Macroeconomics Assignment – 1 (Nitin Gautam HES207035)

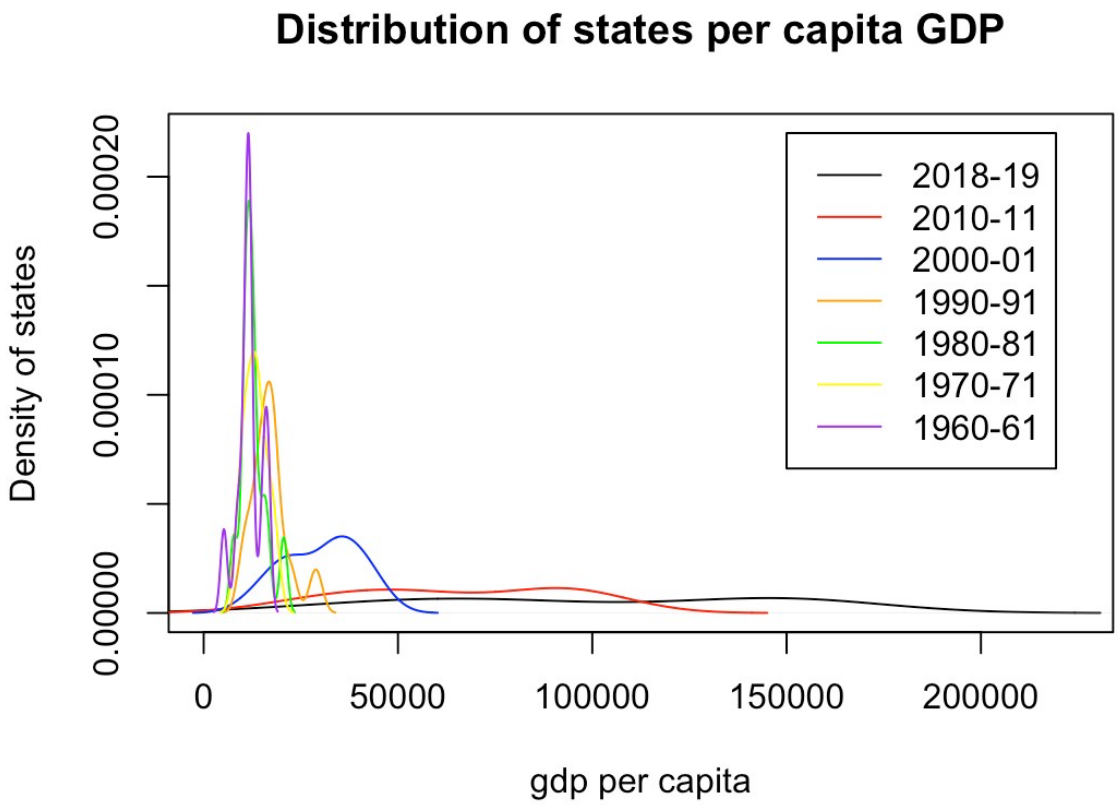

Fig 1.1 Distribution of GDP per capita across Indian states in 1961, 1971, 1981, 1991, 2001, 2011, 2018

Comments on Fig 1.1

1. Rightwards shift of distributions for 1991, 2001, 2011, 2018 shows growth rate of states GDP per capita in next 30 years.
2. Initial concentration of states at lower GDP per capita, now states concentration shifted towards right and spreading out of the distribution because of the increase in average incomes.

Note:

1. GDP deflator method is used for converting states GDP per capita in different base year to base year 2011(taken as base year for graphs)
2. GDP deflator for India was used due to unavailability of individual state's deflator
3. Dataset for plots is available in excel
4. Plots are made using R

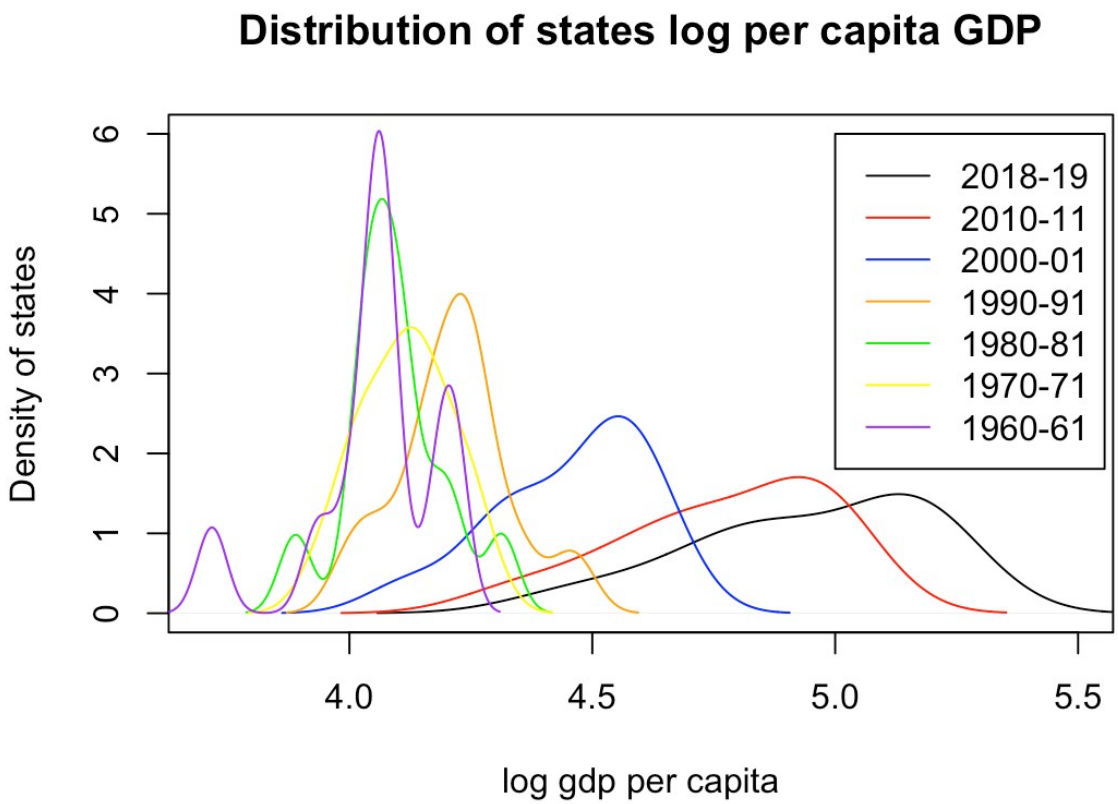

Fig 1.2 Distribution of log GDP per capita across Indian states in 1961, 1971, 1981, 1991, 2001, 2011, 2018

Comments on Fig 1.2

1. Spreading out is limited in log GDP per capita comparing to GDP per capita density plot
2. Absolute gap between rich and poor states has increased considerably between 1991 and 2018, the proportional gap has increased much less.
3. 2011 density of log GDP per capita is more spread out than 1991
4. Considerable increase in the density of relatively rich states, while many states still remain poor – “Stratification phenomenon”

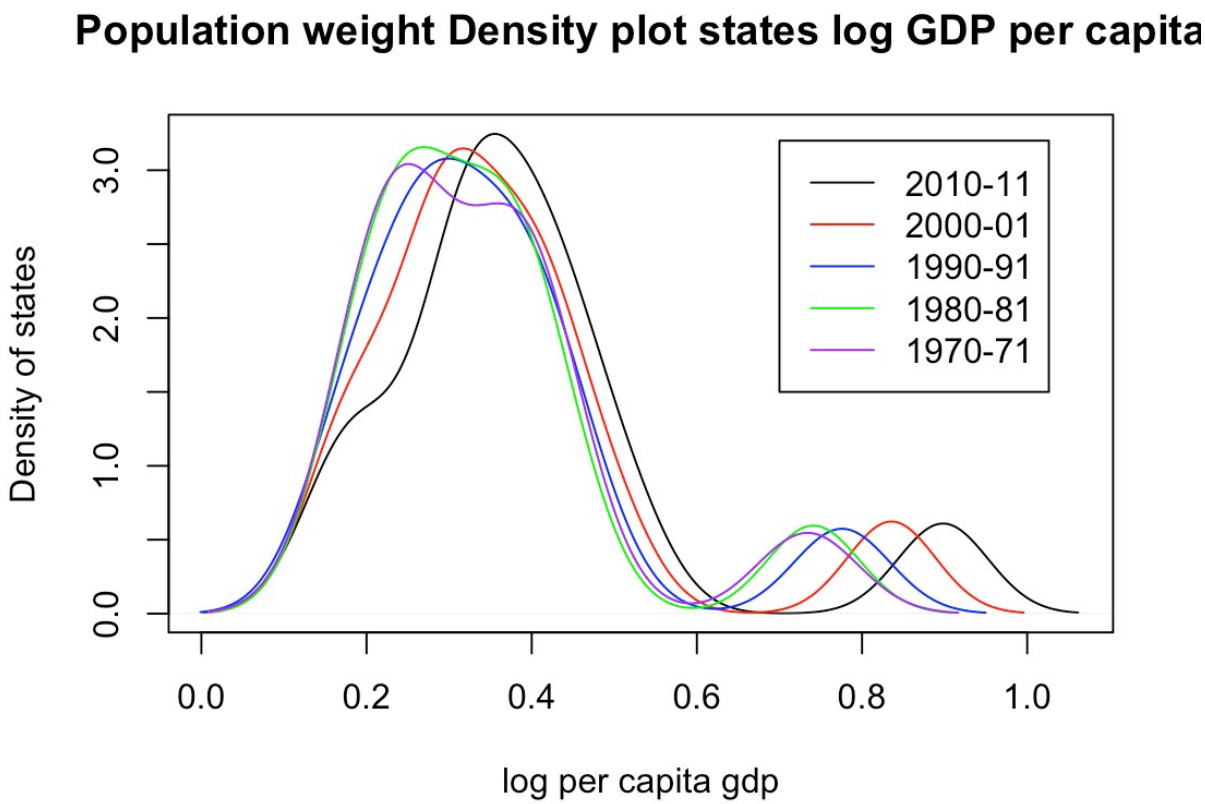

Fig 1.3 Distribution of GDP per capita across Indian states in 1971, 1981, 1991, 2001, 2011

Comments on Fig 1.3

1. Distribution of 2011 appears less spread out in population weight density plot
2. Growth of high population states has been low, hence no effect observed

Fig 1.4 Distribution of GDP per capita across Indian states in 1971, 1981, 1991, 2001, 2011

Comments on Fig 1.4

1. Greater concentration of states in the relatively rich tail in 2011
2. Large amount of inequality in income per worker across states as highly dispersed distributions
3. Noticeable increase in inequality across states

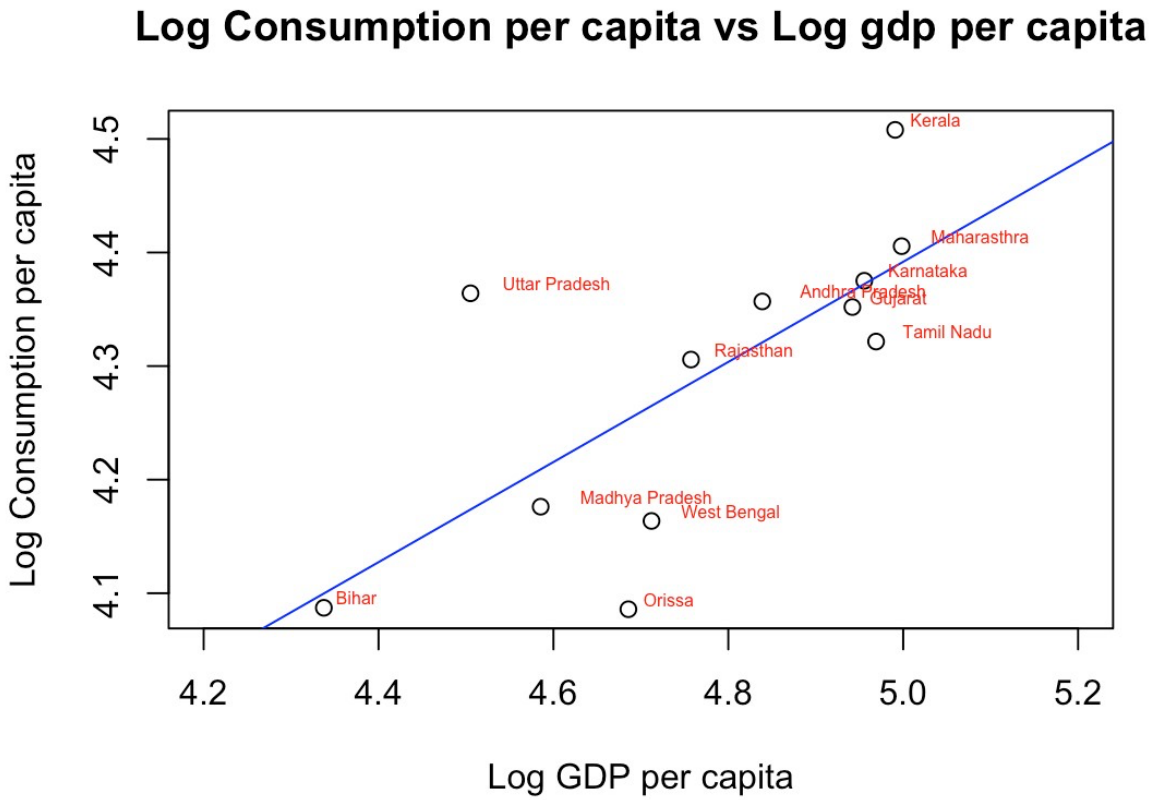

Fig 1.5 The association between income per capita and consumption per capita in 2011

Comments on Fig 1.5

1. Income per capita differences are strongly associated with difference in consumption
2. Consumption per capita increases with income per capita
3. On average, Rich states consume more than poor states i.e., Bihar and Orissa

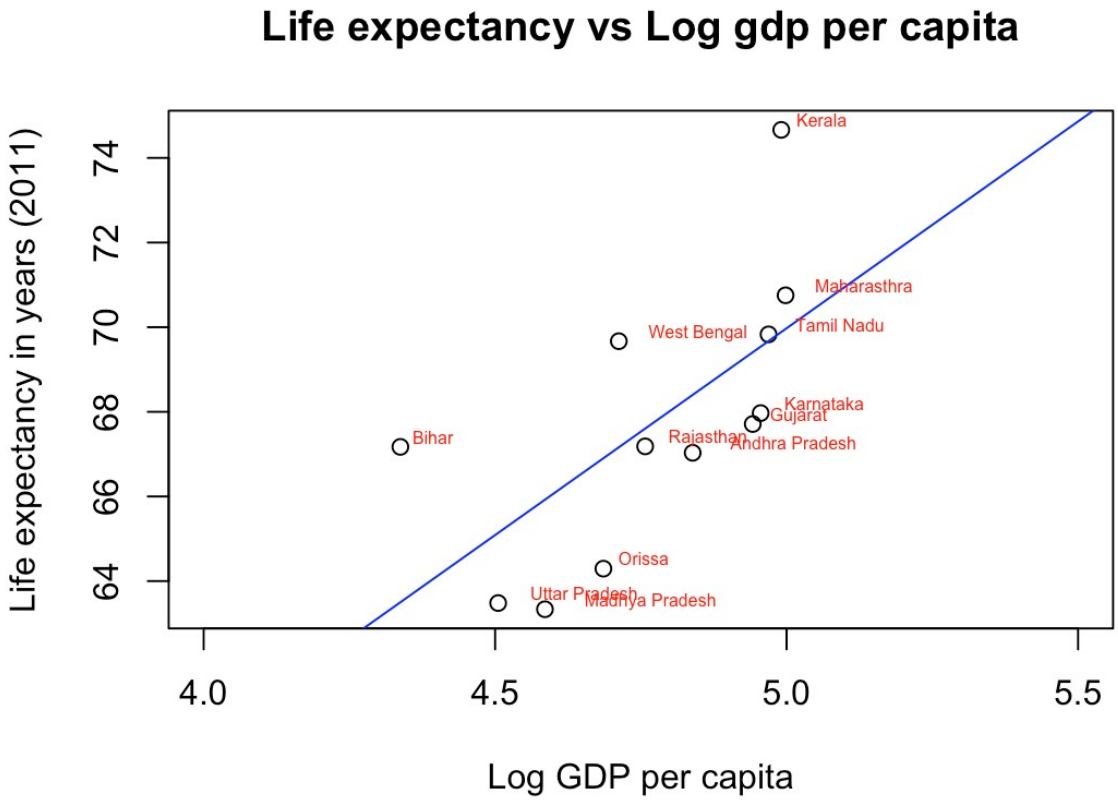

Fig 1.6 The association between income per capita and life expectancy at birth in 2011

Comments on Fig 1.6

1. Income per capita differences are strongly associated with difference in life expectancy at birth
2. Life expectancy at birth increases with rise in GDP per capita, but there are outlier states i.e., Bihar which has higher expectancy at low GDP per capita

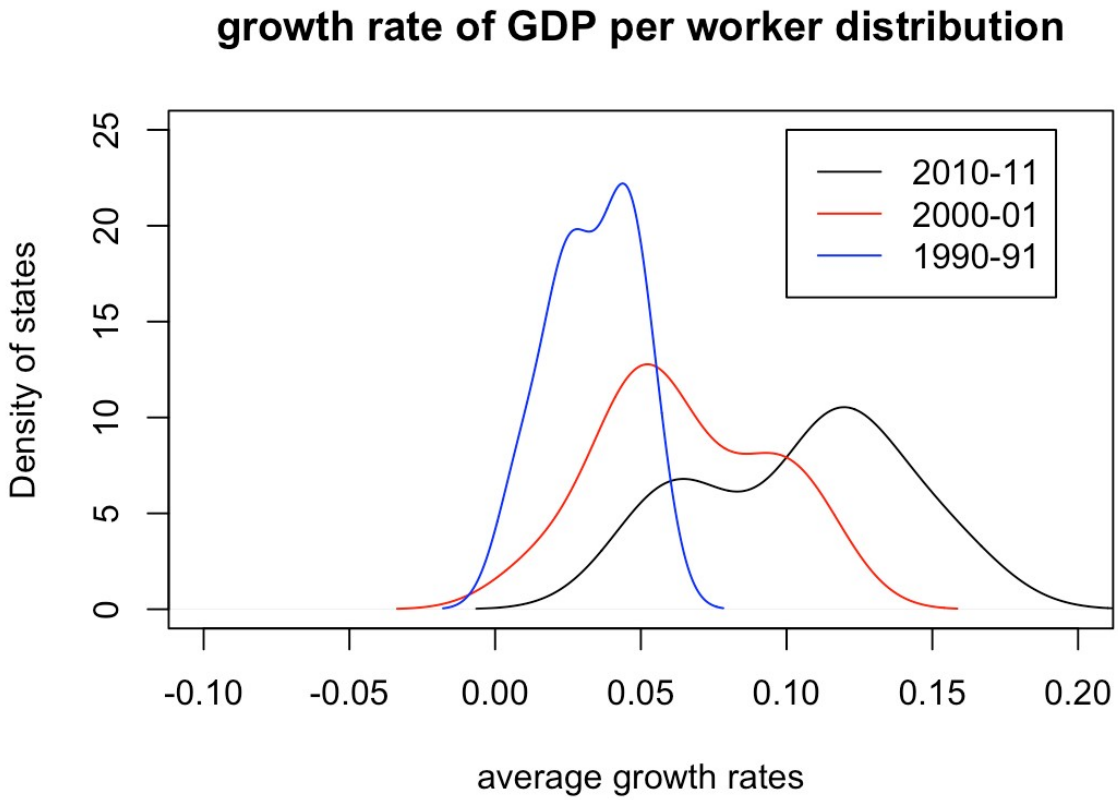

Fig. 1.7: Estimates of the distribution of states according to growth rate of GDP per worker in 1991, 2001, 2011

Comments on Fig 1.7

1. Workers – total economically active population according to the definition of the International Labour Organization
2. Large difference in GDP per worker across states and they have grown over last 30 years
3. Productivity differences have increased over time across states

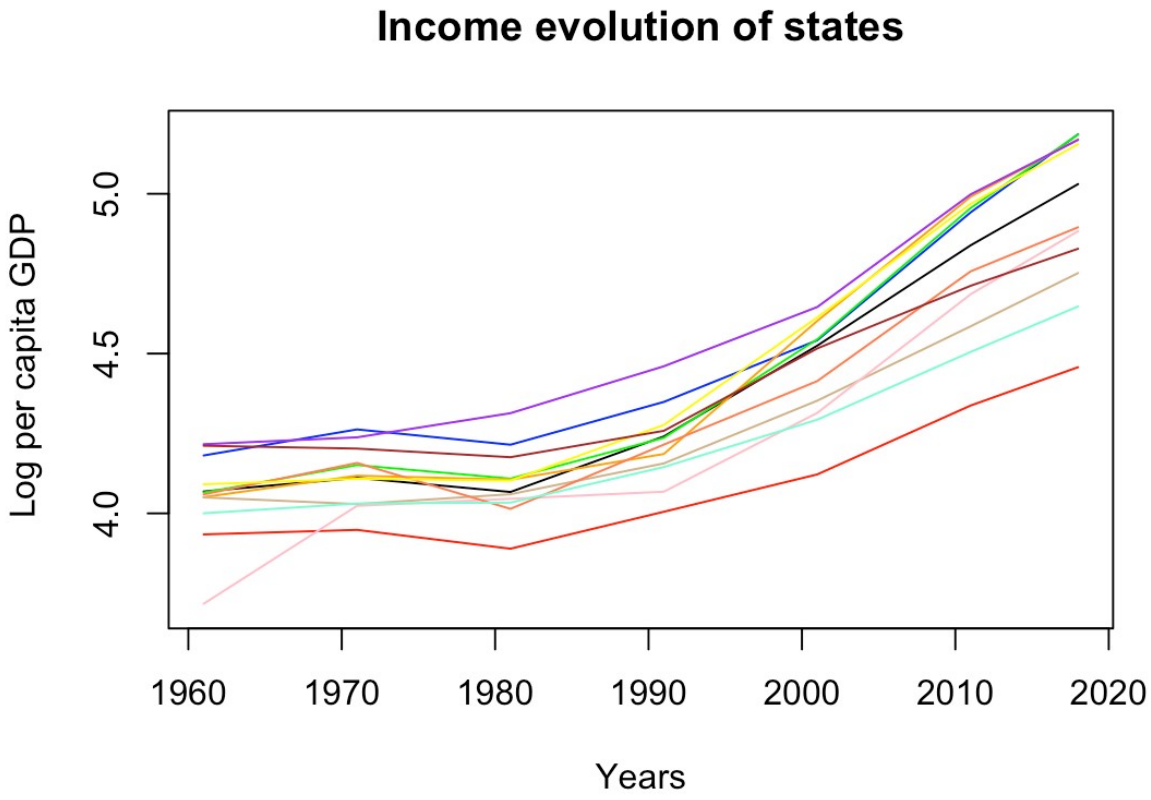

Fig 1.8: The evolution of income per capita in 12 states from 1961 to 2018

Notes:

1. Color codes

States	Colour Code
Andhra Pradesh	black
Bihar	red
Gujarat	blue
Karnataka	green
Kerala	orange
Maharashtra	tan
Madhya Pradesh	purple
Orissa	pink
Rajasthan	coral
Tamil Nadu	yellow
Uttar Pradesh	aquamarine
West Bengal	brown

2. Comments
    a. No convergence in GDP per capita across all 12 states, poor states continue to poor and richer states performed well. Gujarat and Maharashtra had

higher GDP per capita in 1960s and continue to have higher GDP per capita while Bihar and Orissa were poor states in GDP per capita in 1960s and continue to be poor. But there is converge in GDP per capita among southern states.

b. Sharp rise in GDP per capita post 1991, after stagnation in 1960 to 1990

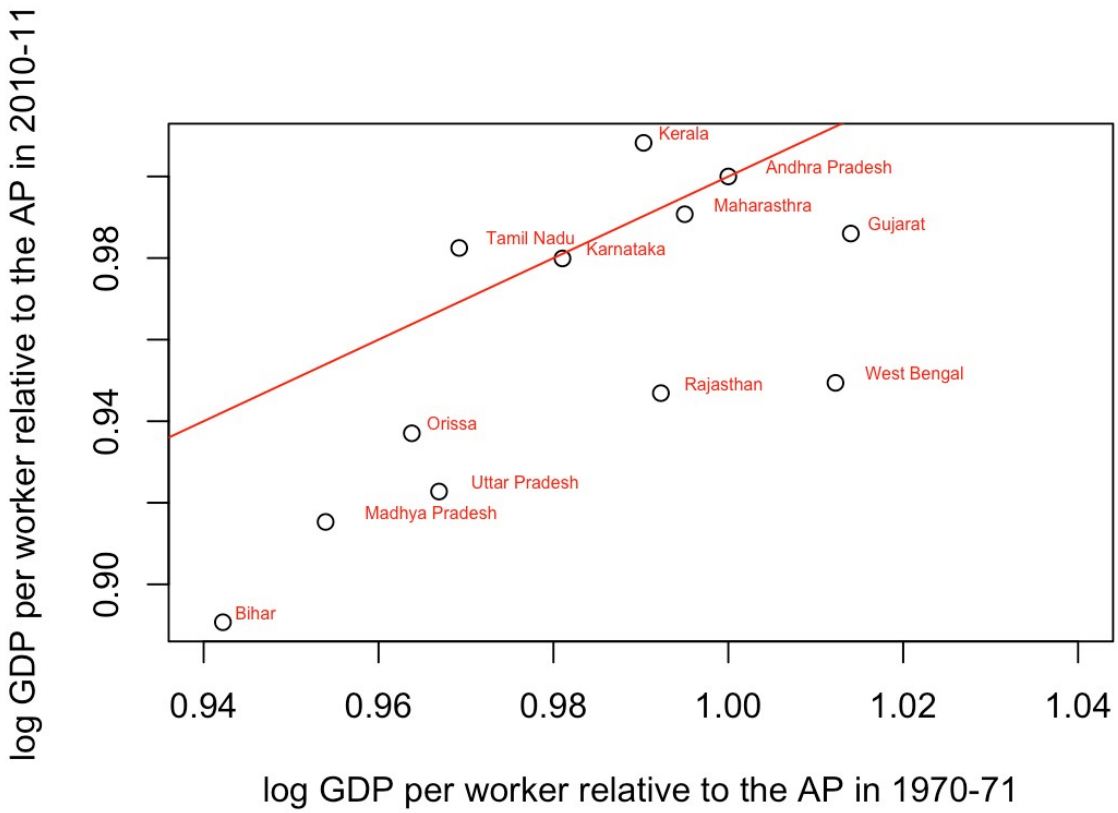

Fig 1.9: Log GDP per worker in 2011 versus log GDP per worker in 1971 (relative to Andhra Pradesh in both case), together with the 45◦ line

Comments on Fig 1.9

1. Few states are scattered around 45 deg line in plot, suggesting fewer states are performing as good as Andhra Pradesh in 2011. Gujarat, Karnataka, Kerala and Maharashtra are performing similar to Andhra Pradesh in 2011 with respect to 1971.
2. But major states are underperforming relative to Andhra Pradesh in terms of productivity. States i.e., Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal are underperforming with respect to Andhra Pradesh.

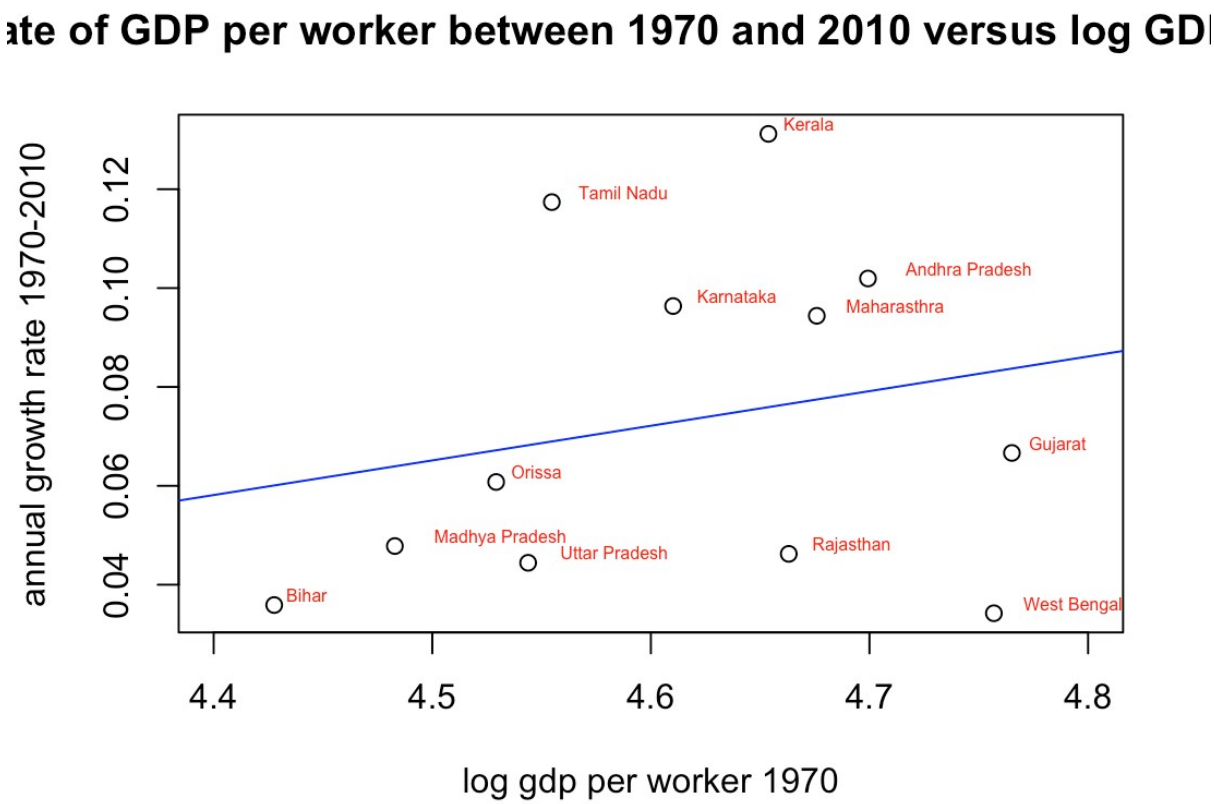

Fig 1.13: Annual growth rate of GDP per worker between 1970 and 2010 versus log GDP per worker in 1970 for all states

Comments on Fig 1.13:

1. No unconditional convergence observed.
2. Growth rate of states with higher GDP per capita is higher than states with lower GDP per capita
3. There is slight positive relationship between growth rate of states with GDP per capita.

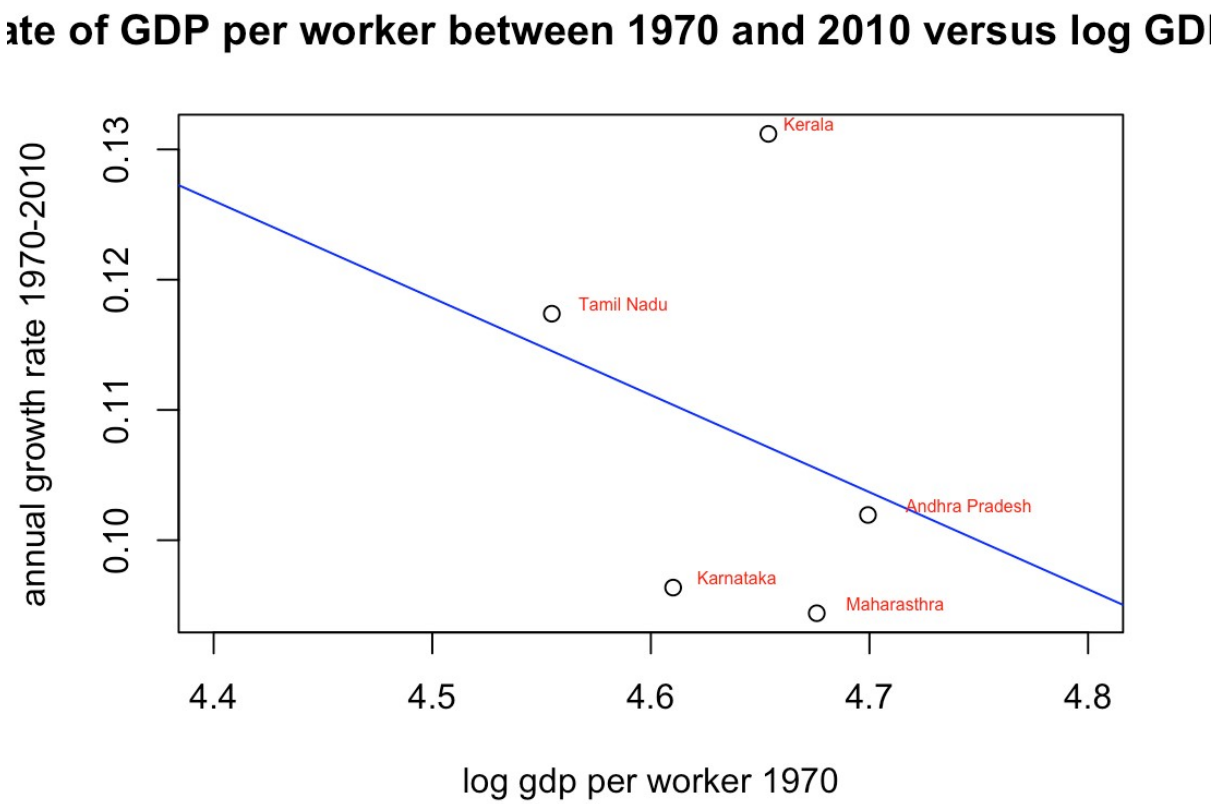

Fig 1.14: Annual growth rate of GDP per worker between 1970 and 2010 versus log GDP per worker in 1970 for southern states in India

Comments:

1. There is a strong negative relationship between log GDP per worker in 1970 and annual growth rate between 1960 and 2000 among the southern states. This sample is distinguished from all states case due to homogeneity of the southern states, having similar level of GDP per capita, population, institution.
2. This suggest that there might be a type of conditional convergence when control for certain states characteristics potentially affecting economic growth i.e., all are coastal states etc.