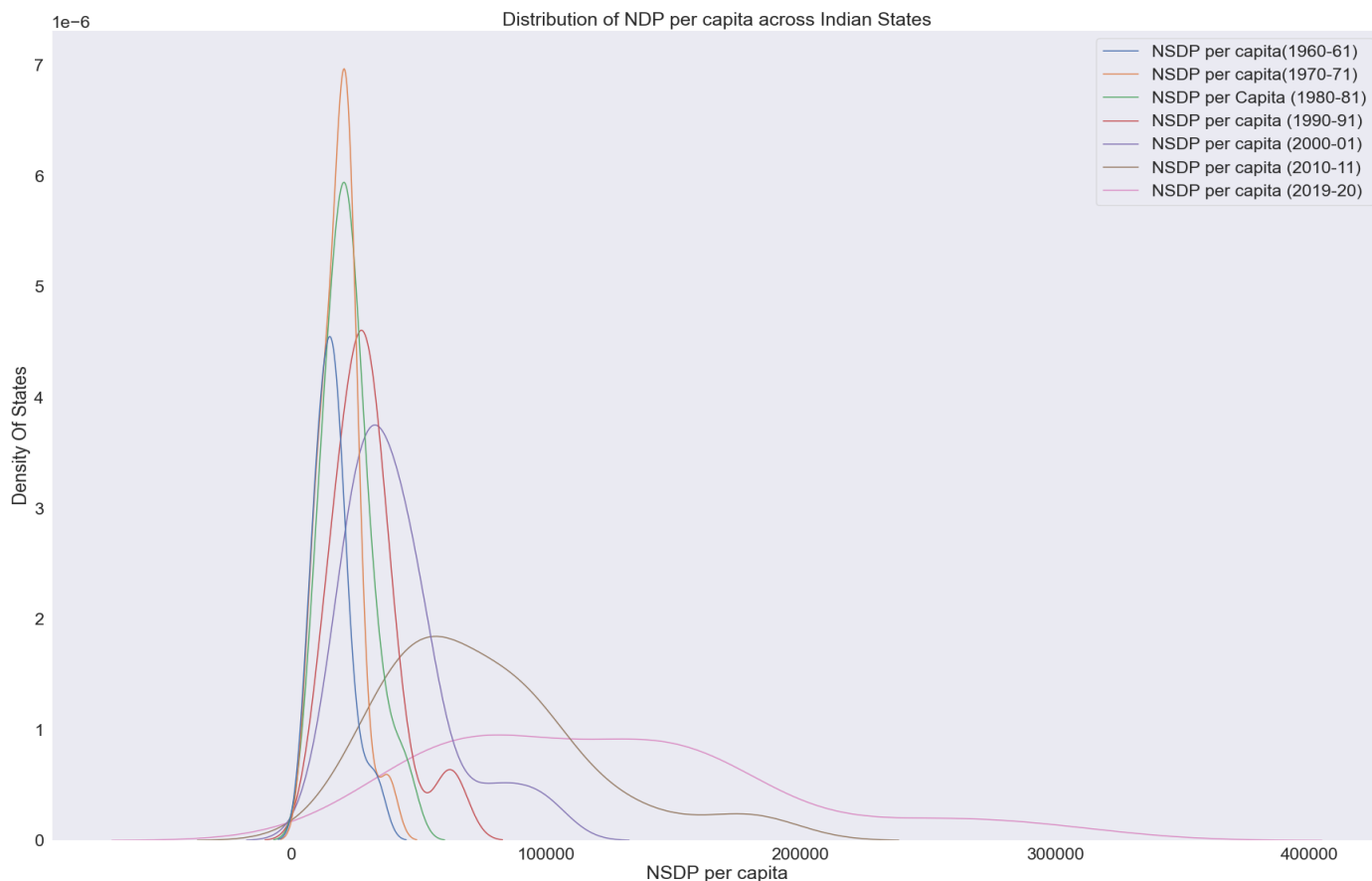


REPLICATING ACEMOGLU FIGURES FOR INDIAN STATES

Submitted to Prof. Debasis Mondal

1. Distribution of NDP per capita across Indian States

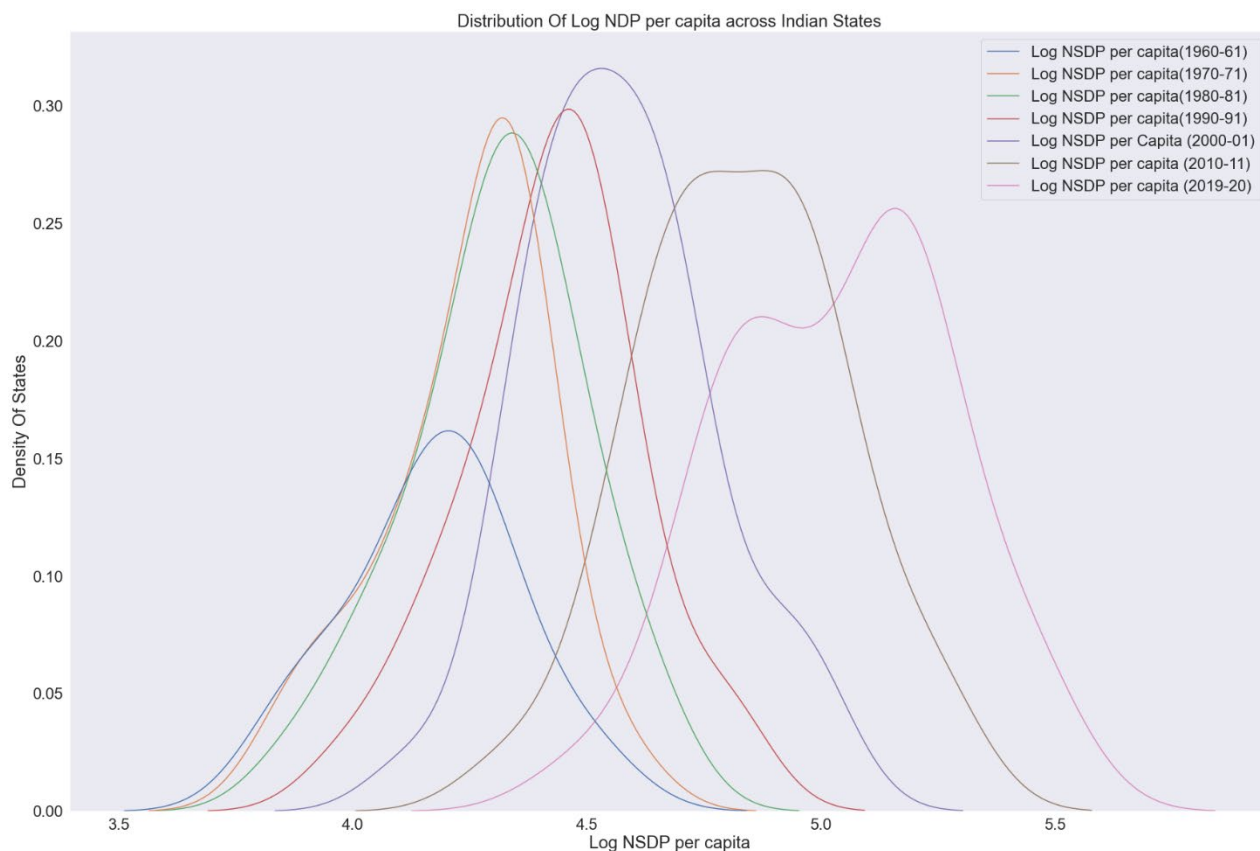


The original Acemoglu figures were on Gross Domestic Product per capita, but due to unavailability of data I have resorted to Net State Domestic Product or NSDP per capita data which was available from 1960 onwards for Indian States at EPWRF site adjusted to 2011 prices. In the above figure I have plotted for seven decades as indicated in the legend box.

Interpretation:-

Clearly, the density was more earlier for 1960s and 70s, but gradually it reduced with time but the important thing to notice is that progressively less number of states share higher NSDP per capita in 2010-11 and 2019-20. This indicates that income inequality has considerably increased.

2. Distribution of Log NDP per capita across Indian States

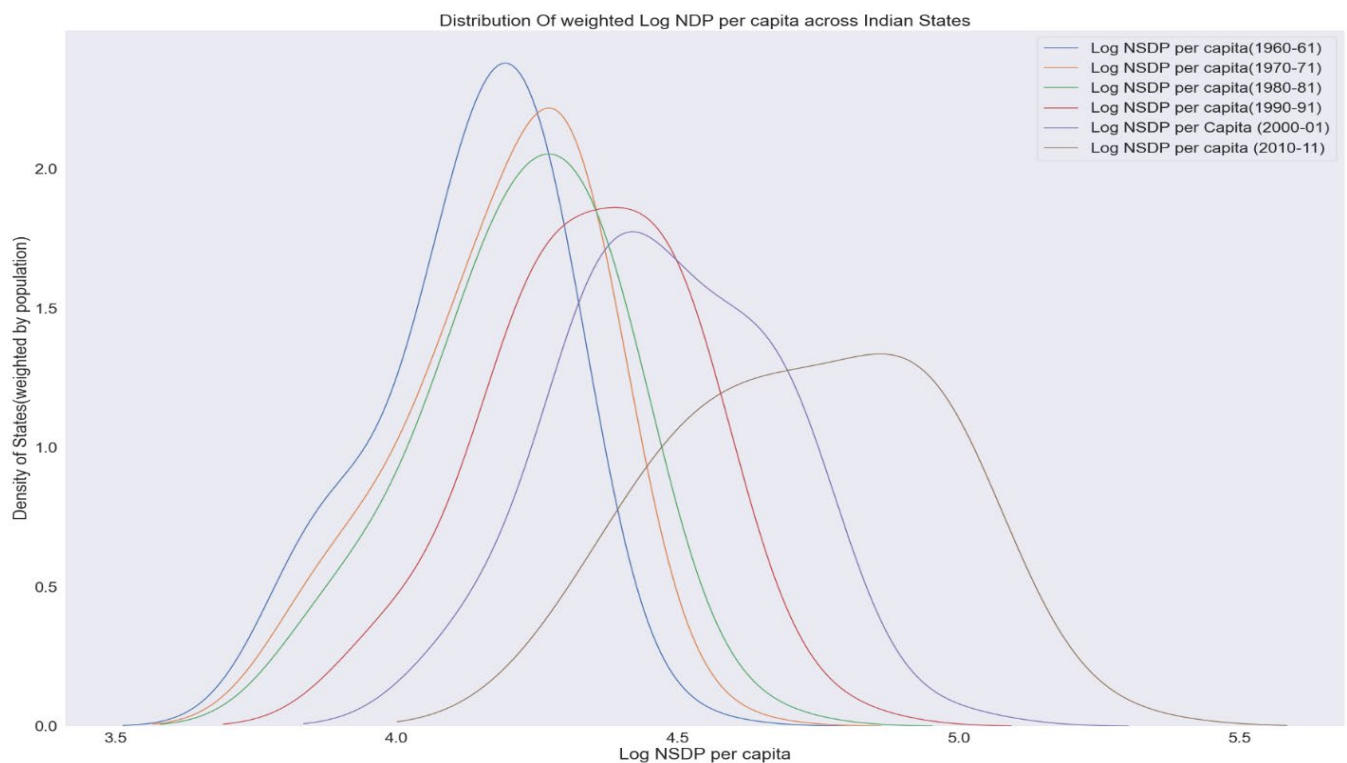


An extension to the previous graph. Here I have plotted the log NSDP per capita for the same seven decades as before. Logarithm values are computed to base 10 to the previous NSDP per capita data (adjusted to 2011 prices as available on EPWRF site.)

Interpretation: -

The Log NSDP per capita depicts the same story as before. As decades progressed, we see a rising income inequality with a smaller number of states enjoying more per capita Domestic product than others. The gap has widened with time

3. Distribution of weighted Log NSDP per capita



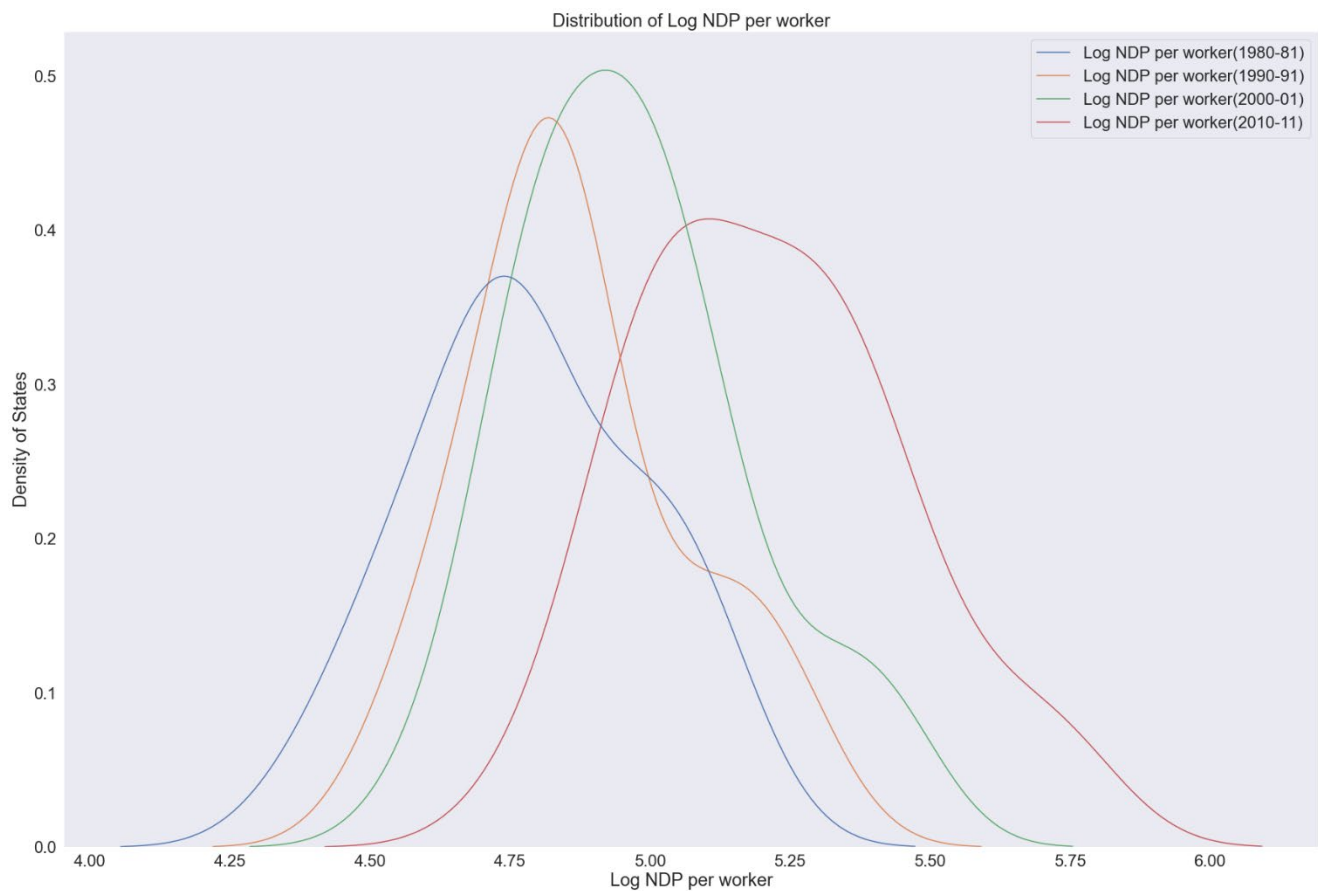
Above graph is an extension to its previous following graph where states have now been weighted by their respective population across different timelines. Population figures were taken from census figures available at [RBI](#). I didn't plot 2020-21 since Census didn't take place for the previous yr. owing to Covid 19 pandemic. The states of Telangana, Uttarakhand and some UTs are not taken into consideration due to unavailability of data.

Interpretation: -

When we weight the figures for different timelines with their respective population, the graphs thus generated are more dispersed than the previous graph of Density on Log NSDP per capita. However, the story of increasing inequality is still pronounced here too, even with the fact that later decades have greater population than before.

- ❖ Rising Inequality among demography is also presented , as hinted in this graph but to establish it more clearly we need to dig deeper into the socio-economic aspect for each state before coming to a reasonable conclusion.

4. Distribution of Log NDP per worker (*as per worker data available on CensusIndia.gov.in)



I got employment status for census years (as reflected above) from which I computed NDP (Net Domestic Product) per worker by dividing the NDP (adjusted to 2011 prices) figures to the workers employed and thereafter made a logarithm (base 10) transformation. All the employment data for the above figure were collected from *CensusIndia.gov.in and especially for 1981 and 1991 workers data is collected indirectly by WPR (Work Participation Rate) and Population records. As for data concern (as available), for 1991 only Main + Marginal Workers were considered while for 1981 it is only Main Workers which was available and hence only taken into account.

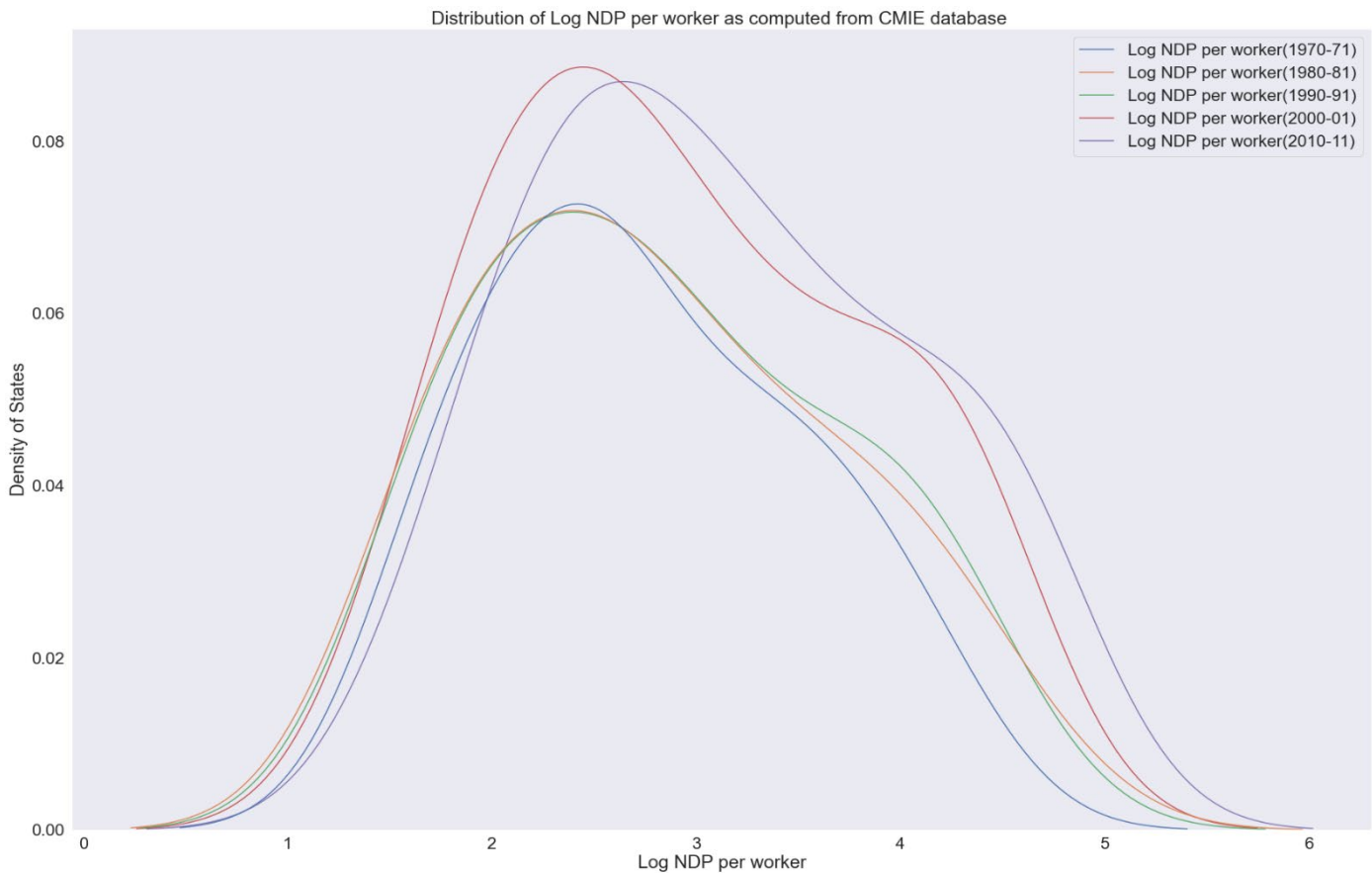
Interpretation: -

Clearly the NDP per worker figures will imitate the figures of NDP per capita because Number of workers is always less than population. Or in other words, Number of workers is proportional to population hence the story of increasing income inequality still evident here.

*Please check last paragraph in the last page for links of resources

Extension to the previous graph from another source....

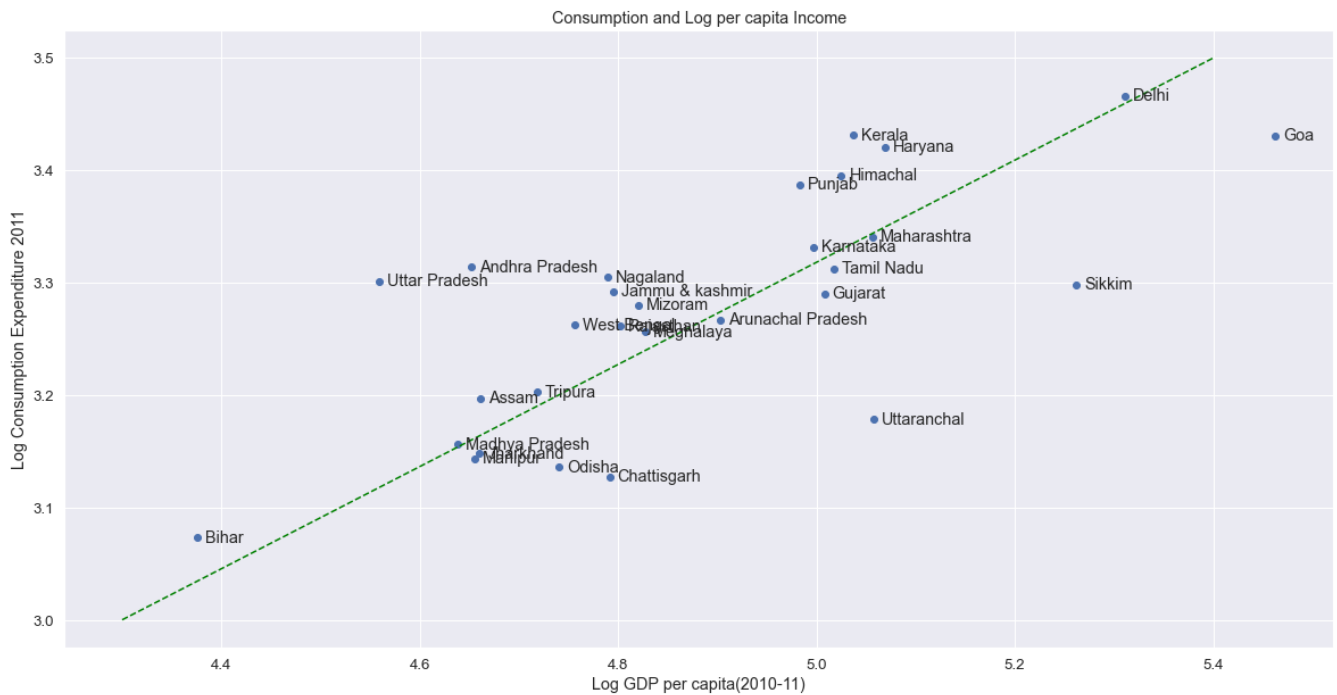
4.1 Distribution of Log NDP per worker (*as per worker data available on CMIE Database)



Above graph is same as previous but I have taken the workers' data from CMIE database. I was sceptical about the source but prefer to keep it too. In the above graph, I was able to plot Log NDP per worker for 1971 which was absent in the previous graph. CMIE database provides WPR (Work Participation Rate) from 1971 onwards but mentions nothing about Main, Marginal or Total workers.

*Please check last paragraph in the last page for links of resources.

5. Income and Consumption



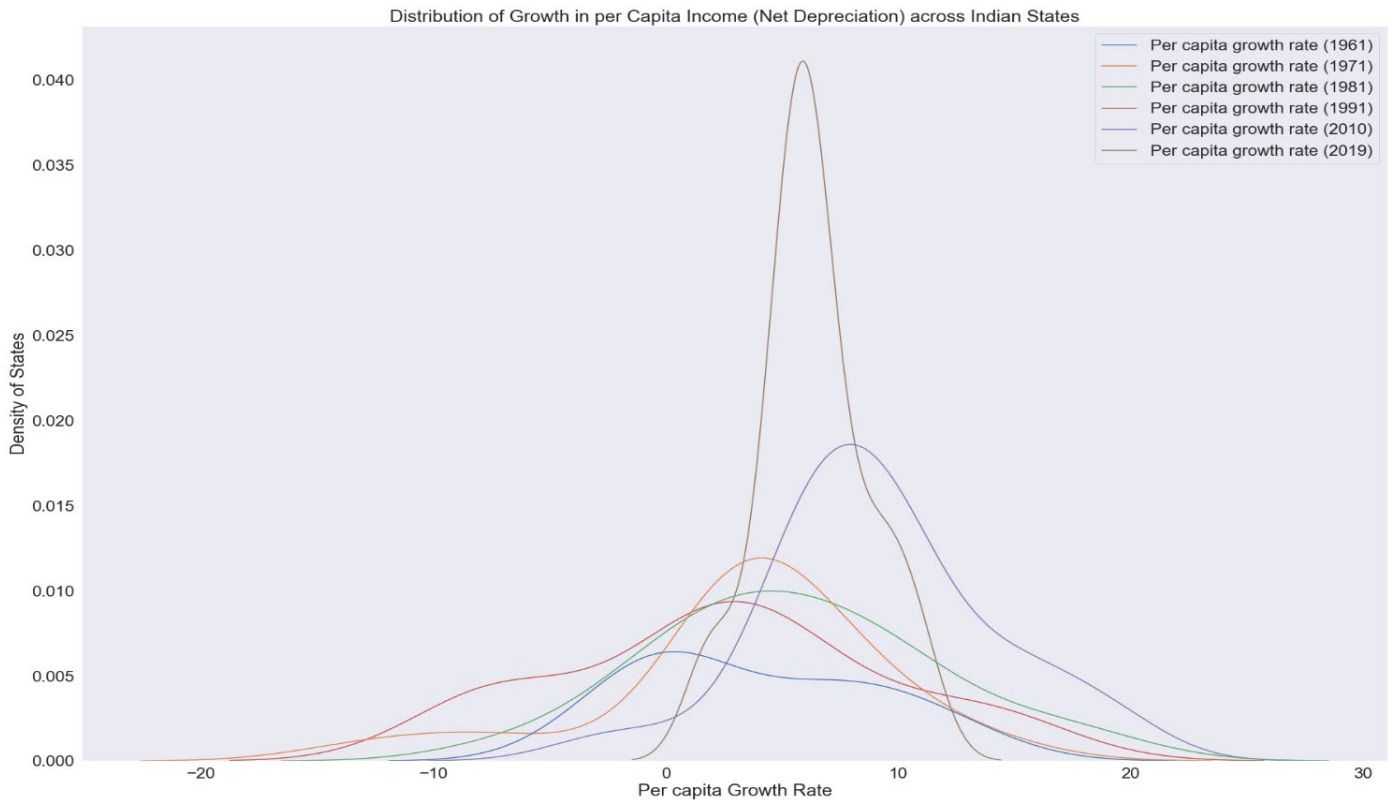
The above graph is based on Consumption expenditure for 2011, taken from [NITI Aayog](#), for 21 states against Log GDP per capita for 2010-11. There were two sets of data for rural and urban respectively. I have taken an average of both to compute Consumption at an aggregate at a monthly basis. There is no doubt for being an positive slope graph, after all consumption expenditure per capita has to be less than GDP per capita.

6. Life Expectancy and Income



In the above graph life expectancy at birth is plotted against Log GDP per capita for 2010-11. Data on life expectancy at birth is available with ministry of health and family welfare page 83. Data is available only for 18 states. [Link](#)

7. Distribution of Growth rate of per capita Income (NET Depreciation) of Indian States

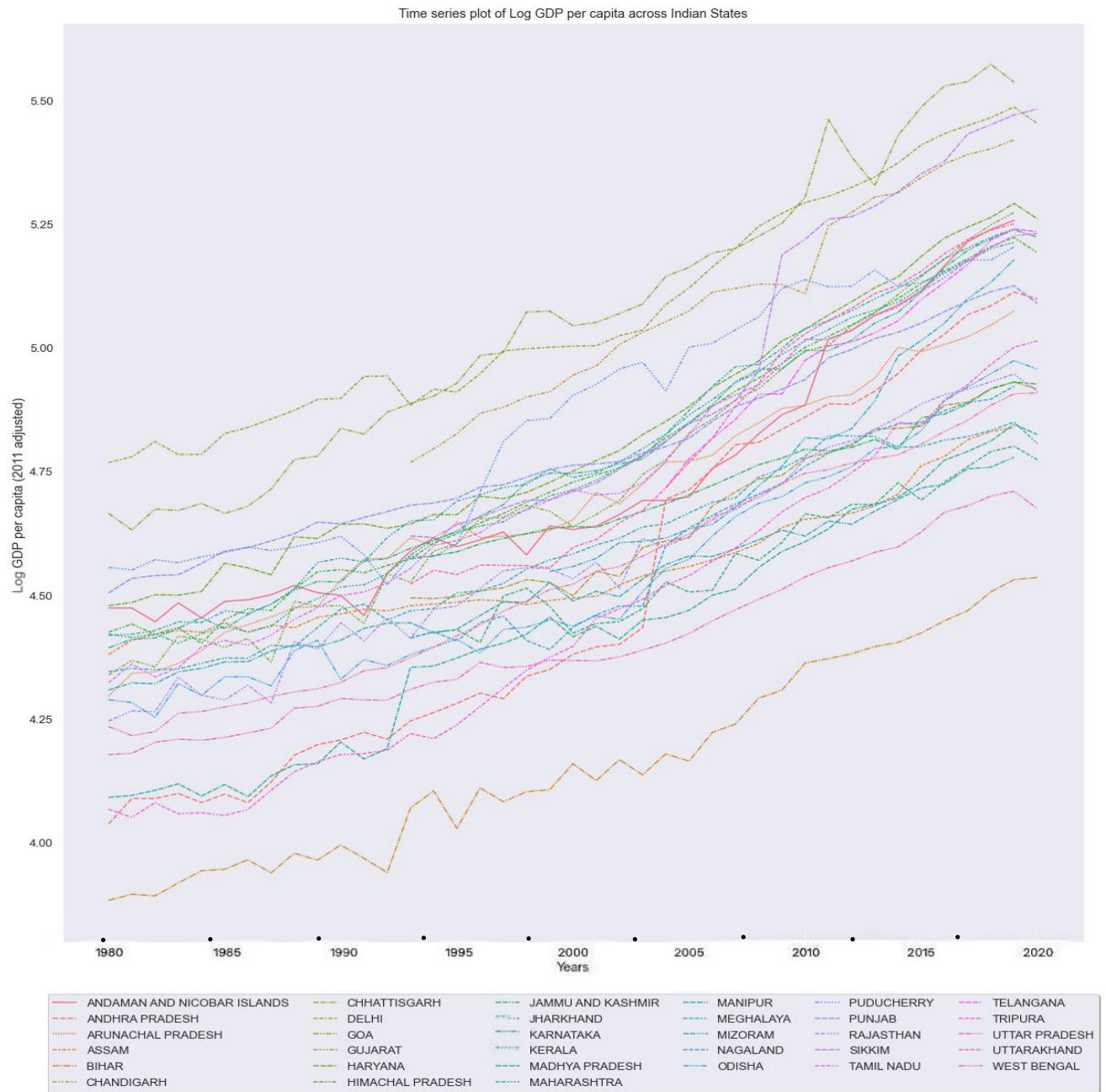


The following graph on per capita income growth is calculated from NSDP data from 1961 onwards to 2019. Per capita growth rate for each decade is measured against its previous yr. (For instance growth rate for 1961 is measured against 1960). The growth rates are all computed from the same NSDP data available at EPWRF site as mentioned before, adjusted to 2011 prices.

Interpretation: -

The graph speaks that per capita growth rate or growth performance, has increased considerably from for each decade with respect to the previous year (as mentioned before). The highest peaked graph is of 2019 which shows that the density of growth rate has increased more than two-fold. (See 2019 graph against the next highest graph i.e., 2010).

8. Time series plot of Log GDP per capita



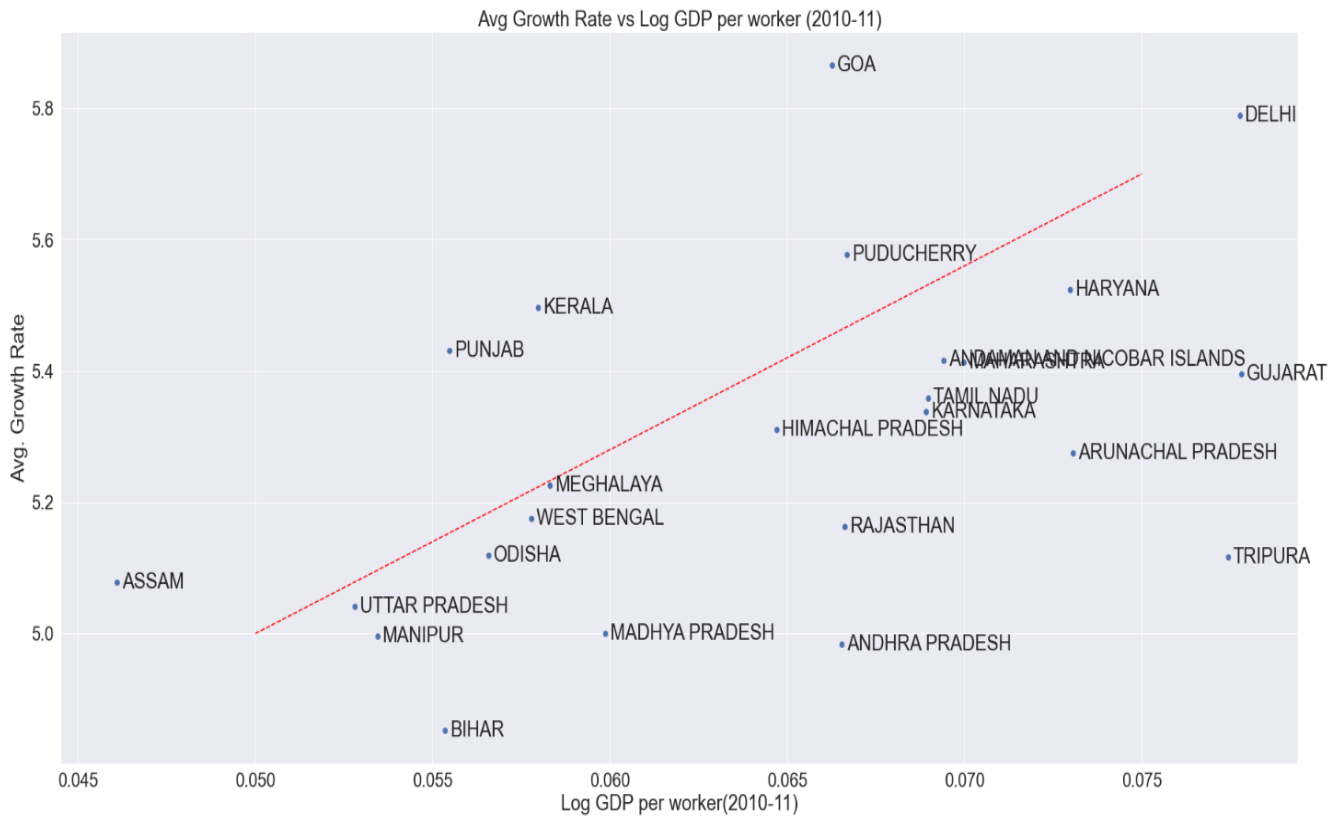
The above graph plots the growth of Log GDP per capita (adjusted to 2011 prices) for various Indian states as indicated in the legend box. I have plotted data for the past 40 years keeping in view that major growth has happened in decade before and after **Liberalisation**. It is quite evident that the Log GDP per capita for all states have been growth up with a greater steepness.

9. Relative Growth Performance



In this graph, state of Maharashtra is taken as a standard and growth rate of all other states has been plotted relative to Maharashtra for 1980-81 against 2010-11. From the graph it is quite evident that some of the eastern states have done well like West Bengal, Assam, Sikkim etc. while some states like Bihar, Mizoram couldn't do well.

10. Average Growth Rate and Log GDP per worker



GDP per worker is computed as mentioned previously for 2010-11. Above graph is a scatterplot of states with their average growth rate (from 1960 to 2019) corresponding to their Log GDP per worker (2010-11).

*While drawing the above graphs I have faced many issues regarding the data availability and quality. All data that has been used for this Assignment has been retrieved from popular websites like RBI, IndiaStat, EPWRF and NITI Aayog. While analysing the data I found some data were missing for some states like Telangana and Uttarakhand (up to 00's) and couple of Union Territories. This is obvious because some states were formed in the due course after Independence, but this in turn has technical compromises while plotting graphs. On the same note data on Gross Domestic State Product wasn't available before 1980 so I resorted to Net State Domestic Product in some areas. Similarly, data on workers or employment status were not available till 1970 and for 1971, 1981 and 1991 number of workers were computed indirectly from WPR ([Link1](#), [Link2](#)) with some compromises as mentioned in graphs description before. Keeping all this in view I have tried my best to incorporate what I have into this Data based Assignment.