradesh	Rajast	West Bengal
47	1991	0.328	0.236	0.265	0.304	0.273	0.350	0.362	0.313	0.439	0.289	0.312	0.381	0.380	0.388	0.318
48	1992	0.308	0.238	0.310	0.310	0.260	0.332	0.358	0.332	0.368	0.377	0.312	0.373	0.333	0.327	0.335
49	1993	0.307	0.257	0.284	0.309	0.348	0.330	0.337	0.311	0.400	0.346	0.302	0.360	0.331	0.297	0.308
50	1994	0.324	0.238	0.275	0.293	0.330	0.333	0.338	0.339	0.396	0.311	0.297	0.364	0.324	0.301	0.330
51	1995	0.286	0.234	0.271	0.299	0.305	0.330	0.331	0.305	0.417	0.287	0.278	0.307	0.376	0.271	0.280
52	1996	0.339	0.254	0.292	0.284	0.315	0.323	0.321	0.312	0.377	0.311	0.295	0.320	0.335	0.274	0.294
53	1997	0.360	0.289	0.298	0.325	0.321	0.333	0.345	0.313	0.381	0.332	0.337	0.293	0.351	0.325	0.315
54	1998	0.376	0.270	0.277	0.285	0.308	0.333	0.331	0.324	0.418	0.302	0.267	0.320	0.335	0.318	0.315
56	2000	0.360	0.230	0.256	0.325	0.282	0.349	0.349	0.339	0.397	0.329	0.292	0.356	0.304	0.265	0.334
57	2001	0.338	0.228	0.271	0.293	0.314	0.361	0.371	0.340	0.405	0.344	0.290	0.332	0.323	0.285	0.333
58	2002	0.362	0.225	0.251	0.387	0.299	0.353	0.347	0.308	0.413	0.357	0.287	0.360	0.333	0.304	0.356
59	2003	0.376	0.252	0.268	0.323	0.301	0.325	0.383	0.384	0.392	0.333	0.333	0.357	0.320	0.319	0.319
60	2004	0.341	0.263	0.274	0.334	0.286	0.336	0.369	0.309	0.399	0.347	0.330	0.403	0.342	0.302	0.374
62	2006	0.404	0.316	0.247	0.306	0.310	0.369	0.381	0.395	0.377	0.344	0.337	0.361	0.325	0.302	0.316
63	2007	0.395	0.322	0.248	0.336	0.330	0.362	0.400	0.382	0.419	0.353	0.342	0.363	0.313	0.317	0.360
64	2008	0.372	0.276	0.277	0.316	0.303	0.474	0.377	0.341	0.411	0.382	0.364	0.366	0.325	0.304	0.352
66	2010	0.380	0.291	0.267	0.354	0.335	0.418	0.401	0.390	0.408	0.352	0.350	0.360	0.335	0.300	0.353
68	2012	0.327	0.289	0.240	0.323	0.351	0.423	0.408	0.372	0.402	0.323	0.321	0.351	0.361	0.314	0.374

Source: Own calculations using NSSO Consumption Expenditure Survey (47th to 68th round)

The Gini coefficient values reveal that across all the states the inequality figures have increased slightly or at best remained constant. We also observe that the consumption inequality values are relatively small. Such low values of inequality can be credited to the inherent underestimation in a consumption survey. We also observe that there is annual fluctuation in the inequality values of the States, which is due to a specific issue arising out of the use of the Consumption Expenditure Survey (CES) of the NSSO[7]. The CES basically provides us with pooled data i.e. the households surveyed each year are different. Even though the households surveyed are similar and representative of the different class groups in the society, they are bound to have greater fluctuations if we try to capture the changes in inequality year on year. Though, the CES provides us with a fairly accurate overall trend for a longer period of time, annual inequality figures are bound to display deviations around the mean annual level of inequality for the State.

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[7] Our results are similar to Himanshu(2015) and Milanovic(2016). Both these studies use the quinquennial round of the NSSO to track the consumption inequality in India.

There are several other issues arising from the use of consumption expenditure data for calculating the extent of inequality. Firstly, the consumption surveys are generally based on a recall period i.e. the respondents are required to inform how much they consumed on a certain good in a given reference period (say, last one month). It is observed that given a smaller recall period respondents tend to overestimate their expenditure. Secondly, consumption expenditure surveys tend to underreport the level of inequality, because, even the poorest of the poor consume some basic necessity goods to survive. What is not captured is through what source such consumption has been enabled. In a developing country like ours, consumption needs are often met through short term loans taken through informal credit channels.

Finally, a general problem that exists in all NSSO surveys is that the super wealthy and poorest are often inadequately represented, which leads to underestimation of inequality.

An alternative to using the consumption data would be to use the Indian Human Development Survey (IHDS) data. The IHDS is a national, representative panel survey conducted across two rounds. The first round was IHDS-I which surveyed 41,455 households in 2004-05. The same households were re-interviewed in IHDS-II held in 2011-12, which provides a significant improvement on the CES as it provides us with a panel data and helps us derive the exact level of change in inequality over the time period. The survey provides estimates for both per capita monthly incomes from all sources as well as per capita monthly consumption expenditure for each household. This per capita monthly income estimates have been used to measure income inequality. The shortcoming of this dataset is that it has a small sample size and so far it has been conducted for only two years 2004-05 and 2011-12. Thus at best we can get a trend of rise or fall in inequality from this dataset only for this short duration. The values of income and consumption inequality generated using the two IHDS survey's is given below in Table 2.2.

Table 2.2: Consumption and Income Inequality Generated from IHDS Survey Data.

State	Gini Consumption		Gini Income	
	2004-05	2011-12	2004-05	2011-12
Andhra Pradesh	0.34977	0.36887	0.49872	0.45435
Assam	0.33704	0.37897	0.50468	0.49371
Bihar	0.32006	0.34842	0.48339	0.51178
Gujarat	0.35664	0.38039	0.59039	0.58282
Haryana	0.4044	0.41454	0.49454	0.55686
Karnataka	0.40335	0.39363	0.57548	0.52302
Kerala	0.42582	0.40321	0.55822	0.44647
Madhya Pradesh	0.42841	0.38769	0.53707	0.54588
Maharashtra	0.36051	0.34078	0.498	0.46728
Orissa	0.40519	0.40796	0.53236	0.51998
Punjab	0.31109	0.35524	0.47943	0.52582
Rajasthan	0.37398	0.36181	0.49151	0.51035
Tamil Nadu	0.37737	0.41768	0.48141	0.45711
Uttar Pradesh	0.3967	0.37866	0.52752	0.51854
West Bengal	0.37557	0.35826	0.51904	0.56005

Source: Own calculations from IHDS consumption and income survey of 2004-05 & 2011-12.

The values of consumption and income inequality bring to light some interesting issues[8]. Firstly, the consumption inequality estimates obtained by using IHDS are in a similar range as those obtained by the CES. Secondly, the above inequality measures help us compare the difference in levels of inequality obtained from consumption and income estimates. The income inequality measures are significantly higher than the corresponding consumption inequality estimates. This empirically establishes our earlier proposition that consumption estimates tend to underestimate the level of inequality.

The only contrasting and surprising result that we observe from the IHDS survey is that from 2004-05 to 2011-12 inequality has declined in many states. This is true for both measures of inequality (consumption and income). What is even more interesting is that for some states like Gujarat, Haryana, Orissa and Tamil Nadu the consumption and income measures for inequality have moved in the opposite direction. While the value of consumption expenditure has increased marginally in these states, the income inequality has actually gone down. If the survey results are to be believed it raises two important questions. First, what happened in this period of 2004-05 to 2011-12 that

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[8] Our results are similar to Dubey (2016). Their paper actually uses only the IHDS-1 data and thus gives income inequality values for 2004-05 only.

led to a fall in income inequality? We try to figure out a probable answer to this trend when we discuss the impact of public expenditure on social services on inequality in the subsequent section. The second question is why in some states we see the consumption and income inequality moving in opposite directions. A possible explanation for this trend is that there is a tendency for consumption to be relatively stagnant across different social groups. Secondly, changes in income can also be attributed to increase from new temporary sources which if coming up for the relatively poor, will tend to bridge the inequality gap.

Besides the CES and IHDS we can also obtain a different measure of inequality by using the All India Debt and Investment Survey (AIDIS) also conducted by NSSO. The AIDIS collects information on assets like land holdings, livestock, and agriculture machinery. The survey also provides information on financial assets of households like shares, deposits and amount receivable by households. The issues faced in utilizing the AIDIS survey are similar to other survey measurements. There is a tendency of respondents to under-report their wealth holdings. Also, there is usually an under-sampling of super wealthy households which leads to underestimation of inequality (Anand & Thampi, 2016).

(Anand & Thampi, 2016) utilize the 48th (1991), 59th (2002), and 70th (2012) rounds of AIDIS conducted by the NSSO. They calculate state level Gini coefficients using the survey to provide for a measure of wealth inequality in the Indian states.

We would utilize their results for wealth inequality to draw a comparison with the consumption inequality results that we have calculated. Table 2.3 shows the decadal growth rate of the respective state and corresponding figures for wealth inequality. Our own estimates of consumption inequality for the corresponding years have been added to the table to make a comparative analysis easier.

Table 2.3: Decadal Growth Rates, Wealth Inequality and Own Consumption Inequality Estimates

	Decedal Growth Rate			Wealth Inequality Gini				Consumption Inequality Gini		
STATE	1991-02	2002-12		1991	2002	2012		1991	2002	2012
Andhra Pradesh	5.41	12.19		0.68	0.72	0.72		0.328	0.362	0.380
Assam	3.17	23.27		0.52	0.52	0.69		0.236	0.225	0.289
Bihar	0.93	8.38		0.6	0.6	0.67		0.265	0.251	0.267
Gujarat	6.42	20.67		0.63	0.65	0.69		0.304	0.387	0.354
Haryana	3.16	28.98		0.65	0.68	0.71		0.273	0.299	0.351
Karnataka	4.67	13.28		0.6	0.65	0.67		0.350	0.353	0.423
Kerela	7.21	25.62		0.61	0.63	0.64		0.362	0.347	0.408
Madhya Pradesh	4.87	18.55		0.62	0.6	0.74		0.313	0.308	0.372
Maharashtra	4.65	38.73		0.69	0.68	0.8		0.439	0.413	0.402
Odisha	3.07	9.4		0.56	0.61	0.6		0.289	0.357	0.352
Punjab	3.44	17.9		0.66	0.68	0.75		0.312	0.287	0.321
Rajasthan	2.32	10.4		0.56	0.55	0.63		0.381	0.360	0.360
Tamil Nadu	5.24	25.05		0.74	0.71	0.74		0.380	0.333	0.361
Uttar Pradesh	1.78	12.19		0.59	0.59	0.63		0.388	0.304	0.314
West Bengal	4.27	19.99		0.6	0.64	0.75		0.318	0.356	0.374

Source: wealth estimates from (Anand & Thampi, 2016) using AIDIS. Consumption estimates are own source calculations from CES.

The wealth inequality estimates show very high levels of inequality across states. The wealth inequality has gone up significantly in the last decade. Interestingly, these were the years in which we experienced the highest growth rates. The higher level of wealth inequality also points out to the fact that when it comes to assets and resources the gap between the rich and poor is significant and increasing sharply. This is despite the fact that NSSO surveys do not adequately cover the top and bottom strata of the society and are to an extent an underestimation of inequality.

As we have seen in the above analysis, different survey estimates provide different levels and extent of inequality in the country. The measure of consumption, income and wealth inequality have also projected that even though there might be disagreements about the inequality prevalent in our country, one thing that can be easily pointed out is that there definitely exists a growth equity trade-off and growth

post-liberalisation can be labelled as anti-poor. The increasing or at best constant levels of inequality across states validate this assertion.

Having highlighted the prevalence of increasing inequality despite rapid growth, we turn to the question whether this high growth-increasing inequality dichotomy can be curbed using affirmative government action. In the next section we analyse how social services expenditure (considered to be pro-poor) in Indian states has changed and whether linkages can be drawn between growth, inequality and social services expenditure in the Indian context.

Chapter 3

Trends in Economic Growth, Inequality and Social Service Expenditure in India

The traditional economic view on the linkages between economic growth and inequality are mostly influenced by the inverted U-curve hypothesis of Kuznets[9]. Kuznets (1955) by his inverted U-curve hypothesis basically propounded that as we go through a path of increased economic growth, we are bound to experience an increase in inequality in the initial phases and a decline only in the later phase. Bhagwati (1958) took a further extreme view on this by giving us the concept of immiserizing growth, which meant that process of industrialization and economic growth can not only increase inequality but also increase poverty. The inverted U-curve hypothesis has stood the test of time and has been supported and empirically tested by many researchers.

But in recent years, many critiques of this hypothesis have emerged. Fields (1989) has argued that the real question about Kuznets's inverted U-curve is not whether it exists but whether it can be avoided. Fields further argues that income distribution is determined by the *type* of development as it is determined by the *level* of development.

As a counter to the traditional economic view focussing on economic growth, it is being increasingly recognised that qualitative aspects of economic growth are more important than economic growth per se. These qualitative aspects are determined by overall economic policy and government intervention through the public expenditure mechanism Schwartz & Ter-Minassian (2000).

India in the past two decades has experienced rapid economic growth. Post 2003 India's growth rate has averaged between 6-8%. Despite being seen as a success story for its economic growth, India has not been successful in bringing about a more equitable income distribution. The very process through which this economic growth has been achieved is often blamed for its failure in reducing inequality.

 Ghosh (2017) explains growing inequality despite steady economic growth by means of exclusion through incorporation, a process found typical of capitalist accumulation around the world. The development that is projected hinges on the deprivation of the

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[9] Kuznets inverted U graph states that as an economy grows, the market forces will first tend to increase and then eventually decrease economic inequality. This hypothesis was first advanced by economist Simon Kuznets.

marginalised society from having the means to acquire assets, bargaining power for a better wages, education system and income generating opportunities. Capitalism has thrived on these past and present social and economic discrimination. It has materialized on the structural in-capabilities of the marginalized by incorporating them in the system in a way that only results in their exploitation to the benefit of the capitalists. This can be seen in the small farmers being exposed to volatile deregulated markets with minimum state protections, the rising population in the informal sector due to lack of skill development and job opportunities, and also residents being displaced by developmental projects and unable to find a stable source of livelihood. Thus we have the marginalized contributing to the system but not getting the benefits that they should be entitled to.

Thus, it is safe to say that post liberalisation India has progressed in a path predicted by the inverted U-curve hypothesis of Kuznets. Recent literature has suggested we can skip the inverted U-curve with the right mix of economic policies. The World Bank in its World Development Report had suggested as early as 1990, that countries which significantly increased public expenditure on social services were successful in reducing inequality. In this context it is important to highlight the role of public expenditure in general, and social services expenditure in particular in reducing inequality.

Social scientists across the globe have been advocating the importance of social services expenditure by the governments for an economy to be on a sustainable and equitable growth path. According to Mittal (2016) public spending on social sector is given importance for at least two reasons. First, the extent of deprivation in the developing countries is too large to be left to market forces alone to take care of sufficient spending required for human development. Second, the poor utilizes more government services as compared to richer households. Ospina (2010) undertakes the study of 19 Latin American countries from 1980 to 2000 to analyse the determinants of income inequality with a special focus on education, health and social security. The results show that education and health have a negative impact on inequality whereas social security seems to have no significant effect.
Similarly Niehues (2010) argues the redistributive role of public spending given the equity- efficiency trade off. Policy makers often argue that state interventions in the form of social expenditure are efficiency decreasing. On the other hand social

scientist believe that market forces alone without the guidance of government cannot bring about the necessary equitable outcome, especially when the resources are concentrated in the hand of few.

The Indian economy underwent significant policy shifts in the 1990s. These shifts were aimed towards opening up of our economy with the desire of achieving rapid economic growth. It was thought that the benefits of the growing economy would reach out to all as hypothesised by the Kuznets's inverted U curve. The present situation doesn't see the downward sloping part of the cure being realized.

In our study, we try to go a level deeper and bring out a state level analysis of trends in growth, inequality and public expenditure. India, being a federal country has many different political parties in government in the states. Thus, the economic policies and thereby public expenditure in the states vary due to the inherent political, social and institutional differences in our federal setup.

We examine the growth levels of the State Domestic Product (SDP) in the post liberalization era from 1991-2012 for 15 major Indian states. We also examine the trends in expenditure in social services as a ratio of SDP for the above mentioned period. Lastly, we see the trend in inequality in this time frame. The inequality figures have been arrived using our earlier results from the CES and IHDS data for consumption and income inequality respectively. We also plot the wealth inequality results from (Anand and Thampi, 2016) for a more complete analysis.

STATE LEVEL TRENDS-

Fig 3.1: Gujarat
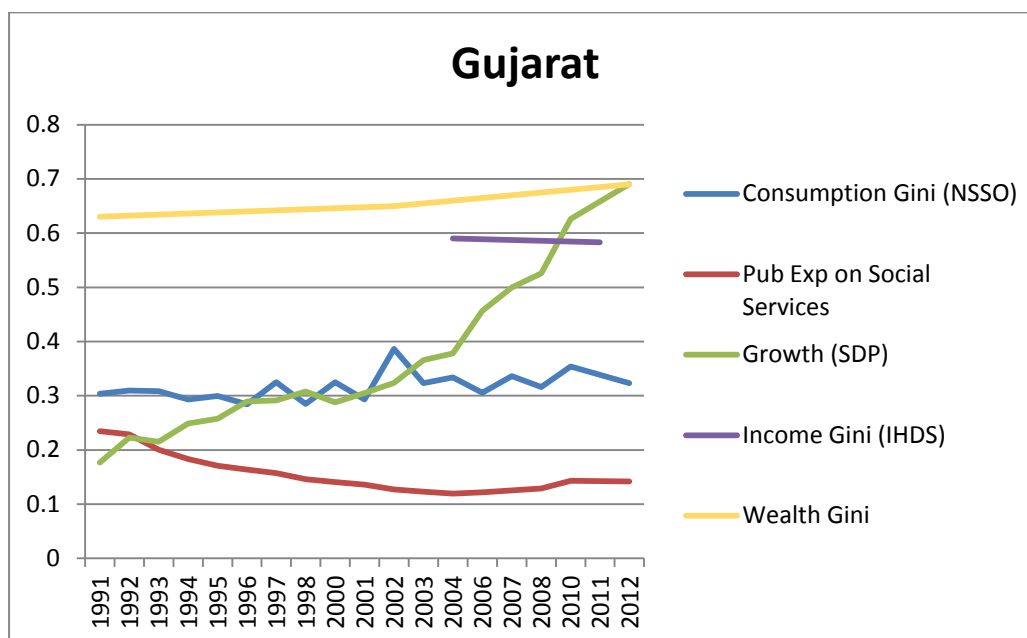
1991-2012

From the graph we can see that the public expenditure on social services in Gujarat declines steadily from 1991-2003 and then a slight increase from 2004-2012 period. The consumption Gini coefficient remains constant with some fluctuations during the concerned period. Wealth inequality on the other hand shows slight increase from 1991- 2002 and comparatively greater increase from 2002-2012.

2004-2012

In this period we see a slight increase in public expenditure corresponding to which the IHDS income inequality data shows a slight decline. This is in tandem with the theory that public expenditure in social services aids in reducing inequality.
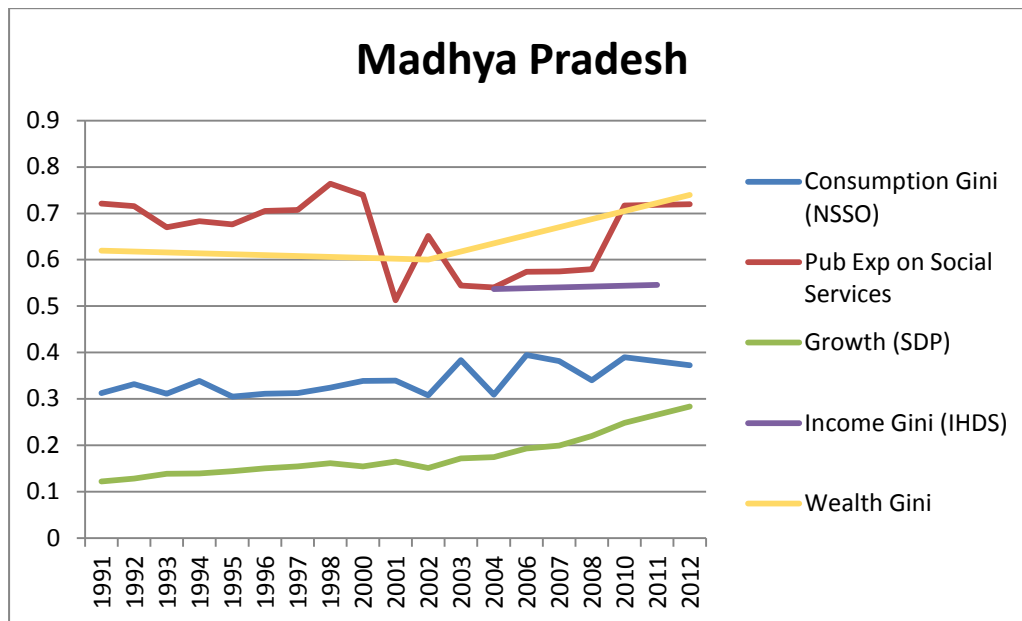
Fig 3.2: Kerala
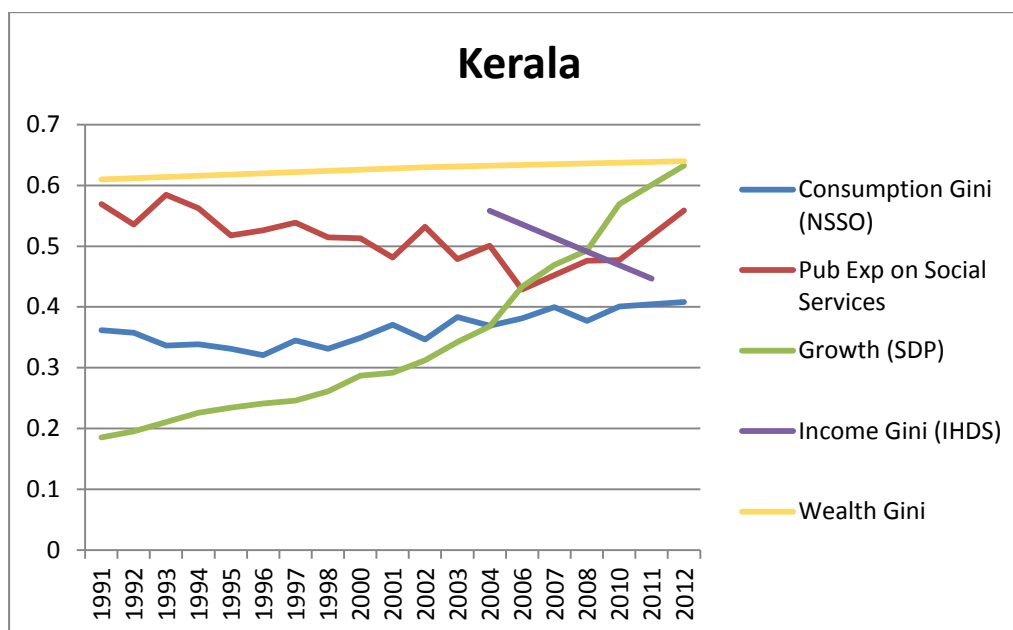
1991-2012

From the above graph we can see that public expenditure in social services declines from 1991-2006 and rises from 2006-2012 with fluctuations in between. Corresponding to this we see that consumption equality has risen from 1991-2007 where after it stagnates more or less. This shows how inequality has worsened in the years that saw a low public expenditure in social services. Wealth inequality estimates on the other hand shows a steady increase.

2004-2012

The period from 2004-2012 shows an overall increase in public expenditure, with a dip in 2006. On analysing the IHDS income inequality data for the corresponding period we see there has been a sharp decline in equality. This shows that for the state of Kerala increase in public expenditure has resulted in a corresponding decrease in inequality.

Fig 3.3 Madhya Pradesh

Madhya Pradesh

Legend:
- Consumption Gini (NSSO)
- Pub Exp on Social Services
- Growth (SDP)
- Income Gini (IHDS)
- Wealth Gini

1991-2012

For the given study period public expenditure in social services has remained constant with some sharps dips and rises in between. Consumption Gini shows a slight increase with some intermittent troughs and crests. Wealth Gini shows a slight decline from 1991-2002 and rises sharply from 2002-2012.

2004-2012

The period from 2004-2012 shows an increase in public expenditure on social services. Income Inequality from IHDS for the same period shows no change whereas a slight increase has been observed in consumption inequality.

Fig 3.4: Punjab
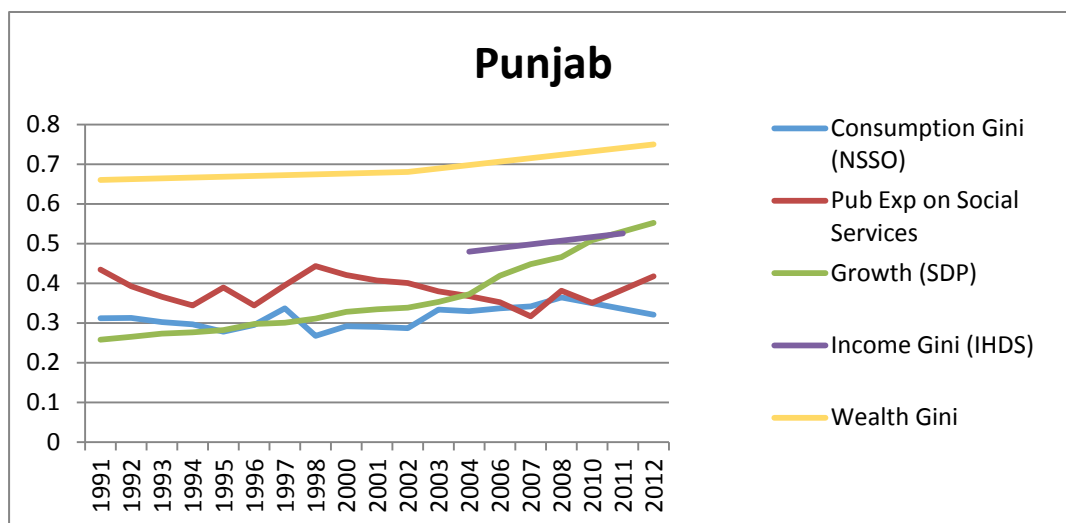
1991-2012:

For the overall study period, we see that the public expenditure levels have not been constant and fluctuated over the years. Thus, the level of public expenditure in 2012 compared to that in 1991 is more or less the same. Similarly, the value of consumption Gini has fluctuated over the years and remained constant from 1991 to 2012 levels. On the other hand, wealth inequality has increased slightly from 1991 to 2002 and very sharply from 2002- 2012 levels.

2004-2012:

If we consider the smaller period from 2004-12, we see that public expenditure levels are higher in 2012 compared to the 2004 levels. But, it is important to point out that the increase has not been consistent and there have been large annual fluctuations. We also see that the Income Gini values calculated using IHDS data has shown a rise in Income inequality in this period. This, basically implies, that even an increase in public expenditure on social services might not be enough, and the inequality will not decline unless the expenditure policy is consistent and expenditure is increasing at a constant rate. It is also important to point out that growth (SDP) has increased sharply in this period and public expenditure has not shown a similar proportional increase, which might be another reason for increasing income inequality in the period.

Fig 3.5: Rajasthan

Rajasthan
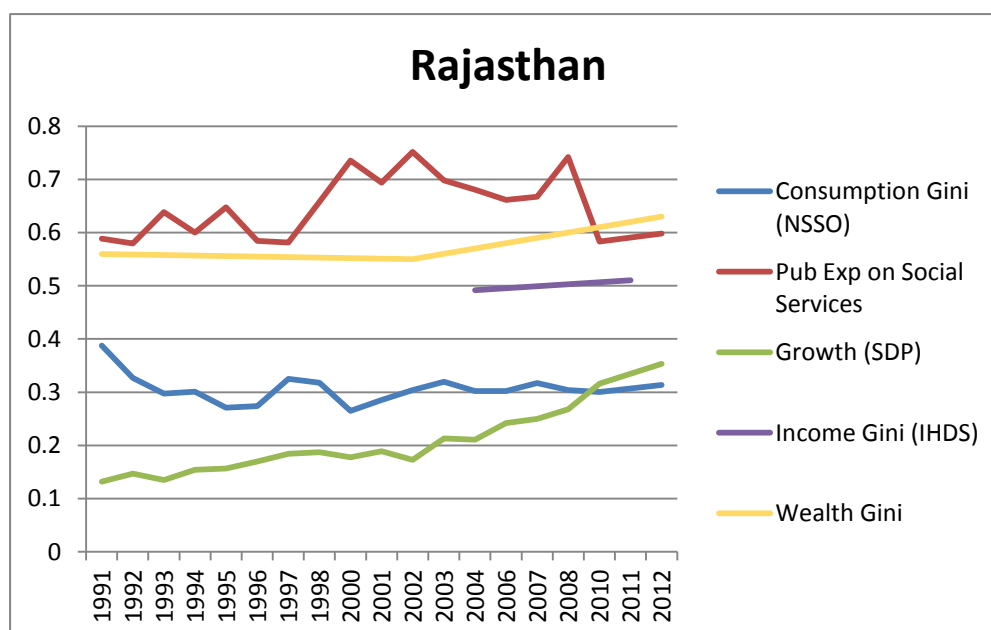
1991-2012

Public expenditure on social services is more or less constant for the overall study period with some major fluctuations. Similarly consumption Gini remained constant with some intermittent fluctuations. Wealth Gini showed a slight decline from 1991-2002 and a sharp rise form 2002-2012. The period of decline in wealth Gini is marked by some evident crests in the public expenditure while the period of increase in wealth inequality showed an evident decline in public expenditure.

2004-2012

Public expenditure shows a decline when seen in a more constricted period from 2004-2012 whereas Income inequality measured from IHDS data shows a slight increase. Wealth inequality is on a rise and consumption inequality is stagnant. The possible reason for it can be the decline in public expenditure.

Fig 3.6: Tamil Nadu
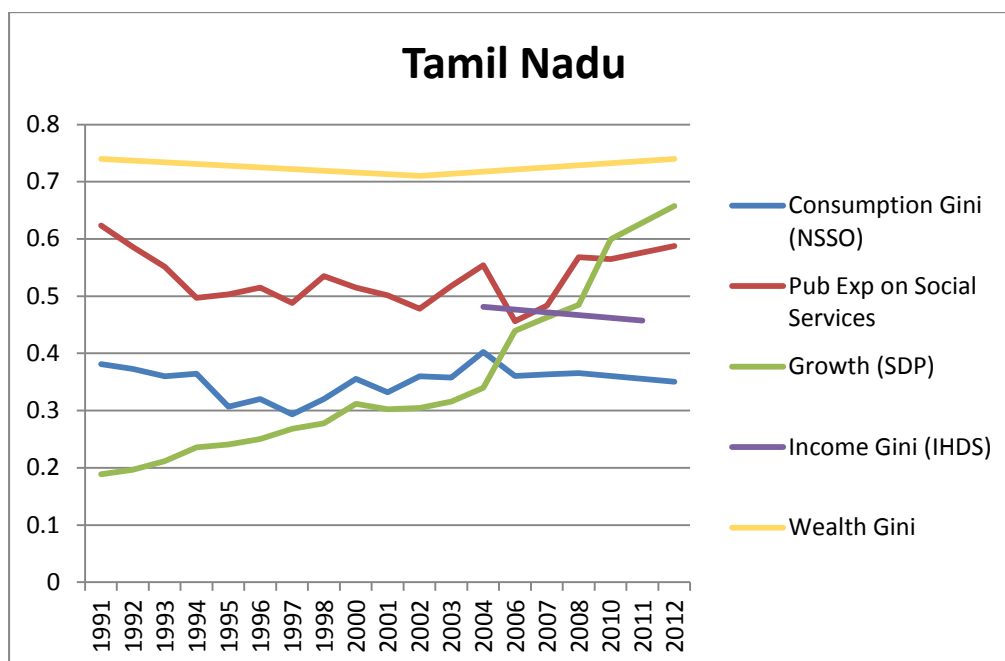
1991-2012

For the period from 1991-2012 public expenditure has overall remained constant with many fluctuations in between. On a closer look we see that public expenditure has declined from 1991-2006 and has risen from2006-2012. Consumption Inequality has increased slightly in the period 1991-2004 and decreased thereafter. Wealth inequality has decreased from 1991-2002 and increased from 2002-2012. Consumption inequality is seen to rise with a decline in public expenditure and vice versa. Wealth inequality on the other hand rises despite an increase in public expenditure. A possible reason for which can be that the high and middle income are better able to exploit the benefits that arise from expenditure on public services by means of their better position in the society resulting an increase in wealth inequality .

2004-2012

The smaller period from 2004-2012 shows a sharp increase in public expenditure on social services corresponding to which income inequality shows a sharp decline. We observe a decline in consumption inequality as well.

Fig 3.7 Andhra Pradesh
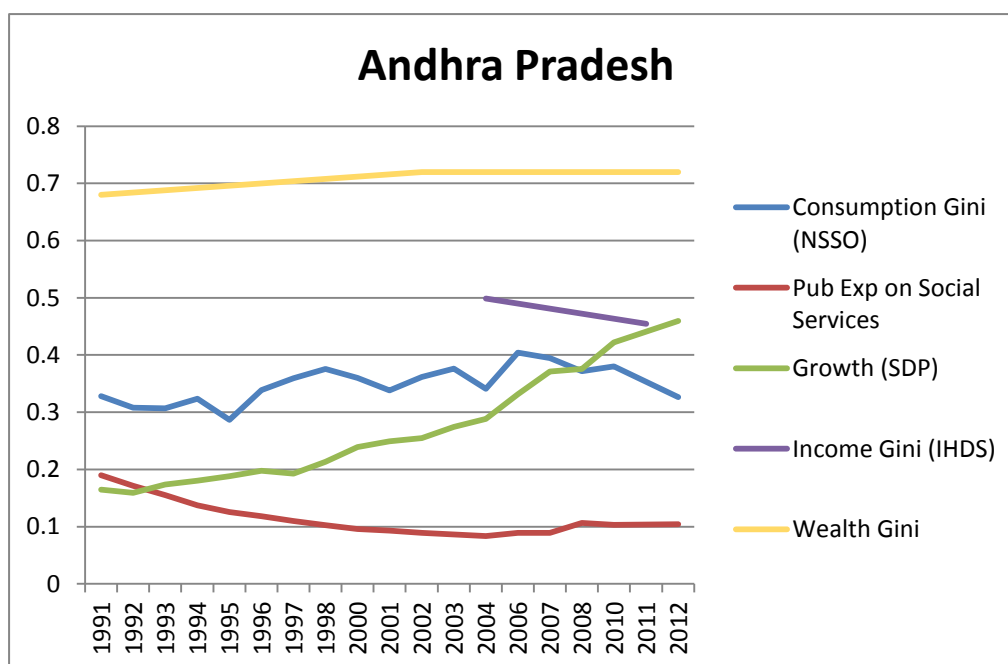
1991-2012

The given study period is observed with a gradual decline in public expenditure on social services. Consumption inequality remains constant overall with a gradual increase in the intermittent period from 1995-2007. Wealth inequality shows an increase in the given period corresponding to the declining public expenditure.

2004-2012

The period from 2004 to 2012 shows a very slight increase in public expenditure. IHDS income inequality depicts a sharp decline. Consumption inequality also projects a decline

Fig 3.8 Bihar
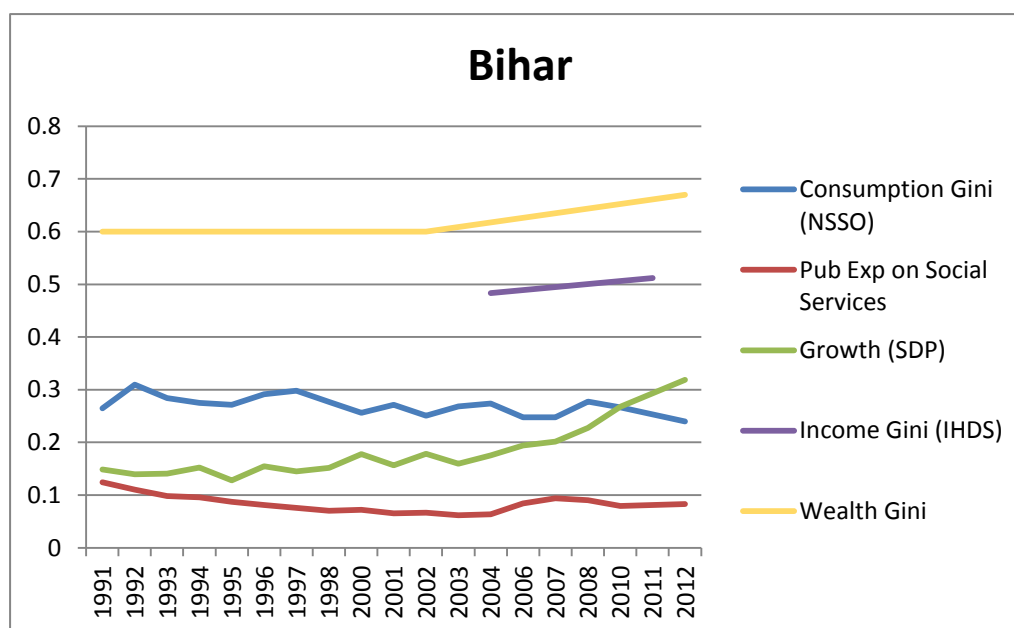
1991-2012

Public expenditure in social services for the study period declines very slowly up to
2003. There is a slight increase from 2004-2008 after which it remains constant.
Overall it remains constant with some small fluctuations. Consumption Gini also
shows a similar trend of an overall constant inequality with intermittent fluctuations.
Wealth Gini does not change from 1991-2002 after which it rises sharply. The low
level of investment in public expenditure could explain the inequality rising or at best
remaining constant.

2004-2012

In this shorter period we see public expenditure rises slightly and then becomes
constant. Income Gini shows a rise in the given period. Despite the increase in public
expenditure inequality is on a rise owing to the low level of expenditure which for
the most of the period has shown a decline. The slight increase in this short span fails
to have the desired effect on inequality.

Fig 3.9: Haryana
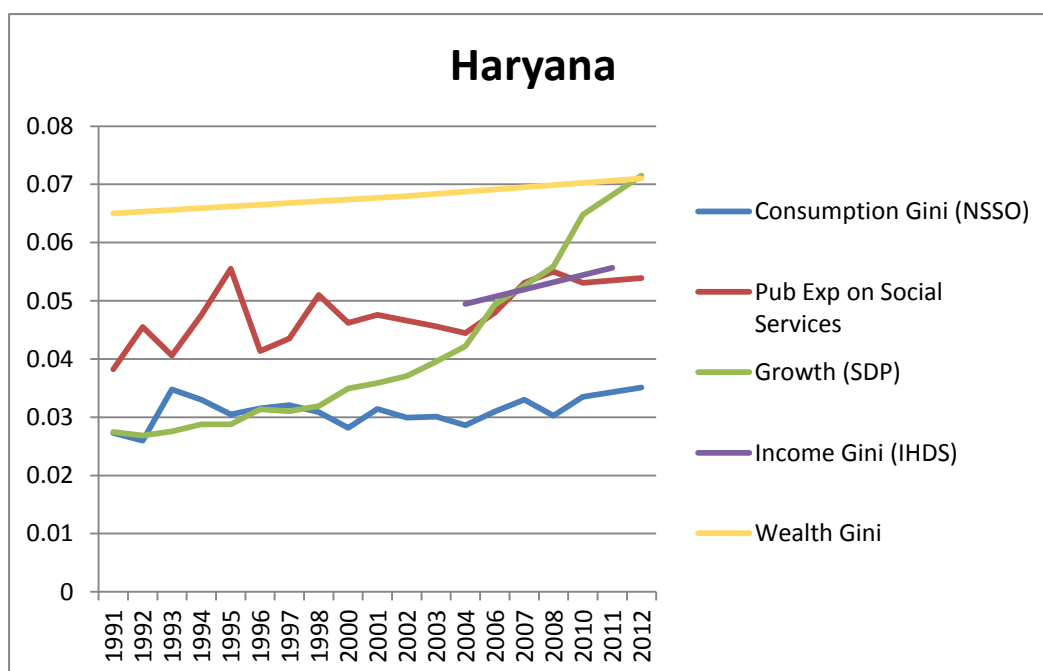
1991-2012

In the given time period we see the public expenditure on social services shows an overall increase with many intermittent troughs and crests. Despite this increase we see the consumption inequality increases gradually and so does wealth inequality. The expenditure even though has shown an increasing trend, it can be observed that neither has the increase been consistent year on year, nor the increase has been in proportion to the rapid growth rate (SDP).

2004-2012

Even when we consider the shorter period from 2004-2012, inequality be it income, consumption or wealth has shown a steady increase. The incoherent increase in public expenditure fails to aid in reducing inequality. Also how effective the increase has been in benefitting the lower income groups is an important factor in reducing inequality.

Fig 3.10 West Bengal

Fig 3.10 West Bengal chart titled "West Bengal" showing Consumption Gini (NSSO), Pub Exp on Social Services, Growth (SDP), Income Gini (IHDS), and Wealth Gini for years 1991–2012.
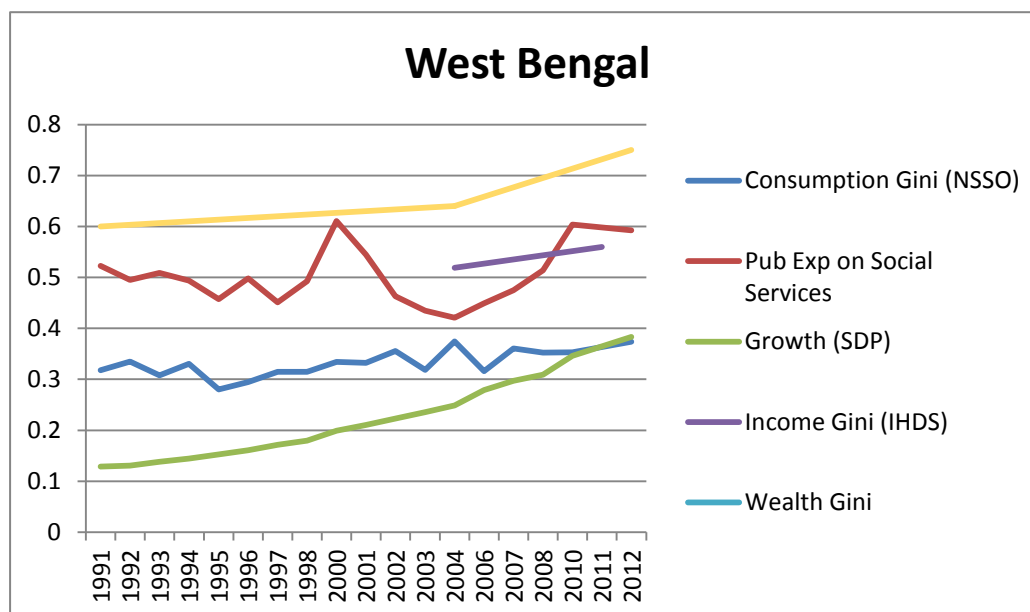
1991-2012

For the given period public expenditure in the year 2012 is higher than what it was in 1991. Overall there is an increase but there are many points in between where the expenditure has declined sharply. Consumption and wealth inequality has both shown an increase.

2004-2012

Public expenditure rises sharply in this shorter span but alarmingly so does income, wealth and consumption inequality. This anomaly for the larger period and the small period considered can be attributed to the fact that expenditure fell very sharply between 1999 and 2004. In this period the level of expenditure was well below even the 1991 level. Thus, even though expenditure has picked up post 2004, the level effect arising from the very low levels of expenditure in the preceding period would have accounted for the increase in inequality from 2004-05 to 2011-12

Fig 3.11 Karnataka

Karnataka

Legend
Consumption Gini (NSSO)
Pub Exp on Social Services
Growth (SDP)
Income Gini (IHDS)
Wealth Gini
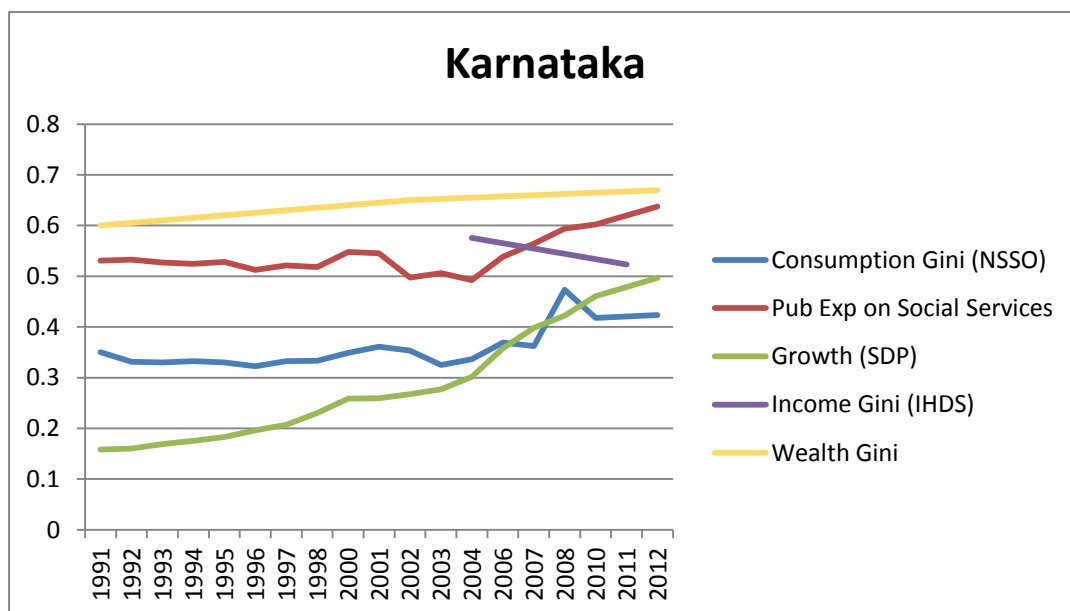
1991-2012

We see that public expenditure on social services for the given period remains constant for most of the period and shows a sharp increase post 2004. Consumption inequality also remains constant up to 2003 and rises thereafter contrary to the expectation. Wealth inequality is seen to increase gradually over the period concerned.

2004-2012

In the smaller period from 2004-2012 we see a sharp increase in public expenditure on social services. We also observe that Income Gini calculated from IHDS data has shown a sharp decline in Income inequality. Thus an increase in public expenditure in this period helps in bringing down income inequality

Fig 3.12 Maharashtra
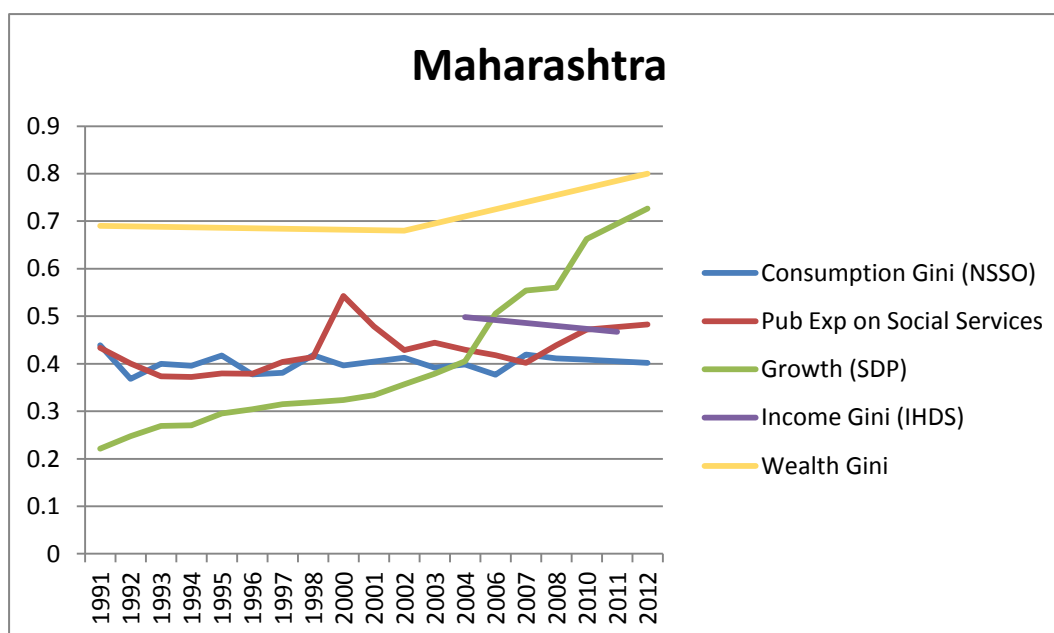
1991-2012

Public expenditure in the given period has remained more or less constant. The expenditure in 2012 is higher than that in 1991. Consumption inequality over the period shows very small changes. Wealth inequality on the other hand declines slightly from 1991 to 2002 and sharply increases thereafter. Increase in growth rate of the state is accompanied with increasing wealth inequality.

2004-2012

In the shorter span from 2004-2012 public expenditure depicts an increase corresponding to which we see a conspicuous decline in Income inequality. Thus in this smaller period we observe the positive effect of increase in public expenditure on declining inequality.

Fig 3.13 Odisha

Odisha

Legend:
- Consumption Gini (NSSO)
- Pub Exp on Social Services
- Growth (SDP)
- Income Gini (IHDS)
- Wealth Gini
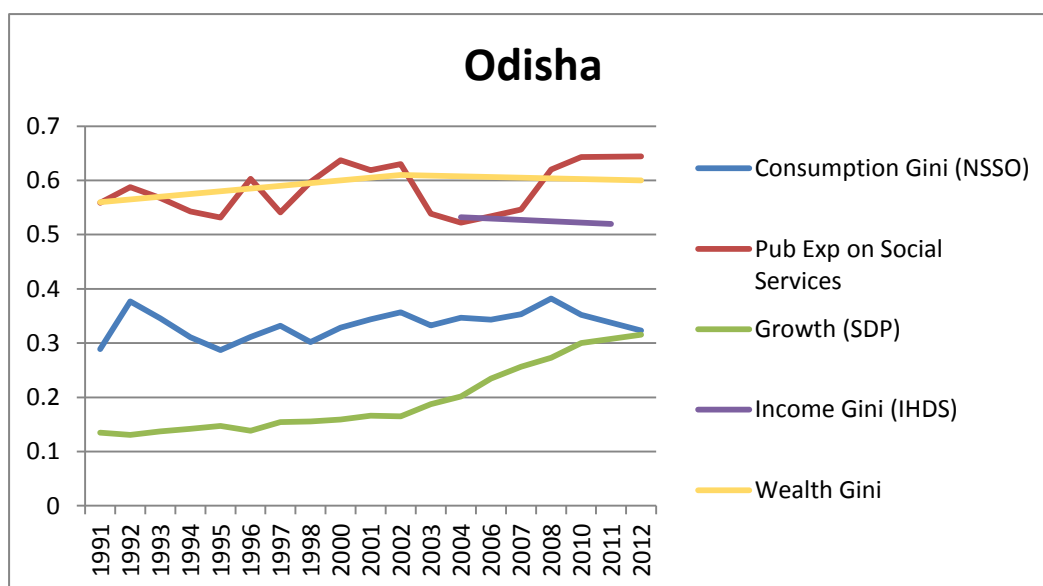
1991-2012

For the overall study period we see that public expenditure in social services has increased in 2012 compared to what it was in 1991. This increase has not been constant over the years but has been seen with intermittent dips. Consumption inequality has remained almost constant with few fluctuations over the years. Wealth inequality shows a very slow increase over the period in concern. Thus the overall low increase in public expenditure can be seen as cause of this increase in wealth inequality.

2004-2012

For the smaller period form 2004-2012 we see that public expenditure increases sharply. Corresponding to this we see a decline in income expenditure. This decline in this shorter period can be explained by the increase in public expenditure in this span.

Fig 3.14 Assam
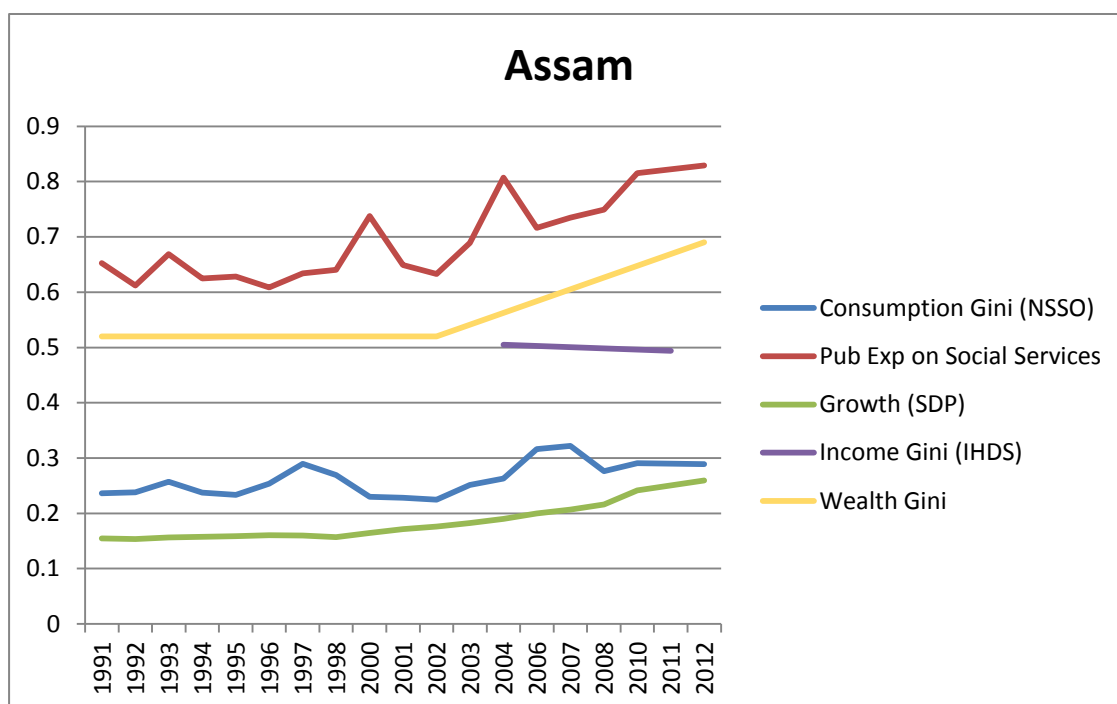
1991-2012

In the state of Assam we observe that public expenditure on social services has steadily increased over the period of study. Consumption inequality shows a slow increase from 1991 to 2012. Wealth inequality remains constant from 1991 to 2002 where after it shows a sharp increase. Despite an increase in public expenditure wealth inequality and consumption inequality shows an increase. A probable cause for it can be policy paralysis where lower income groups were not able to make use of the services to their benefit.

2004-2012

When we consider the shorter span from 2004 to 2012 we see that public expenditure rises sharply. Income inequality from IHDS data shows slight decline in the given period. Although we see that this decline is not in congruence with the sharp increase in public expenditure. With better targeted policies there could be a sharper decline in Income inequality.

Fig. 3.15: Uttar Pradesh
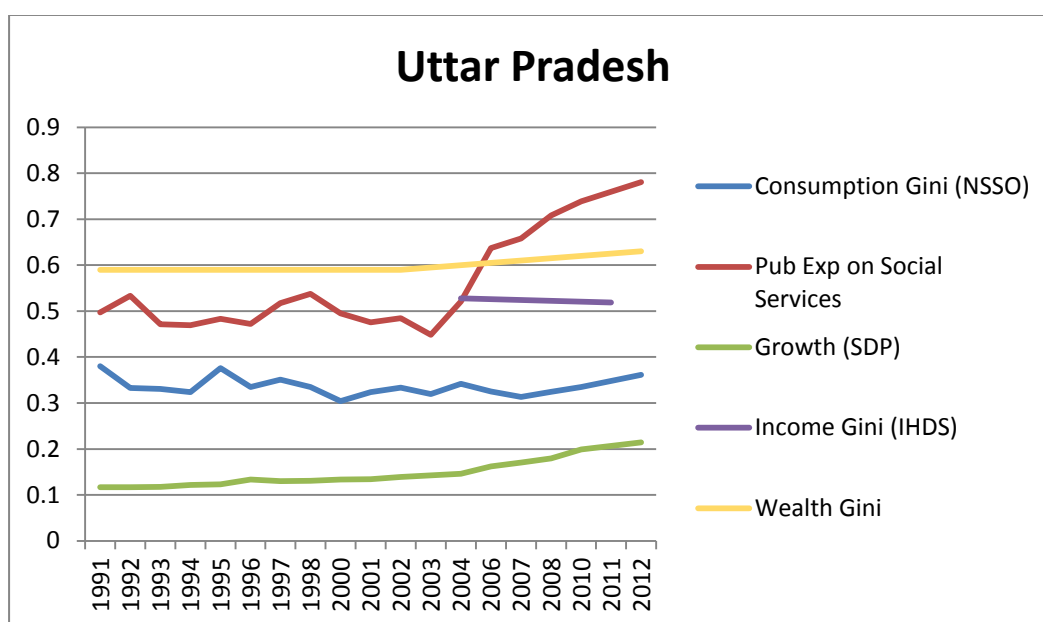
1991-2012

For the given study period we observe that public expenditure on social service has remained constant until 2003 where after it showed a sharp increase. Consumption inequality shows some fluctuations and remained constant more or less. Wealth inequality shows a very small increase from2002 to 2012 before which it showed no changes. Thus the increase in public expenditure on Uttar Pradesh does not result in evident changes in inequality.

2004-2012

When we take the shorter period from 2004 to 2012 we see a sharp increase in public expenditure. Income inequality in this shorter span shows a small decline. This could be accounted to the fact that expenditure before this period remained more or less constant. Thus the increase in subsequent years did not made make much difference to inequality.

The above State wise analysis points out that consumption inequality across states has increased only slightly and at best remained constant. Public expenditure on social services does not seem to reveal strong correlation with consumption inequality as per the trend analysis. Similarly, wealth inequality has increased rapidly for almost all

states and shows no major correlation with public expenditure on social services. On the other hand, the income inequality estimates are available for a smaller period of 2004-2012. In this period we see a correlation between income inequality and social services expenditure. Most states in which public expenditure has risen have seen a fall in income inequality and vice versa. It is also important to note that rise in public expenditure from 2004 level to 2012 level is alone not sufficient to lead to a fall in income inequality. What is required is a consistent expenditure policy. Thus, we observe that income inequality has come down only in those states in which public expenditure on social services has not only increased, but increased consistently and in line with the rapidly growing State Domestic Product (SDP).

The analysis of the individual states has been quantified in the table below by means of percentage change in state domestic product, public expenditure and inequality over the two time periods taken into consideration

Table 3.1: Change in SDP, Public Expenditure on Social Services and Inequality for Two different Time Periods; 1991-2012 and 2004-2012

STATES	1991-2012	1991-2012	1991-2012	2004-2012	2004-2012	2004-2011
	%change in SDP	% change in public expenditure	%change in consumption Gini	%change in SDP	% change in public expenditure	% change in income Gini
ANDHRA PRADESH	179.32	-45.25	-0.38	59.41	24.60	-8.90
BIHAR	114.23	-33.08	-9.39	81.52	31.25	5.87
GUJARAT	290.61	-39.57	6.37	82.70	18.43	-1.28
HARYANA	160.71	40.99	28.76	69.51	21.28	12.60
KARNATAKA	214.20	20.19	20.89	64.84	29.55	-9.12
KERELA	241.29	-1.82	12.88	71.70	11.65	-20.02
MADHYA PRADESH	132.25	-0.22	18.98	62.73	33.12	1.64
MAHARASHTRA	228.53	11.41	-8.43	79.31	12.53	-6.17
PUNJAB	114.09	-3.84	2.83	48.39	13.62	9.68
RAJASTHAN	167.33	1.628	-19.07	67.83	-12.11	3.83
UTTAR PRADESH	83.96	56.91	-4.99	46.72	49.81	-1.70
ASSAM	67.65	27.01	22.39	36.50	2.72	-2.17
ORISSA	134.36	15.28	11.70	56.37	23.42	-2.33
TAMIL NADU	248.65	-5.78	-8.06	93.46	6.08	-5.05
WEST BENGAL	196.90	13.29	17.59	54.01	40.78	7.90

Source: Author's own source calculation

The trends from individual states have been assessed above where some states show a conspicuous effect of public expenditure on inequality while in some public expenditure show no evident effect on inequality based on the data available.

The rising growth rates in the states rather than being an enabler of equitable distribution have become a cause of growing inequality. Allocation of resources and redistribution, the two major roles of the state as seen before independence have been reduced to mere allocation of resources. Post liberalization the redistribution has been left to the market forces, resulting in downplaying of the state as an instrument of inclusion (Himanshu, 2015). The inability of some of the states in redistribution of income through increased public expenditure on social services feeds into this argument. Thus the role of states as an instrument of inclusion needs to be revisited and incorporated in the underlying philosophy of policies aimed for the same.

Chapter 4

Regression Results and Conclusion

This study examines how inequality in Indian states is impacted by the public expenditure on social services. Inequality is impacted by various other factors and thus we need to incorporate some control variable in our framework. We postulate the following equation:

Gini = β_0+ β_1Expsdp+ β_{20}X+ ε_{it}

Where, Gini is our dependent variable measuring Gini coefficient of inequality, Expsdp is expenditure on social services as a ratio of state domestic product and represents our variable of concern for the given study. X is the matrix of control variables used in the study, namely:

Power => per capita power availability in a State.

Expsdp =>expenditure on social services as a ratio of State Domestic Product.

Sdppercapi => State Domestic Product per capita.

Revsdp => own tax revenue of the government as a ratio of SDP.

Modsec=> contribution of modern sector.

The economic rationale for using the above variable is discussed below.

One of the most common metrics of inequality is Gini coefficient[10]. We should ideally be using income as a measure to calculate income inequality using the Gini coefficient. But, due to unavailability of data on income distribution in India, we take consumption expenditure as a proxy for it.

Public expenditure on social services is our primary variable of concern as we try to see how the Gini coefficient reacts to the fluctuations in it across time. It is pivotal to our study as it is one of the most powerful tools that the government has at its disposal to build a level playing field. Growth in itself does not lead to an equitable distribution of income, instead it favours the group that has the means to appropriate

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[10] Gini coefficient is measure inequality of a distribution defined as the mean of absolute difference between all pairs of individuals for some measure.

from the opportunity presented. Thus public expenditure on social services is a mean to develop the necessary social infrastructure required for an equitable distribution of income.

Other independent variables used in our study are the control variables. Power represents the per capita power availability in a state. It is representative of the infrastructure development of the states. Electrification is primal for the development and advancement of any sector be it agriculture, industry or services. It is a basic requirement for a good quality of life for an individual and thus an important variable to control for the variation in Gini coefficient of inequality.

State domestic product per capita is another control variable used. It is used as a proxy for per capita growth of the states. Kuznets hypothesized that in the initial phase of development growth would lead to higher level of inequality. It is only with time that the benefits would trickle down and benefit all section of society and result in lower level of inequality. The study intends to evaluate how growth is impacting inequality in the Indian states.

Own tax revenue of the government as a ratio of state domestic product tells us about the size of the government or in other words the potential capacity of a state to meet its own expenses. The larger the size of the government the larger is the capacity of the state to spend on developmental sectors.

To control for variations we have also incorporated the contribution of the modern sector to the State Domestic Product. The share of industry combined with services is termed as modern sector. As a country embarks on a positive growth trajectory there is migration from agriculture to industry and services to benefit from the higher wages. People migrate from villages to the urban areas in search of higher paid employments. The growing modern sector widens the wage gap resulting in higher level of inequality. Thus we see how the changes in share of modern sector impact levels of inequality.

4.1: The Summary Statistics for the Variables in the Analysis

Table 4.1: Summary Statistics of the Variable Under Study

VARIABLES	(1) N	(2) MEAN	(3) SD	(4) MIN	(5) MAX
GINI	269	0.329	0.0433	0.225	0.474
Literacyrate	254	65.21	12.38	38	94
Power	269	122.1	147.3	16.69	932.8
Exp on SS/SDP	269	0.0662	0.0310	0.0317	0.229
SDP per capita	269	26,126	13,423	6,400	72,637
Own source revenue/SDP	269	0.142	0.0388	0.0806	0.265
Modern Sector share	269	0.735	0.0850	0.572	0.927

4.2: Fixed or Random Effects Model

For the econometric analysis the study estimates both the Fixed Effects Model and the Random Effects Model. Fixed Effects Model is useful in controlling the individual specific effects across the states with respect to inequality. It explores the relation between the independent and dependent variable within an entity which being the states in our case. Each individual state has its own characteristic which may or may not impact the inequality in the respective states. When using Fixed Effects Model the basic assumption is that the idiosyncratic differences across the states may impact or bias the dependent variable and thus need to be controlled for. On the other hand, Random Effects Model assumes the variation across the entities (states) to be random and not correlated with the dependent variable (Gini) in the model. Thus it is used when across entity variations have high influence on the dependent or outcome variable.

The econometric test to choose the more appropriate model between the two for the given study is called the Hausman's Test. It tests whether there unique errors are correlated with the repressors. The null hypothesis is that they are not correlated. If we fail to reject the null we use the Random Effects Model. Table (4.2) shows the result of our Hausman Test in which we fail to reject our null hypothesis that the errors are not correlated with the regressors and thus Random Effects Model seems to be more appropriate.

While the Hausman test suggests the use of Random Effects Model, the existing studies have shown results of both Fixed and Random Effects estimates and we will follow the same trend to draw a better comparative analysis.

HAUSMAN TEST:-

Table 4.2: Hausman Test Results

```
              ——— Coefficients ———
                (b)           (B)           (b-B)      sqrt(diag(V_b-V_B))
               fixed         random       Difference          S.E.

literacyrate   -.0002841    -.0002277     -.0000564          .000151
      power    -.0000272    -.0000188     -8.42e-06          .0000137
sdppercapita    7.60e-07     6.92e-07      6.77e-08          9.37e-08
ownsourcer~p    .3050758     .2516357      .0534401          .0317358
modernsector    .0920466     .1049895     -.0129429          .01856
expenditur~p   -.1946388    -.2087657      .0141269          .0453367

                   b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

             chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                     =        3.31
            Prob>chi2 =       0.6523
```

4.3 Regression result for Fixed and Random Effects Model

Table 4.3: Regression Results from Fixed Effects and Random Effects Model.

VARIABLES	(1) Fixed Effects	(2) Random Effects
Literacyrate	-0.000296	-0.000234
	(0.000396)	(0.000367)
Power	-2.66e-05	-1.83e-05
	(3.06e-05)	(2.74e-05)
Expsdp	-0.164	-0.178*
	(0.116)	(0.108)
Sdppercapi	7.37e-07**	6.68e-07**
	(2.90e-07)	(2.75e-07)
Revsdp	0.303***	0.248***
	(0.0883)	(0.0824)
Modsec	0.0962*	0.109**
	(0.0538)	(0.0506)
Constant	0.230***	0.226***
	(0.0278)	(0.0284)
Observations	255	255
R-squared	0.711	
STATE FE	YES	
Number of state1		15

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimation results depicting both Fixed Effects Model and Random Effects Model are presented in Table 4.3.

Random Effects Model shows that public expenditure on social services has a significant and negative impact on the Gini coefficient of the states which is consistent with the existing theoretical analysis. It is statistically significant at a 10% level. An increase in public expenditure aids the development of better education and health and employment generation to augment the incomes of the marginalized sections of the society whereby decreasing the income gap. If neglected it leads to significant increase in income inequality. Fixed Effects Model fails to show a significant result.

Per capita State Domestic Product is strongly significant at a 5% level and has a positive relation with inequality. The result show growth to be equipping inequality, the rationale for which follows from the argument that individuals with greater wealth, capital and access to resources have a head start and thus are able to appropriate the opportunities presented by a growing economy. Without the necessary government interventions the rich would continue to grow richer and poor poorer leading to further widening of income gap. Both the models test the state domestic product per capita to be significant.

The share of modern sector in State Domestic Product is significant at 5% level and positively correlated with inequality. The rising share results in increase in inequality. As discussed earlier the migration of labour from traditional sector to the modern sector leads to an increase in the already wide income gap. The government needs to take steps that would lead to the advancement of the traditional sector to mend the wage differentials. Migration and increasing share of modern sector alone would only culminate into rising inequality figures.

The power and the literacy variables show a negative relation but are statistically insignificant. Theory suggests that the literacy and power variables should have an inverse relation with inequality. The test results show them to be statistically insignificant. It is rather surprising to observe that these two social variables are insignificant determinants of inequality. A major reason for this could be the fact that our estimates of inequality are based on consumption expenditure.

4.4: Regression Results after Dropping Insignificant Variables

We drop these two variables in the following regression to see if it has any positive impact on the regression model and the results.

Table 4.4: Regression Results of Fixed Effect and Random Effects Model after Dropping the Insignificant Variable

VARIABLES	(1) Fixed Effects	(2) Random Effects
Sdppercapi	5.69e-07**	5.48e-07**
	(2.60e-07)	(2.52e-07)
Revgdp	0.302***	0.248***
	(0.0846)	(0.0794)
Modsec	0.0830*	0.0989**
	(0.0429)	(0.0412)
Expsdp	-0.216*	-0.214**
	(0.113)	(0.105)
Constant	0.225***	0.221***
	(0.0267)	(0.0271)
Observations	270	270
R-squared	0.712	
STATE FE	YES	
Number of state1		15

Dropping the two insignificant variables, as expected has improved our significance levels for remaining independent variables. The public expenditure on social service, share of the modern sector in economy and SDP per capita variables are significant at the 5% level. Whereas, the own source revenue/SDP variables is significant at the 1% level.

CONCLUSION & POLICY RECOMMENDATIONS

"Virtually all the problems in the world come from inequality of one kind or another"

- Amartya Sen

This study attempts to present an analysis of the extent of inequality prevalent in the Indian states. In the Indian context, very few studies have been undertaken to point out the relationship between inequality and public expenditure. Even fewer studies have studied state wise patterns of inequality in the country. Thus the aim of this dissertation is to fill this gap in literature. We have also studied the linkages between growth, inequality and expenditure on social services. Using, the Consumption Expenditure Survey (CES) of the NSSO and IHDS survey we computed two measures of inequalities for Indian states: consumption and income inequality. Consumption inequality estimates for almost all states show a level of rigidity and have remained constant (1991-2012). On the other hand, income inequality estimates obtained for the period 2004-12, have shown mixed results with increase in inequality in some states and decline in inequality in a few.

The major aim of the dissertation is to figure out whether public expenditure on social services can act as a significant redistributive tool. Thus we see how states have fared in terms of growth, inequality and public expenditure on social services. A trend analysis of public expenditure on social service, growth rates in states (SDP) and inequality figures for 15 major states presents a clearer picture in our analysis. We find that while consumption and wealth inequality trends do not show a strong correspondence with public expenditure figures, income inequality figures show strong correlation with the levels of public expenditure on social services. Thus states that have shown continuous and consistent increases in public expenditure on social services are the ones in which income inequality has been kept in check. Results also indicate that only those states in which public expenditure levels have grown in proportion with the rapid growth (SDP) levels are the ones which have been able to tackle the problem of inequality.

Regression analysis from our dissertation also points towards a similar conclusion. Public expenditure on social services appears to have a statistically significant and negative impact on inequality. Other variables like SDP per capita, contribution of modern sector to economy and size of the government are all statistically significant and have signs consistent with the results of existing research.

Based on our dissertation results we would like to highlight some policy recommendations. Public expenditure on social services is seen to have a significant impact in reducing inequality but our analysis has pointed out that we need long term vision and stability in our expenditure policy. States should have an expenditure rule in place, which should be followed to have consistency in policy and increase in expenditure in line with the increase in SDP. From the literature and experiences of different economies we have learnt that often it is the middle income and the high income groups who benefit the most from these government policies aimed at social upliftment. Hence policy makers should take cognisance of the same. Care should be taken that the expenditure policies designed for better human capital generation and social infrastructure development are targeted in a way that the lower income groups are able to the make most of them. In this regard, social services expenditure is considered an appropriate expenditure as it serves as a strong redistributive tool.

Thus, public expenditure if used as a long term policy tool in right areas can be an efficient tool to check inequality and foster economic development and growth.

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