



# Local Level Land Inequality in India

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# Contents

**Abstract**

This research makes two main contributions. First, I use wealth ownership surveys (NSS-AIDIS) to construct long run wealth inequality at state level in India. I find that most of the states have seen increase in wealth inequality since 1981. Pre and post liberalization analysis shows that rural wealth inequality decreased in pre-1991 in rural areas indicating some success of redistributive policies. Post 1991, wealth concentration has risen in urban areas, led mainly by increase in land and building prices. Next, I gather information from censuses (SECC 2011, Census 2001 and 2011) to explore land inequality at village level in India. I find Scheduled Caste population share to be an important factor in explaining village level land inequality. Further there is a huge level of differences in land ownership structure across states with Rajasthan and Karnatka (55% agricultural land owned by top 10% households) having lowest land inequality and Punjab and Bihar (80% agricultural land with top 10% households) having highest land inequality.

JEL Classification: J00 D63 N30
Keywords: Land; Wealth; Inequality; India; Caste

# 1 Introduction

Economic inequality is skewed distribution of the resources in a given population. Recent estimates of income , wealth and consumption inequality have established a very high level of inequality in India. Bharti ("Wealth Inequality, Caste and Class in India 1951-2012") finds an increasing trend of wealth and consumption inequality in India in recent decades. **p**resents the evolution of income inequality since 1922 and it has peaked in recent years. The comparison of wealth and income inequality places India into one of the most unequal countries in the world.

However given the sheer size of the country it is interesting to understand if all the regions of the country are experiencing similar patterns of concentration of resources. India is a federal country with states having considerable power and autonomy to influence the economic distribution. Basing on this, I first present the evolving wealth inequality at state level. One can argue if state is the best administrative unit to study economic inequality because even some states are larger than many countries in the world. Uttar Pradesh (200 mill) and Bihar (100 mill), the two most populous states of India are larger than the largest countries of Europe. I concede to this argument and take this study to further smaller administrative units.

The level of wealth inequality is very heterogenous at state level and its evolution in last 50 years varies too. However, except Orissa and Kerala, all other states have seen rise in their level of wealth inequality between 1981 to 2012. The increase of wealth concentration is the highest in Punjab and Haryana in the North and Maharashtra (West india), Madhya Pradesh (central India), Assam and West Bengal (East India). Further analysing, I find that, rural sector is responsible for an increase in inequality in Punjab (rise in 15 pp of share of wealth owned by top decile population). Contrarily, in other states like Maharashtra and Haryana, urban sector drives the wealth inequality. As a respite, rural areas of all states in South India have reduced wealth inequality over this time period, however a corresponding gain in urban sector has kept the overall level of wealth inequality at the same level. [1]

India adopted a socialistic path of development just after its independence. Land reforms and five year planning for development are prime examples of its socialist path of development. Till 1981, the economy experienced relatively slow but stable growth rate. After 1981, India started opening its economy slowly however the watershed moment came in 1991 when India adopted economic liberalization reforms. Liberalization process included deregulation of markets, reduction in import tariffs, reduction of taxes and greater foreign investment. There is a big debate in the economic literature on the efficacy of liberalization. The long time period 1961-2012 dataset allows me to assess the evolution of inequality in pre-and post liberalization period of India.
The results show that rural sector saw a decline in wealth inequality (in terms of share of owned wealth by top decile population) in between 1961-1991 in almost all the states. This was a time period associated with major land reforms and more redistributive policies. Post 1991, mostly southern states continued to have a declining rural wealth inequality, but it could partly be due to urbanization, where areas with increasing inequality are turning into urban. However the remaining rural areas continued to decrease their inequality, which is a sign that rural to urban transformation is not the full story. In the urban sector, we do see more states decreasing inequality in pre-liberalization period. This pattern changes in post 1991 where in some states the rise in wealth inequality in urban sector is quite large. Maharashtra, Haryana, West Bengal and Madhya Pradesh saw largest increase.

As argued in Bharti ("Wealth Inequality, Caste and Class in India 1951-2012"), the social and economic inequality are weaved together in Indian context with the thread of caste system in India. Piketty in his new book "Capitalism et Idologe", draws parallel of caste system to the "ternary societies" present in France, Spain or United Kingdom in the past. These ternary societies comprise of priests (Brahmins), warriors/nobility (Kshatriyas) and Labourers/worker (Vaishyas, Shudras, Outcastes), and the tacit or otherwise mutual understanding between priests and warriors helps in retaining the maximum share of resources between the two. This (over) simplification of caste system helps in understanding the manner in which resources have been distributed in the past and continued to do so in the present time. Though practically, caste system is very multi-dimensional. It is still present in many spheres of life and plays a critical role in perpetuating the economic inequality. In this paper, I show that the dalit (Scheduled Caste) population share in a village is a strong predictor of wealth (land) inequality at the village level controlling for all the factors which influence land distribution. One percent rise in the dalit population increases land inequality at household level by around 0.2% over the mean (more or less similar level of effect in all the states). Even though it is not causal, the strong positive correlations across all the states at such local level gives a louder message. It is a reminder that the impact of caste system goes very deep in the country and requires some bold measures by the government to correct. Land reforms adopted in post-independence years partly helped in distributing the land, but its partial success did not lead to any real gain to the bottom 50-60% of the population, where most of the dalit population are present. Positive affirmation through reservation policies indeed have helped, but it is a long and gradual path. Khalid and Yang (2019) work on Malaysia presents a relatively successful story of affirmative action which narrowed the gap across different

[1] This indeed could be due to conversion of rural areas into urban.

ethinicities, and is probably something which India can learn from.

Land is the most important asset in the household basket of wealth in India. Over the years, land has consistently contributed more than 60-65% of the total household owned wealth. Land and Building combined form around 90% of the total household wealth. [2]. Financial assets contribute less than 10% in the household wealth.

Given the importance of land, it becomes imperative to know the distribution of land. I describe land distribution in India. High land inequality has been associated with poor provisioning of public spending on education in India (Ghosh and Pal (2008) ). Further Chaudhary ("An Economic History of Education in Colonial India"), Chaudhary (2010) show that in colonial times the places with dominant landed elites have lower spending on education- especially primary schools. Land inequality has also been associated with political outcomes, where Andres Siegfred show in France, more land inequality is related with voting to right wing parties. I find the level of land inequality is very extreme in India and has increased (in terms of land value) in recent decades. There are wide variations across states and level of land inequality

The first contribution of the paper lies in presentation of regional level evolution of wealth and land inequality in the country. Secondly, the analysis at the lowest level of administrative unit of india, namely, village, show that inequality is a very local phenomena in the country. The increasing between-state level inequality hints towards divergence in the rural and urban counterparts of different states. To my knowledge there is no paper which analyzes the village level land inequality for the country. In the near future I would like to extend the local level inequality analysis to infer more into the direction of identifying the causes and its potential impact on different political, economic and social sphere.

# 2 Data Sources

## 2.1 NSS˙AIDIS

The NSS AIDIS are decennial surveys for the years 1961, 1971, 1981, 1991, 2002 and 2012. It is the primary data source for generating the wealth inequality series. The survey began in 1951 when the RBI (Reserve Bank of India) started All-India Rural Credit Survey with the main objective of identifying the demand and supply of credit in rural India to formulate banking policies and schemes. Information on assets and incidence of debt on rural households were collected to assess the demand side of credit. The next round of survey called All-India Rural Debt and Investment Survey (AIRDIS) was conducted in 1961-1962. This round of survey, for the first time collected details on financial assets, but the survey was still restricted to rural areas. Nationalisation of Banks in 1969 gave a new shift to credit policy, focussing on the hitherto untouched people involved in entrepreneurship, retail trade, professional works etc. and this led to decision to extend the survey to urban areas in the third round of survey in 1971-72. This round also saw an organisational change which brought into place NSSO (National Sample Survey Organisation) to conduct the survey. Unfortunately due to some sampling issues the urban data was never published.

**Methodology**:
The methodology adopted for the collection of data in NSS AIDIS is different from the well known NSS consumption surveys. Each selected household is visited twice, once during the first half of the survey period and then during the second half of the survey period. The surveys are conducted during the calendar year for the reference period which matches with agricultural year of the country.[3] The asset and liability on a certain fixed date (reference date) is ascertained. The reference dates are mid-point of the reference period. Depending on different rounds of surveys, the methodology for ascertaining the asset value changed slightly.

In 1961-62, the asset and liability of the household is derived on a fixed reference date (i.e. 31st Dec 1961 which is mid-point of the reference period July 1961-June 1962) by ascertaining the stock of assets/liabilities as on the date of survey and their transactions/flow during the period of date of reference and the date of survey. In 1971-72 the survey directly collected for the fixed reference date (30th June 1971 and 30th June 1972). In 1981-82, the information on the stock and flow of assets was similar to 1961-62, with changes in valuation.

**Assets**:

[2]This is after excluding the durable household assets. Since some years of survey don't capture this information, I drop this value from total wealth to make the dataset consistent. If household durable assets are included, probably land and building will form 85% of the total wealth

[3]For e.g 1961-62 survey collected information from Jan-Dec 1962 for the reference year July 1961-June 1962. Agricultural year in India is from July to June. Similarly for 1971-72 survey, the survey was conducted during Jan-Dec 1972 for the reference period July 1971-June 1972. And so on for later years of 1981, 1991, 2002 and 2012

Assets include all items owned by the household which had some money value. The survey has collected the information on inventory of assets and liabilities on a fixed reference date. The definition of assets has gone through changes in different years. Physical and Financial assets are the two broad categories. In 1961-62 total assets included the value of 8 different types of assets- i) Ownership rights in land ii) Special rights in land iii) Buildings iv) Livestock v) Implements, Machinery, Transport Equipments etc vi) Durable household assets (life more than a year and which can't be purchased at a nominal price) vii) Dues receivables on loans advanced in cash/kind. viii) Financial assets-Government securities, National Plan savings certificates, shares etc. Importantly no information on cash was collected. In 1981-82, Agricultural implements and non-farm machineries including transport equipments were collected separately. However, crops standing in the fields, cash in hand or stock of commodities were not considered as assets. In 1991-92, non-farm business equipments and all transport equipments were collected separately. Unlike previous years there was an effort to collect information on cash in hand of the household. Similar definition and categorization was used in 2002 survey. Bullions and Ornaments were also collected as part of assets. In 2012-13, survey excluded some of the assets which it had collected before. Household durables were excluded on the pretext of valuation concern. Bullions and ornaments were also not collected.

**Valuation of Assets**:
Estimating the total wealth requires not only the number/amount of assets but also their valuation. In 1961-62, all the values of the physical assets were evaluated using the fixed average market value prevalent at the time of the first round of the survey. Dues receivables were evaluated using average wholesale prices. Shares were valued at their paid-up value and all other financial assets were evaluated at their face values. There was a slight change in 1981-82 in the valuation. The value of physical assets owned on the reference date was simply the value on the date of survey minus the value of transaction between the reference date and the date of survey. Essentially it means different prices for the same assets were used.

Due to the lack of book value for valuation of assets for household sector, the following procedure is followed:
i) Value of physical asset acquired prior to the 30th June 1981 (1991, 2001, 2011) was evaluated in its existing condition at the current market price prevailing in the locality on the date of survey if the asset is owned on the date of survey or on the date of disposal if the asset is disposed of during the reference period in a manner other than sale.
ii) In case the asset is sold/purchased during the reference period, sale/cost price is considered as value of the asset. If the asset is acquired by way of construction, the expenditure incurred on construction is taken as its value.
iii)If the asset is acquired other than purchase, then the value of the asset in its existing condition as prevailing in the locality at the time of acquisition is noted. iv) If the asset is acquired during the reference period and is also disposed of during the said period, the disposal value is reported

**Availability of the data**: Micro-individual survey files are available for the last three rounds of survey- 1991-92, 2002-03 and 2012-13. For previous surveys, only source of information is annual reports. The 1981-82 and 1971-72 reports are available[4]. The 1961-62 report is not digitised yet and is available in hard copy format.[5] The samples are fairly big in size and vary for different years. The assets are collected at household level in all the surveys. I decided to work with individual level wealth as it provides a better understanding of wealth distribution from the perspective of inequality study. For example, a statement like top 10% of the households own 50% of wealth is a weaker statement to make in studying inequality if those 10% happened to represent 50% of total population. Household level inequality hides the per-capita level information, which is better suited for inequality statistics. Since there is no standard method to divide the wealth within household, I equally split among adult household. This will hold true for most of the physical wealth (like land, building, transport etc) which is synonymous to public goods within household. This procedure allows global comparison of inequality statistics. Equal split within a household is a big assumption in Indian society- where women usually do not own wealth because of various reasons like customary transfer of wealth from father to son, biased gender inheritance laws[6] and general gender discrimination in India, but usually have a say (even if unequal) in managing at the household level. The social norm of primogeniture also leads to unequal share of wealth - major share of inheritance going to the eldest son. The definition of adult population is chosen as ($> 20$ years) for all the analysis.

In all the analysis related to wealth using AIDIS datasets, household is the basic unit of reference. This avoids taking any form of assumption in splitting the household wealth within family.

**Justification for using total wealth instead of net wealth** Further the distribution is estimated with household per capita total wealth and not with household per capita net wealth. Net wealth is total household wealth minus total household debt. The debt level from AIDIS are suspected to be unreliable due to reasons of strong tendency of under-reporting of liability, issues related to sampling methodology and relative increase in state sample compared to centre

[4]http://www.mospi.gov.in/download-reports
[5]The library of College of Agriculture Banking, Pune, has the report and it is accessible on prior appointments.
[6]Before Hindu Succession Amendment Act 2005, women were deprived of inheriting land and other properties.

sample **chavan˙ras˙2008**; Narayanan (1988). Comparing the debts handed out by commercial banks, cooperatives and other lending agencies,**gothoskar˙estimates˙1988** found under-estimation of 40% in 1971-72 round and 50% in 1981-82 round. The other reason to use total wealth is that for pre-1991 surveys the information is only available in tabulated form which restricts estimation of distribution of net wealth as the classification is by total asset ownership and not by net wealth status (**subramanian˙distribution˙2008**). Due to these issues, I work with household total assets instead of household net assets. I have shown in my other paper for the years 1991, 2002 and 2012 (for which micro-dataset is available ) that the inequality numbers marginally vary with the net wealth.

### 2.2 SECC 2011

Socio-Economic Caste Census was a unique survey undertaken in 2011 to capture the information on caste. Though the information on caste is not released till now, it captured some information on household owned wealth. Rural census questionnaire asks about house/dwelling, household amenities (refrigerator, telephone/mobile and motorized vehicle) and agricultural land area. I use the information on the land area for estimation of village level land inequality statistics. I received the rural level micro-level dataset for the 10 largest states of India - Punjab, Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnatka, Tamil Nadu, Kerala.

### 2.3 Census 2001 and 2011

I use the micro-dataset provided by the census office of india at village level to combined with the village level land inequality statistics estimated using SECC. This provides a very rich village level dataset on .

### 2.4 World Bank Data

LI, Galdo, and Pinto (*A-Spatial-Database-for-South-Asia-Paper..pdf*) work on "Spatial database for South Asia) puts together village level geographic and climatic variables. I use the following variables from the database :
1) Elevation (in metres): It is the average elevation of the area. This indicator is constructed by averaging information from 1-km resolution global topographic grids.
2) Roughness (in metres): Surface roughness is the standard deviation of the elevation of the area. Elevation is constructed by averaging information from 1-km resolution global topographic grids.
3) Precipitation (in mm) : I use average decadal precipitation (2001-2011).[7]

I combine this information with my other village level datasets

## 3 State Level : Wealth Inequality 1961-2012

I start first by presenting evolution of wealth inequality at state level in India. Bharti (2018) presents the evolution of wealth inequality in last 50 years (1961-2012) using national level surveys and millionaires list. The wealth inequality in terms of share of wealth owned by top 10% population has gone up to reach 62-65% in 2012. Provided the vast size of the country both in terms of area and population, state level wealth inequality helps in understanding the states which are contributing to the national level wealth inequality. I found high level of heterogeneity in different states both in terms of level of wealth and evolution of inequality. I also look at pre (before 1991) and post (after 1991) liberalization periods to argue that many states have experienced higher increase of wealth inequality in post liberalization era.

### 3.1 Household level average wealth

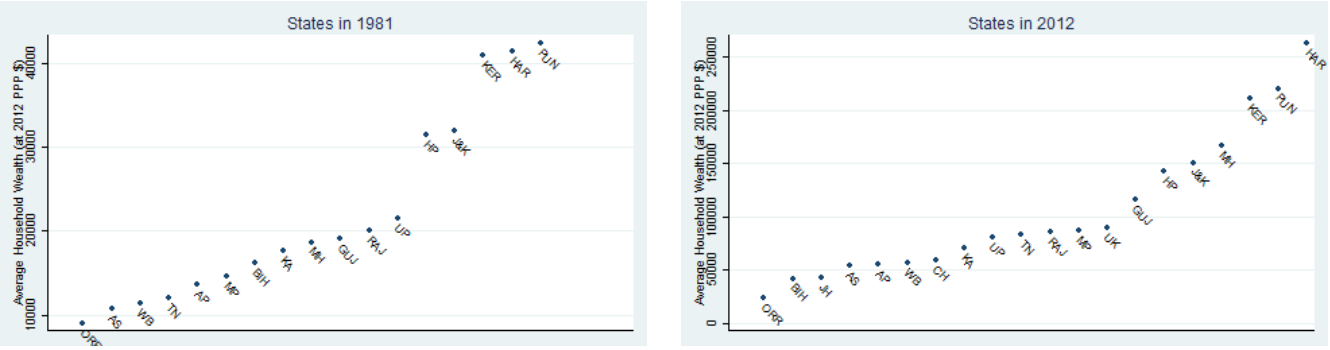
To begin with it is important to highlight that there were high level of differences in states at the time of independence. One of the objectives of the central government was to reduce the differences among states and bring them closer to each other. The distribution of central revenues among states through planned and discretionary approach is a testimony to that. Most of the north indian states, hilly states, north indian states are provided with more resources than what they generate. On the other hand, south and west indian states generate more than what they receive. Add a table of state level revenue generation .
The following graphs show the level of household wealth in different states in 1981 and 2012. In 1981, Punjab, Haryana, Kerala, J& K and Himachal Pradesh formed the top 5 states and remains same in 2012 with Rajasthan coming in and Himachal Pradesh dropping to 6th position. Since we are comparing the level of household wealth, the usual blocks

[7]The main source of this dataset is Climatic Research Unit Database Version 3.22 (CRU) University of East Anglia Climatic Research Unit; Climatic Research Unit. Jones, P. D., and I. Harris. 2008. Climatic Research Unit (CRU) Time-Series Datasets of Variations in Climate with Variations in Other Phenomena. NCAS British Atmospheric Data Centre, 2015

of states may not remain valid. For example, Uttar Pradesh having higher level of average household wealth than Karnatka.

Figure 1: Average household wealth at state level

(a) 1981 (b) 2012



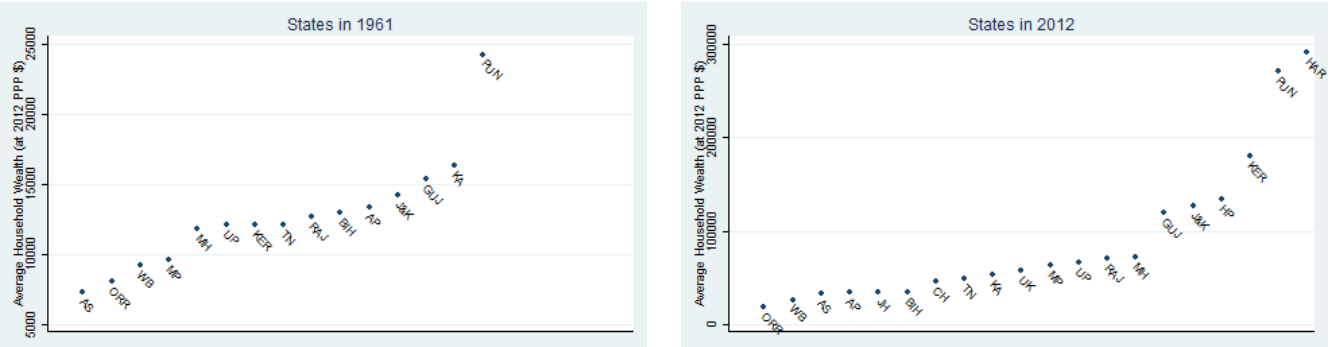

The data allows us to look into the rural and urban level separately. India was majorly a rural country to begin with. The level of urbanization reached 31% in 2011 census from 18% in 1961.

### 3.1.1 Household level average wealth : Rural

Below graphs show the level of average wealth in rural regions of the state.

Figure 2: Average household wealth at state level: Rural

(a) 1981 (b) 2012

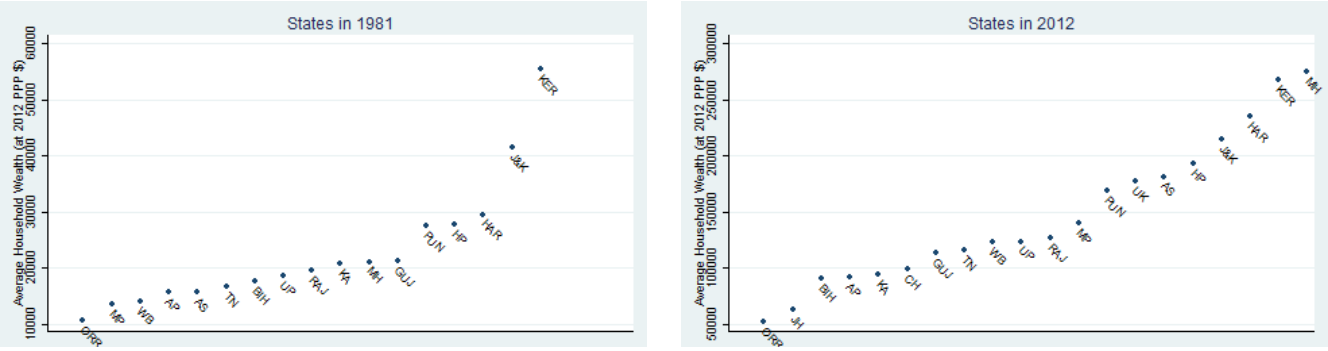



### 3.1.2 Household level average wealth : Urban

Below graphs show the level of average wealth in urban regions of the state.

Figure 3: Average household wealth at state level: Urban

(a) 1981 (b) 2012



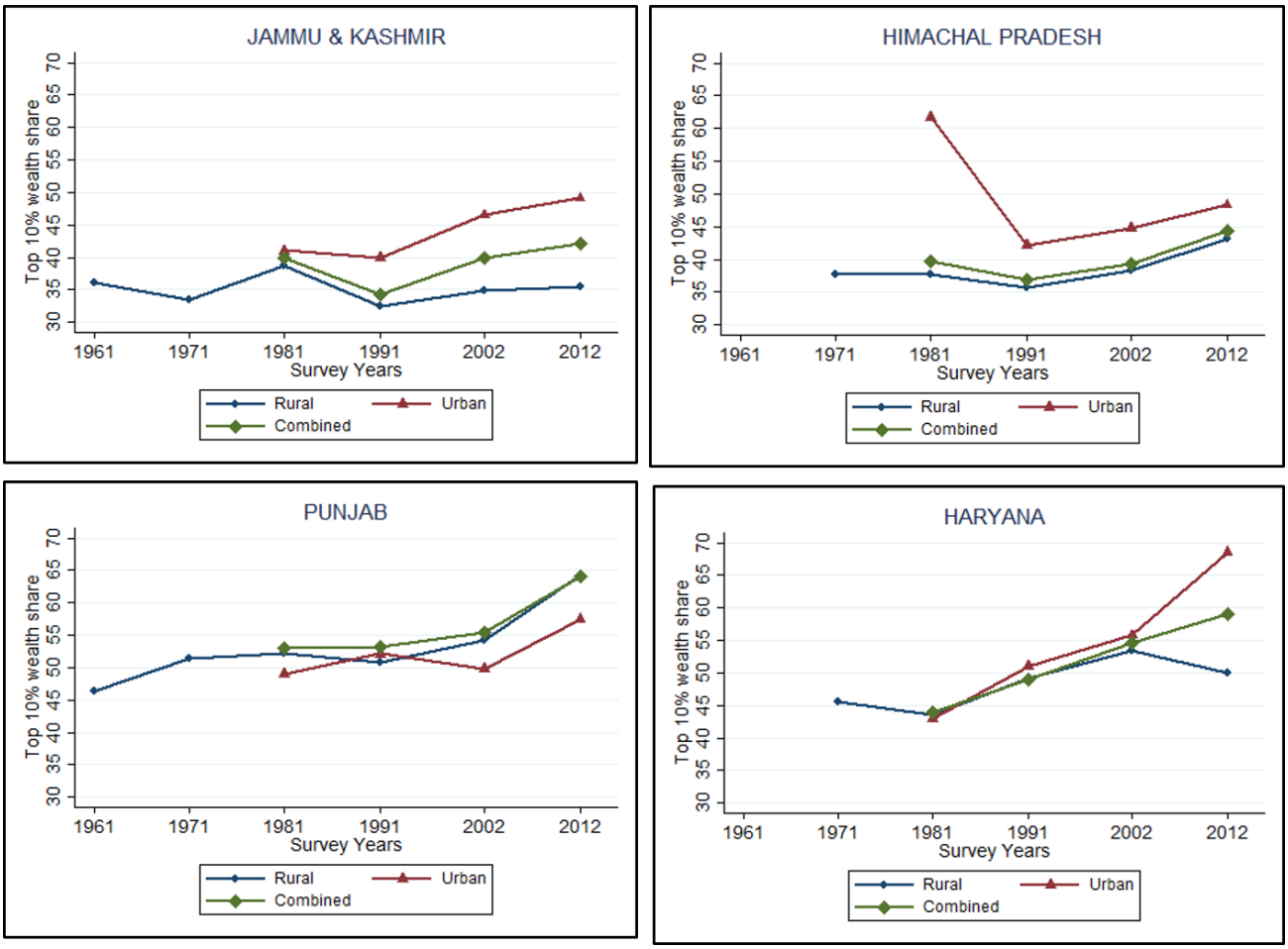
## 3.2 Evolution of Wealth Inequality 1961-2012

Next we look at the distribution of household wealth in different states. Here I present the evolution of wealth inequality in big 17 states. Overall we observe northern states have seen an increase in wealth inequality over the period, whereas southern states have decreased their inequality. The clubbing of states are based on the geographic positioning of the states.

### 3.2.1 Evolution of Top 10% wealth share

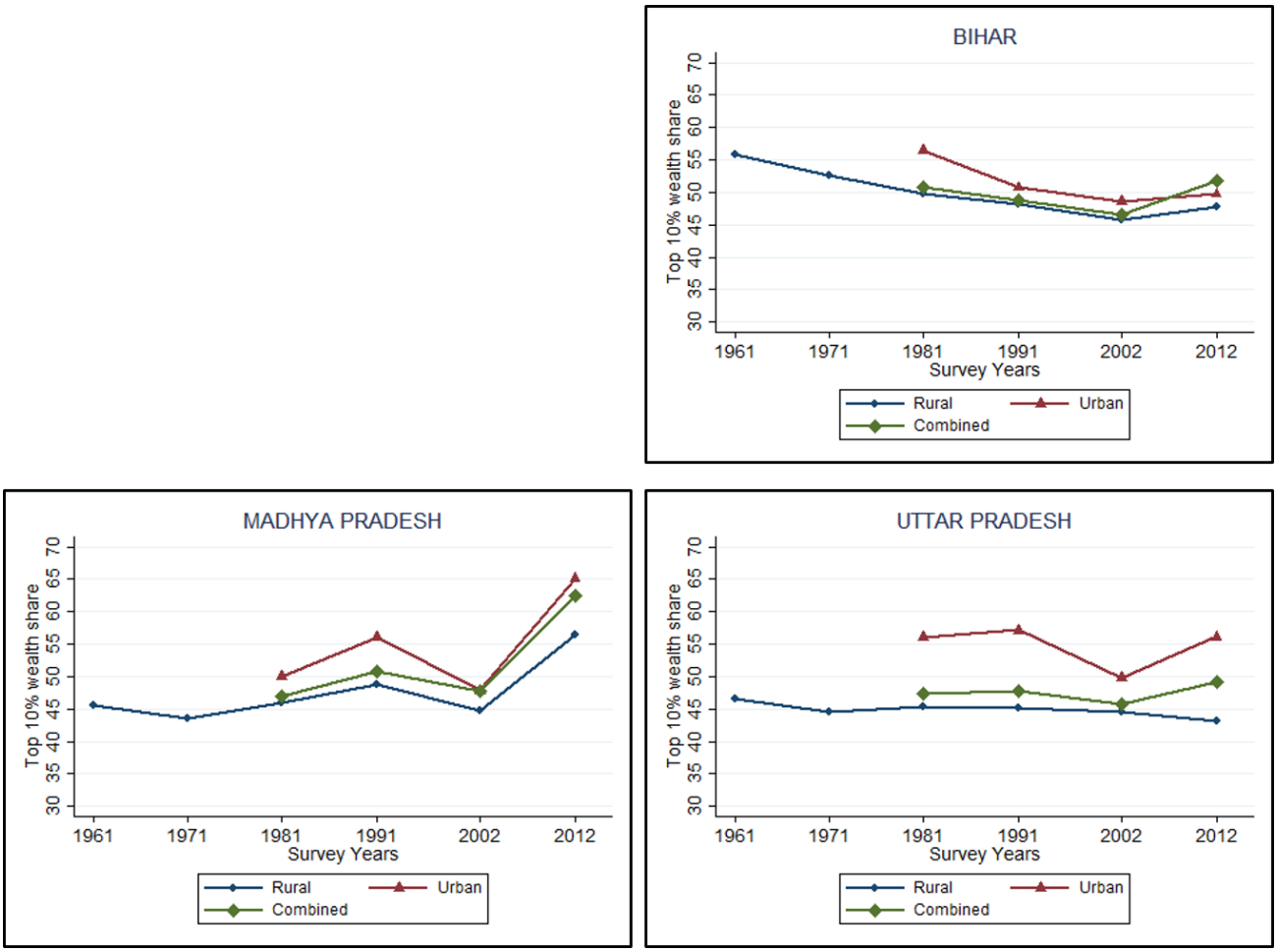
**Northern States** : Jammu & Kashmir, Himachal Pradesh, Punjab and Haryana are the northernmost states of India. Top 10% of the households in the state own around 40% in Jammu and Kashmir, 45% in Himachal Pradesh, 60% in Haryana and 65% in Punjab of the total household wealth in 2012. Looking at 4 we see that post 1991, there is an increasing trend of wealth inequality in both rural and urban regions in all the states. Punjab is a peculiar state where rural level wealth inequality is higher than its urban counterpart. In last decade, Haryana saw overall increase in the wealth inequality coming from urban area.

Figure 4: Top 10% share in Northern States



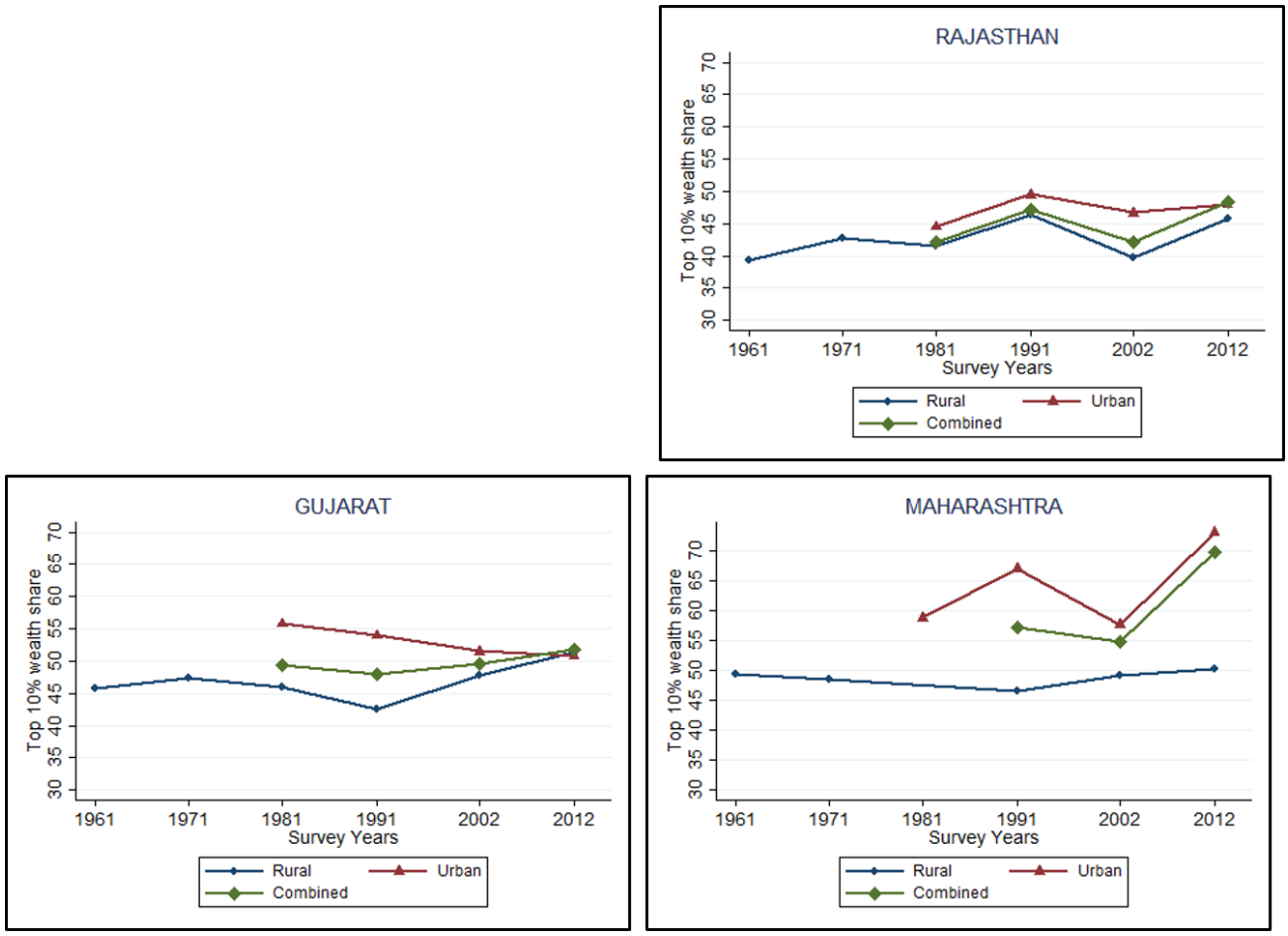

**Northern States- Hindi belt** : Uttar Pradesh, Bihar and Madhya Pradesh are put into this group. Top 10% of the households in the state own around 50% in Uttar Pradesh, 55% in Bihar, 65% in Madhya Pradesh of the total household wealth in 2012. The level of wealth inequality was highest in Bihar in 1961, however it is on consistent decline, except in last decade. The level of inequality in UP has remained the lowest among the three states and in last 50 years we do not see any big movement in the state. This stability of wealth inequality at household level is very unique feature of Uttar Pradesh. Madhya Pradesh is one of the states where inequality increased pre-1991 in rural areas. One should keep in mind that the newly carved state Chattisgarh was a part of the state then.

Figure 5: Top 10% share in Northern States- Hindi belt



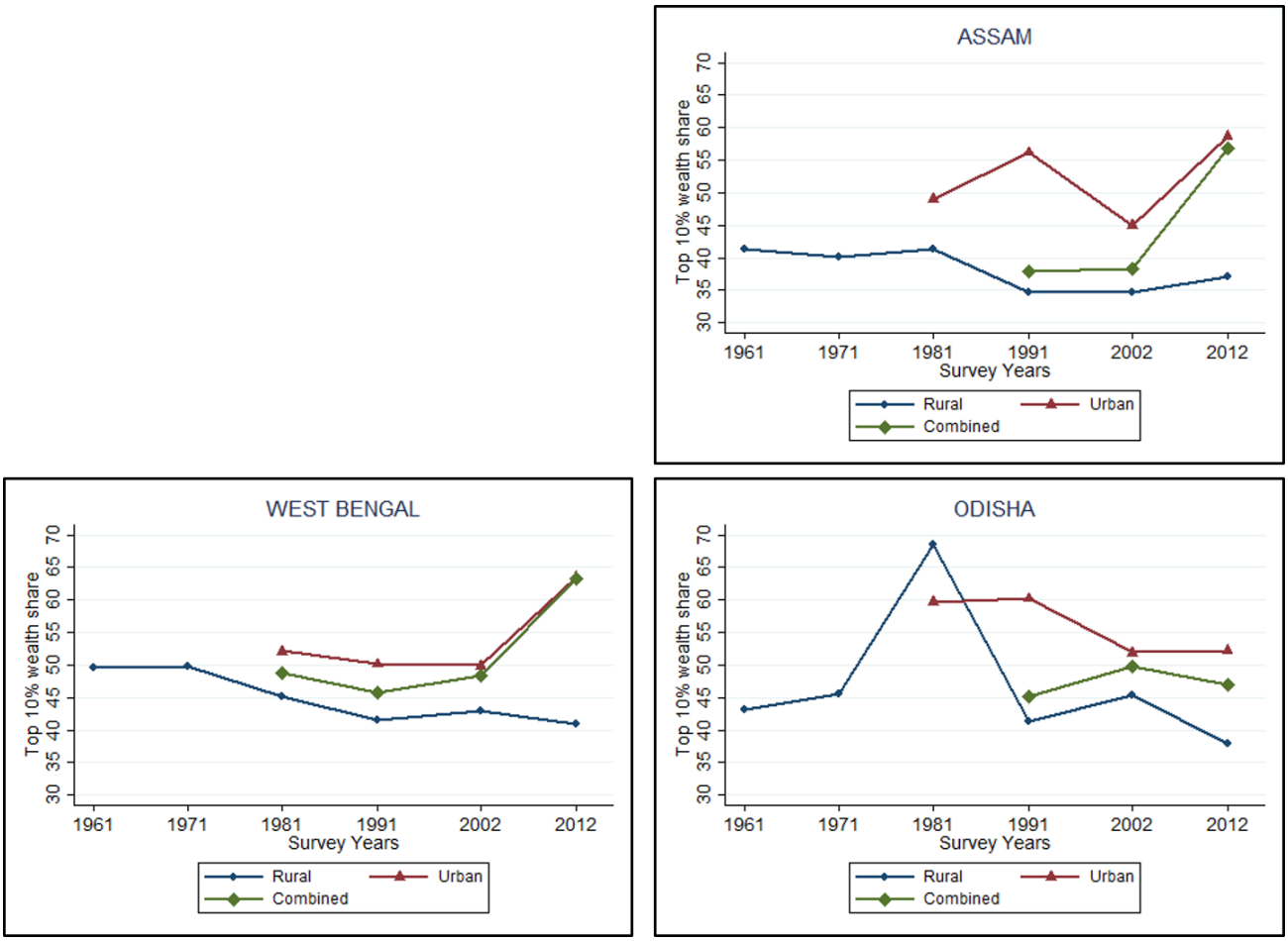

**Western States** : Rajasthan, Gujarat and Maharashtra are put into this group. Top 10% of the households in the state own around 50% in Gujarat and Rajasthan and 70% in Maharashtra, of the total household wealth in 2012. Rajasthan had one of the lowest level of wealth inequality in the country, but now it has come to the same level as UP and Gujarat. The case of Gujarat is interesting as we see there is a consistent decline in wealth inequality in the urban sector and increase in rural sector. Maharashtra on the other hand is one of the most unequal states, where in rural sector Top 10% own 50% wealth, and it has remained almost constant. Urban sector has seen an increase in wealth inequality over the years and it contributed

Figure 6: Top 10% share in Western States



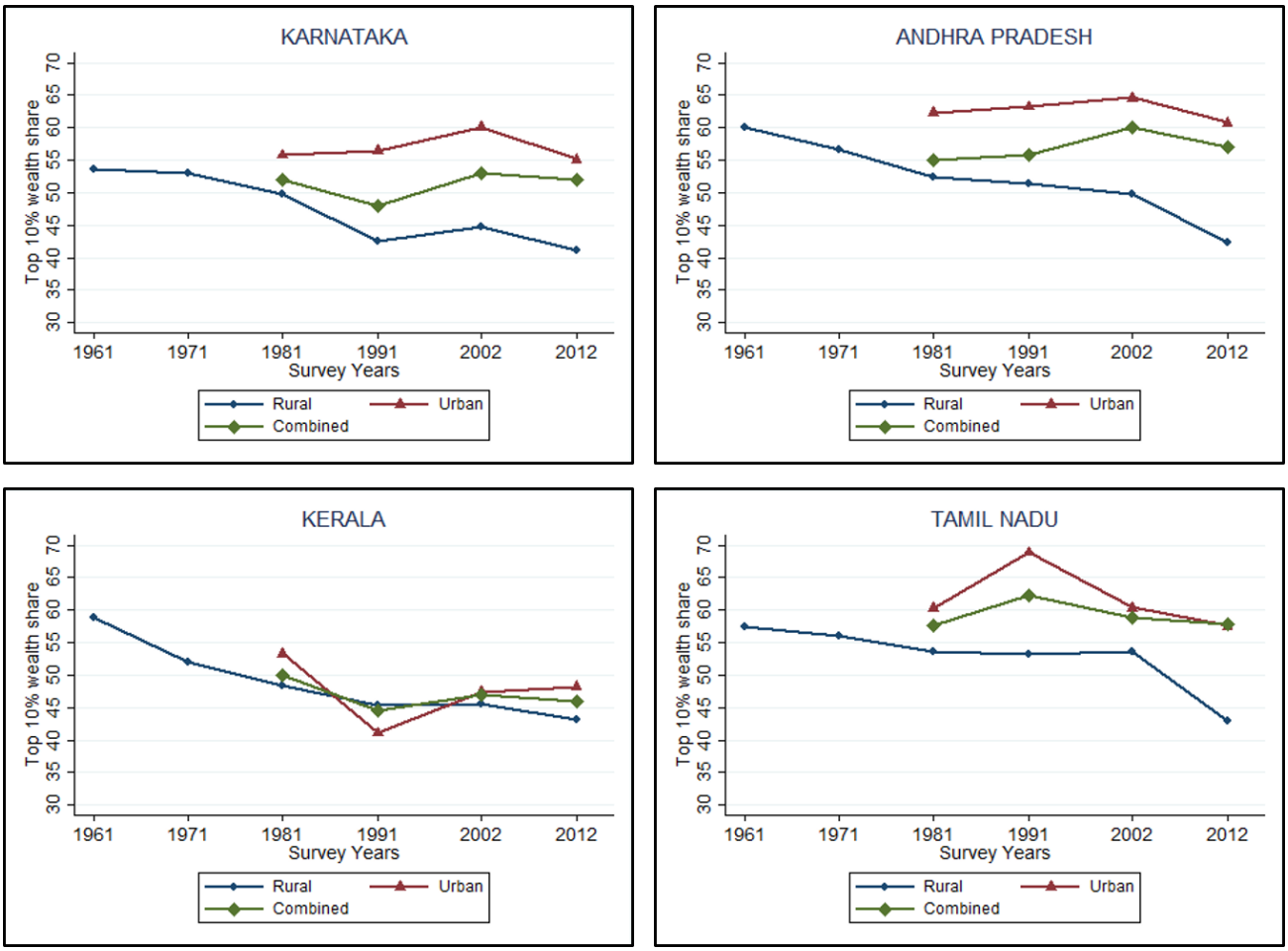

**Eastern States** : I keep Assam, West Bengal and Odisha into this group. Top 10% of the households in the state own around 50% in Orissa, 55% in Assam and 65% in West Bengal, of the total household wealth in 2012. West Bengal has seen consistent decline in rural areas throughout the time period, though urban areas saw a huge jump in last decade which has pulled up the overall trajectory of inequality in the state. Similar trend is observed in Assam with lower level of inequality in the state. Odisha data seems abrupt in 1981.

Figure 7: Top 10% share in Eastern States




**Southern States** : Andhra Pradesh (including Telangana), Karnatka, Kerala and Tamil Nadu are kept into this group. Top 10% of the households in the state own around 55-60% in all the states except Kerala where inequality stands at 45%. We observe a consistent decline in the wealth inequality in all these four southern states in both rural and urban areas. The urban areas of Tamil Nadu and Kerala behave differently post 1991. In Tamil Nadu we see continued decline in wealth share to the top 10% whereas in kerala it is on consistent increase.

Figure 8: Top 10% share in Southern States




### 3.2.2 Evolution of Bottom 50% wealth share

Another interesting statistic to look at is the share of wealth owned by the Bottom 50% of the population in different states. The graphs are present below.

Figure 9: Bottom 50% share in Northern States

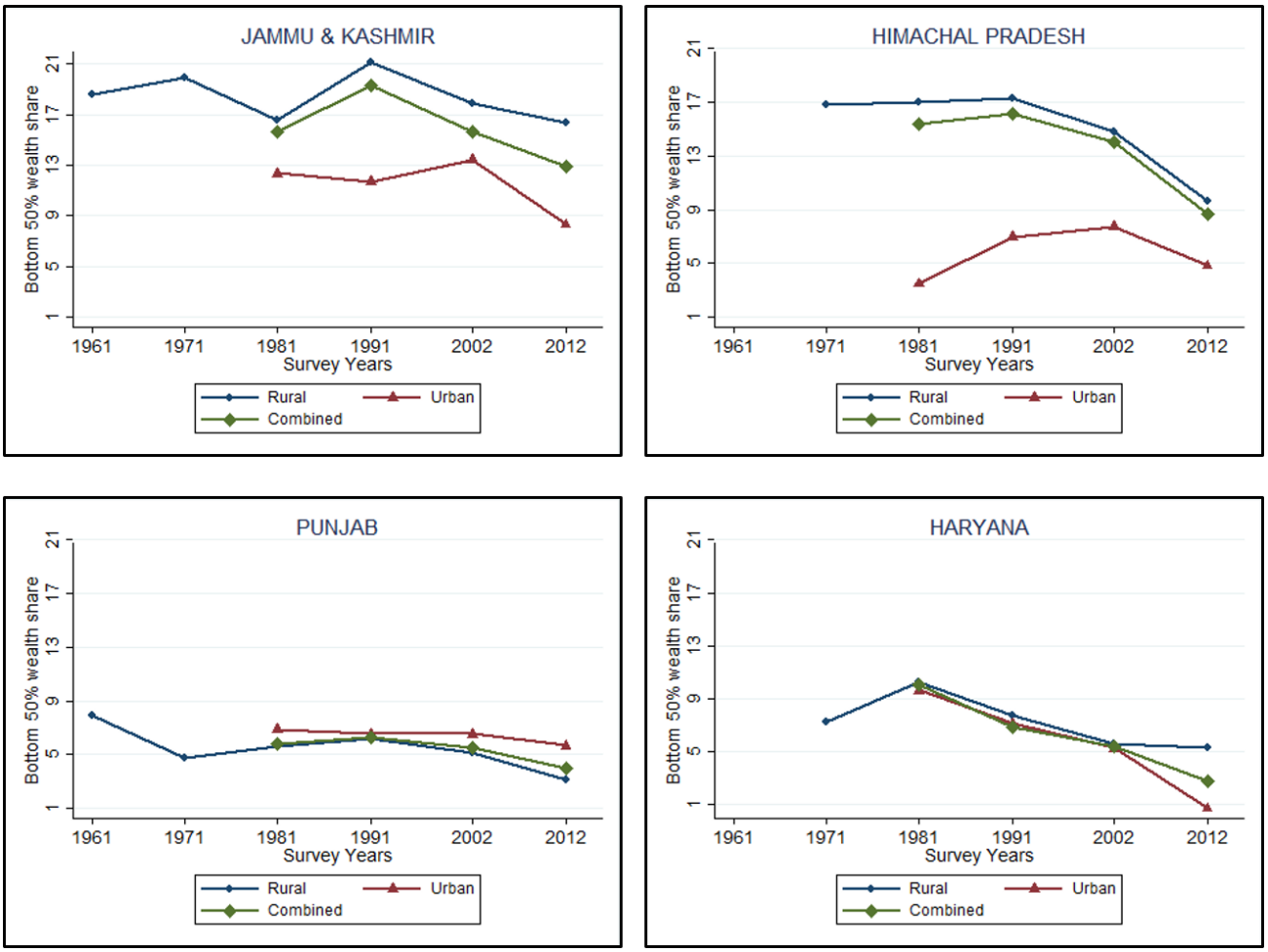



Figure 10: Bottom 50% share in Northern States, Hindi belt

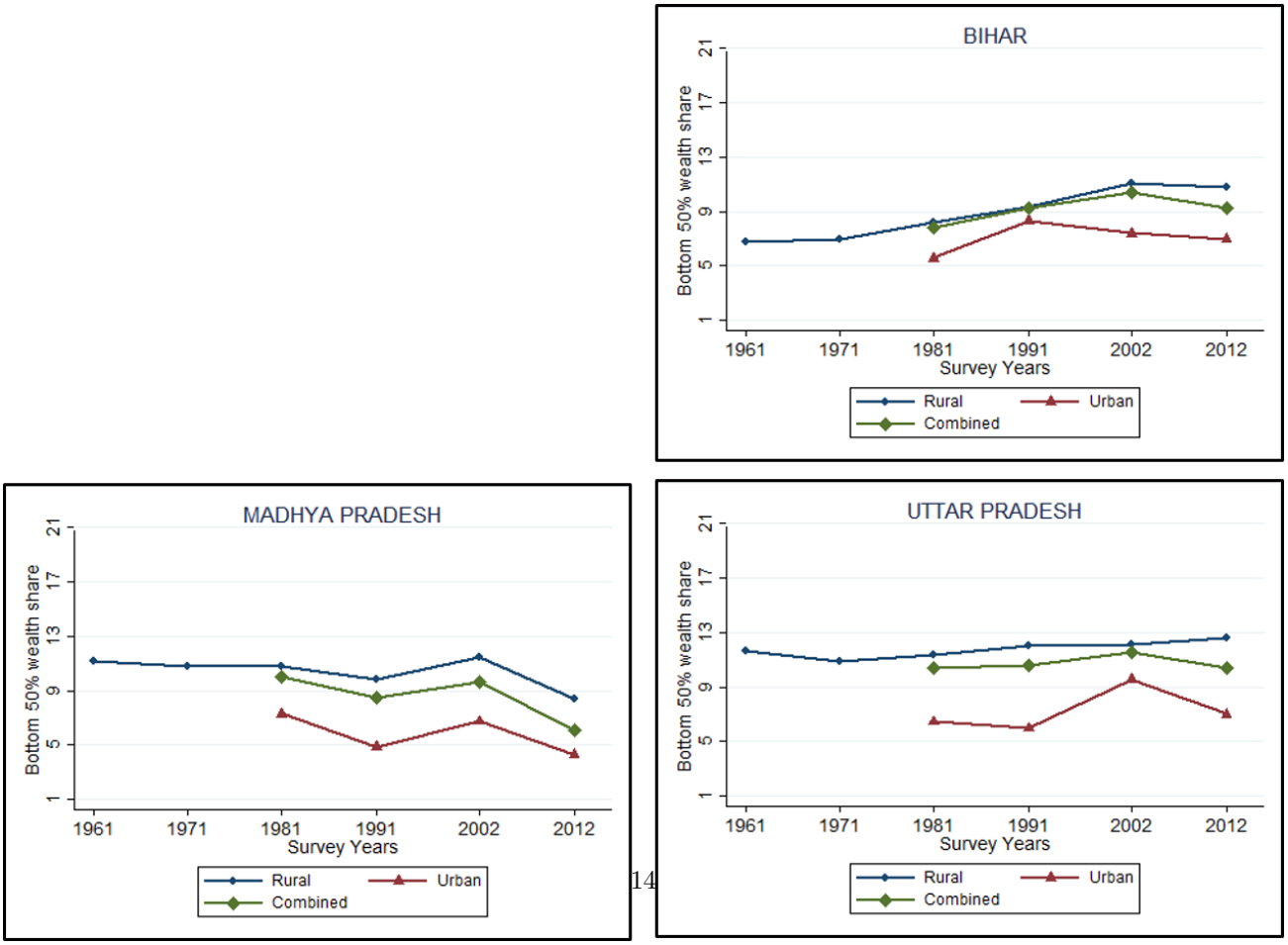
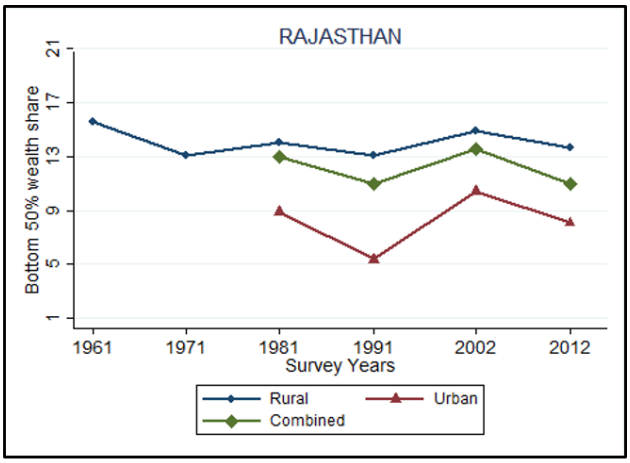
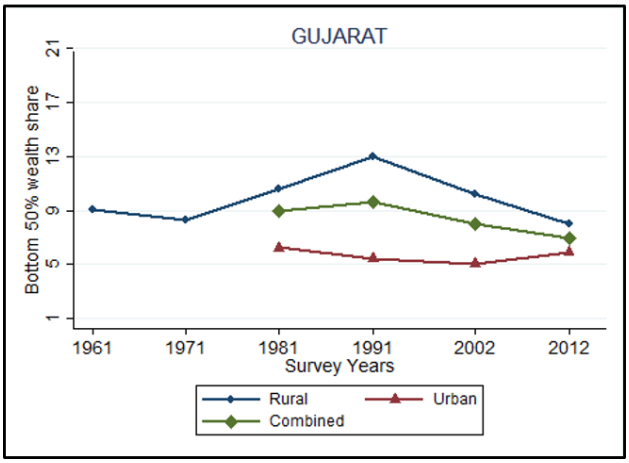


Figure 11: Bottom 50% share in Western States



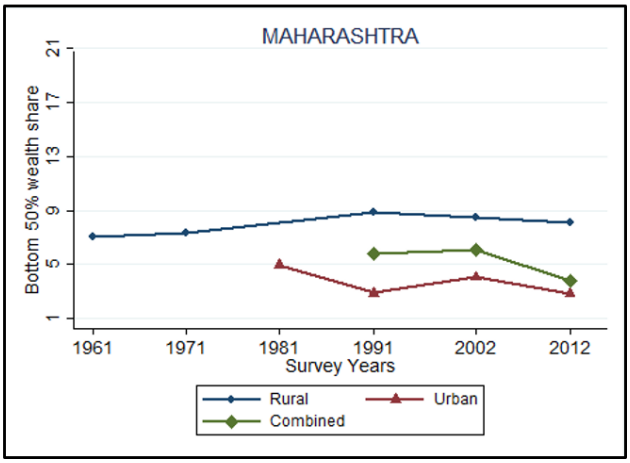



Figure 12: Bottom 50% share in Eastern States

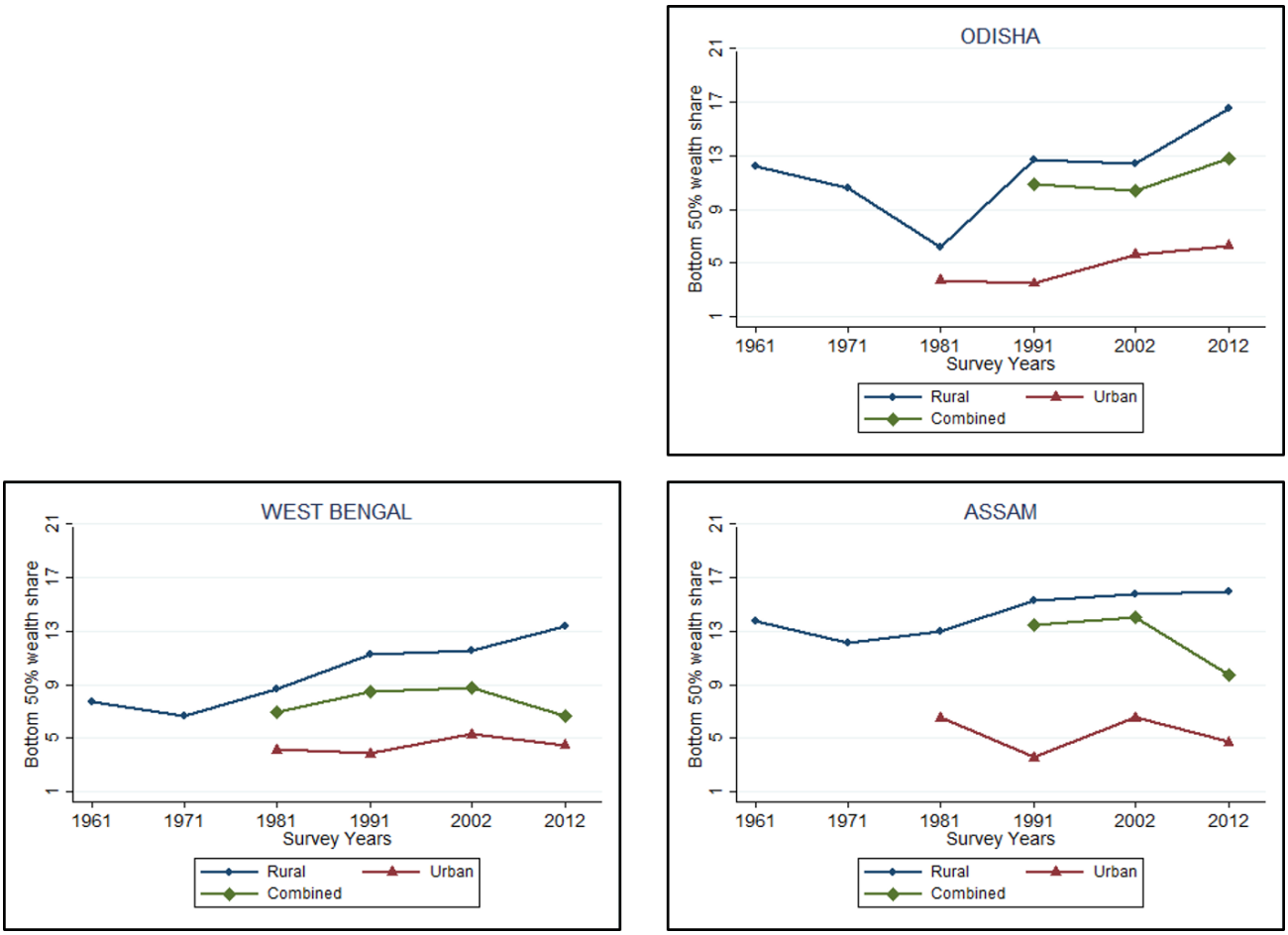
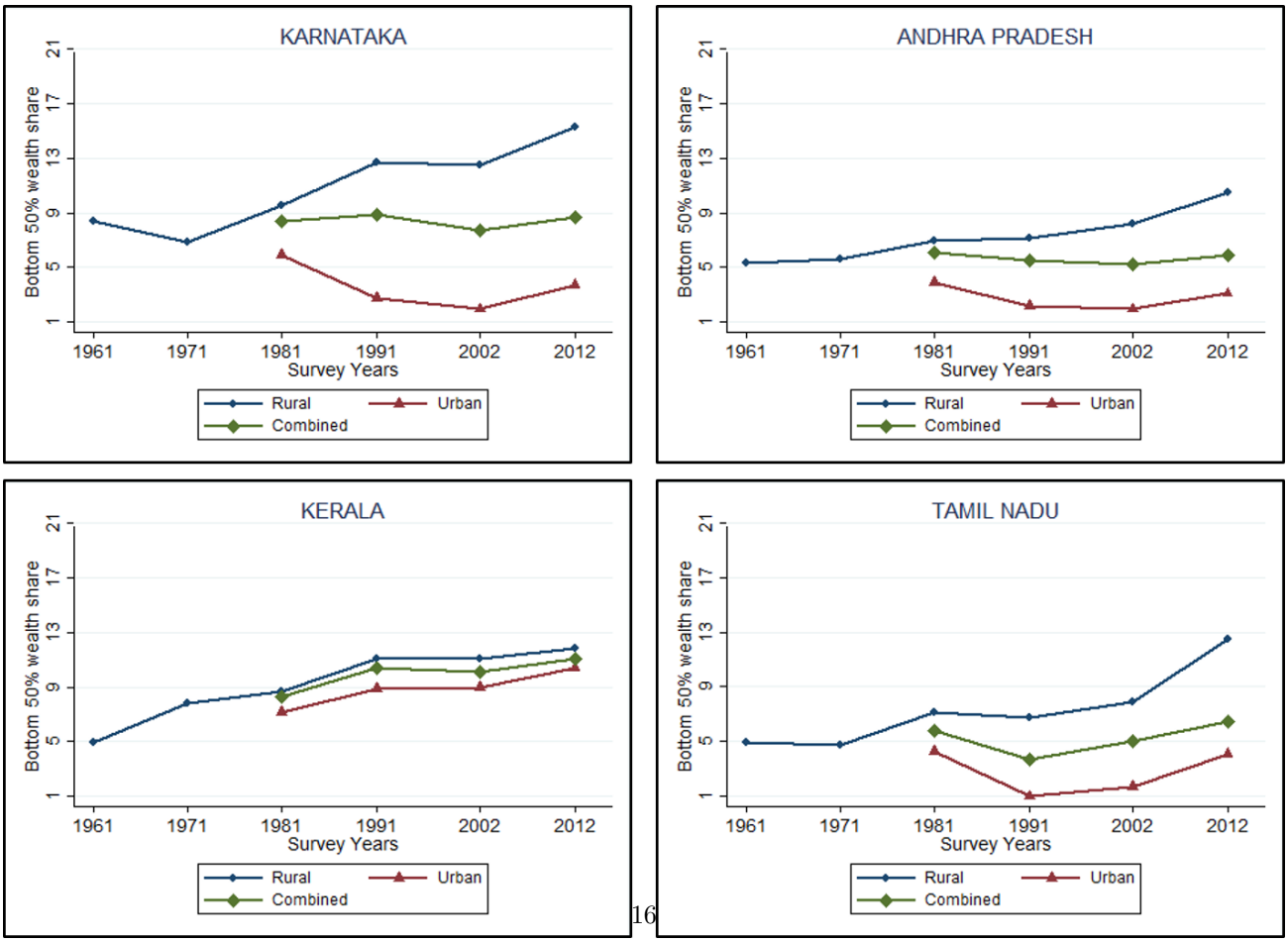



Figure 13: Bottom 50% share in Southern States



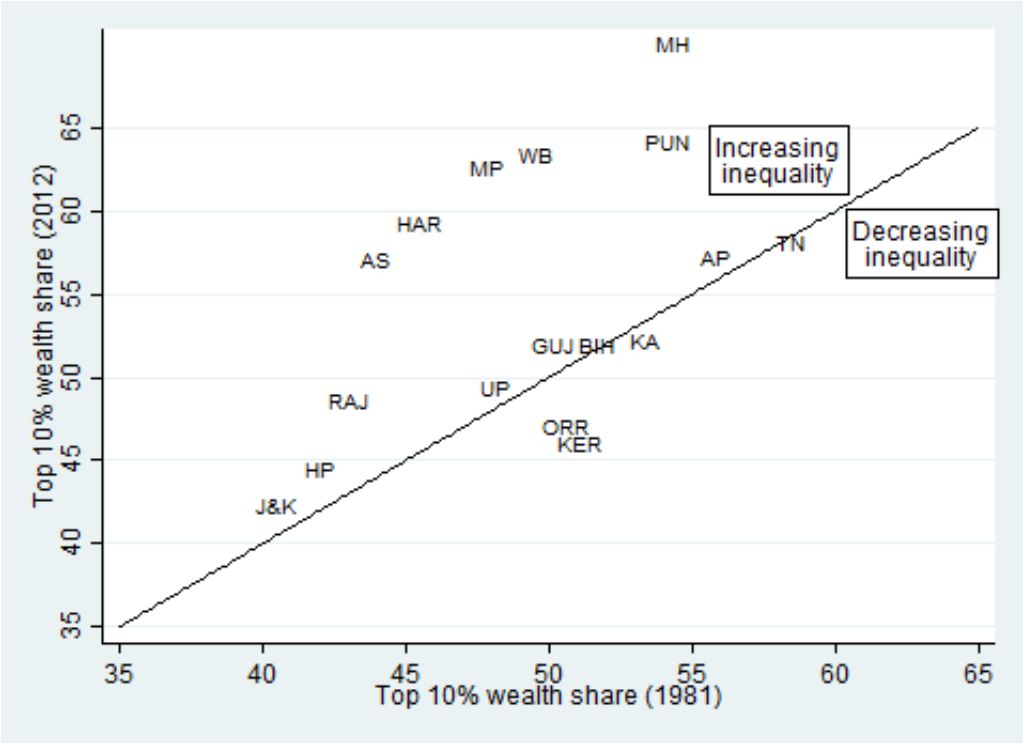
### 3.2.3 Evolution of Middle 40% wealth share

Another interesting statistic to look at is the share of wealth owned by the Middle 40% of the population in different states.

## 3.3 Pre and Post Liberalization analysis across states

From the above we observe that most of the states have seen a rise in wealth inequality in recent years. Interestingly we observe that majority of the states have seen rise in inequality post liberalization period, i.e., after 1991. If one look at rural area separately we observe that many states have been able to reduce the share of wealth owned by top 10% population. Southern states have done exceptionally well. Punjab is an outlier where rural areas have seen an overall increase in 15 pp increase in the top decile share. Most of the states observed an increase in inequality in urban areas . Maharashtra, Haryana, MP and West Bengal have seen a rise of more than 10pp from 1981 to 2012.
In the following paragraph, I present the changes in wealth inequality over entire time period, pre-liberalization period and post liberalization period. This helps in categorizing states into two clear blocks of increasing and decreasing inequality. Figure 14 shows top 10% wealth share in 2012 and 1981. The states which are above the 45 degree line are those which have experiences an increase in top decile share, whereas state below the line are those which has seen decrease in the share of top decile. States close to the line have same level of top decile share. Except Kerala and Orrissa all other states have experienced an increase in the wealth inequality. Farther the states lie from the line, greater is the change. In Maharashtra, Punjab, West Bengal, MP, Haryana and Assam the increase is more than 10pp.

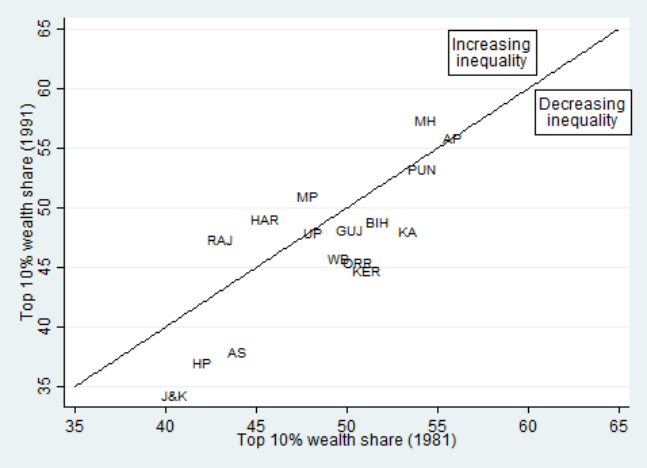
Figure 14: Indian States 1981-2012 : Top 10% wealth Share



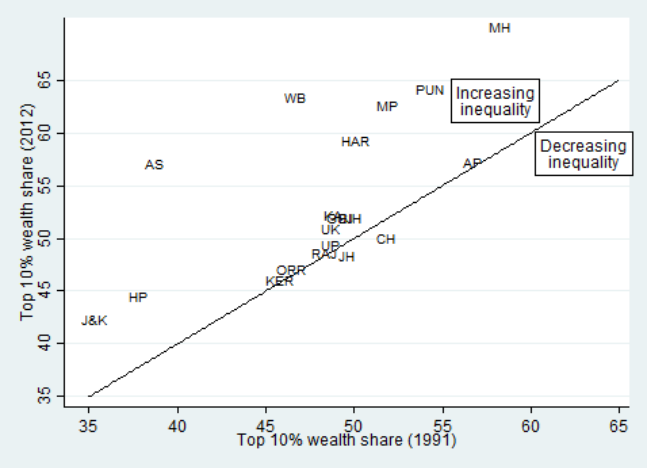

Next we look at top decile shares in pre and post liberalization period separately in Figure 15. Most of the states are below the line, indicating a decrease in the wealth inequality before 1991 (Fig 15). Even the states which are in the "increasing inequality" box are very close to the line. On the other hand in the post-liberalization phase, we see a clear shift where either the states have experienced larger increase in the wealth inequality or remain stable. Maharashtra (Mumbai), Punjab and Haryana receive lots of migrant population who go to work there and may be potentially a reason for this higher level of inequality. The migrants usually work as agricultural labourer in Punjab and Haryana or mostly in informal sector in Maharashtra(Mumbai metropolitan). The same story may not be true for Madhya Pradesh, Assam and West Bengal which probably receive less such migrants. The data allows us to look into rural and urban sector separately. However one should keep in mind that there is an increasing trend of urbanization in all the states which doesn't allow proper comparison across the two sectors.

Figure 15: Wealth Inequality in Pre vs Post liberalization period

(a) 1981-1991




(b) 1991-2012




### 3.3.1 Rural Sector: Pre and Post Liberalization analysis across states

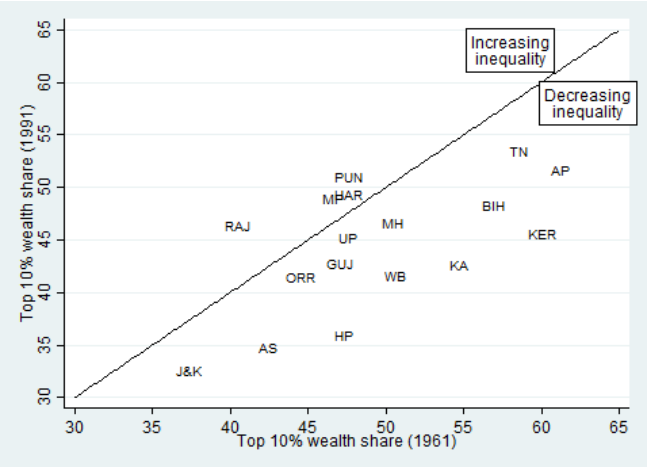
The data for rural sector is present from 1961 which helps in comparing 30 years before and after of pre-liberalization in rural sector.

If we create 3 categories of High (>55%), Medium (45-55%) and Low (<45%) level of wealth inequality based on the wealth share owned by top 10% households, in 1961, we observe that all southern states and Bihar had High wealth inequality. Rajasthan, Assam, Orissa and Jammu & Kashmir had Low wealth inequality. Rest of the states fall in Medium level. By 2012, the situation changed only Madhya Pradesh and Punjab fall in High level. All Southern states now are in Low level of wealth inequality category apart from the states which were present before. Uttar Pradesh and Himachal Pradesh also now have Low wealth inequality.

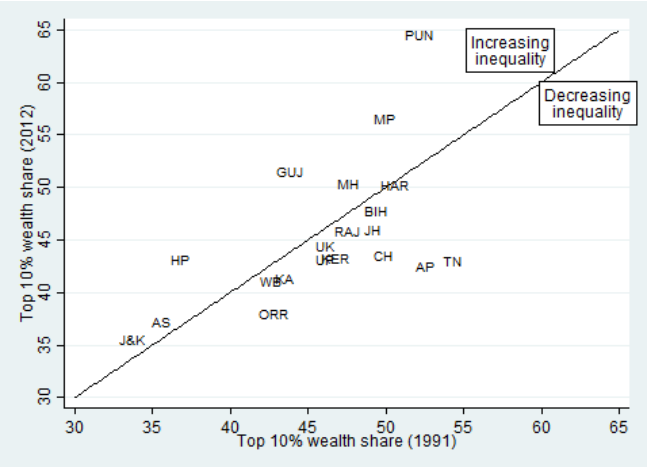
We observe that almost all of the states are in the "Decreasing Inequality" bloc in pre-liberalization period. It could be due to several land reforms measures undertaken in this period. Post liberalization the picture changes and several states fall in increasing inequality bloc, though closer to the line. Punjab is an outlier with a big increase in wealth inequality in its rural sector post 1991.

Figure 16: Rural: Wealth Inequality in Pre vs Post liberalization period

(a) 1961-1991




(b) 1991-2012




### 3.3.2 Urban Sector: Pre and Post Liberalization analysis across states

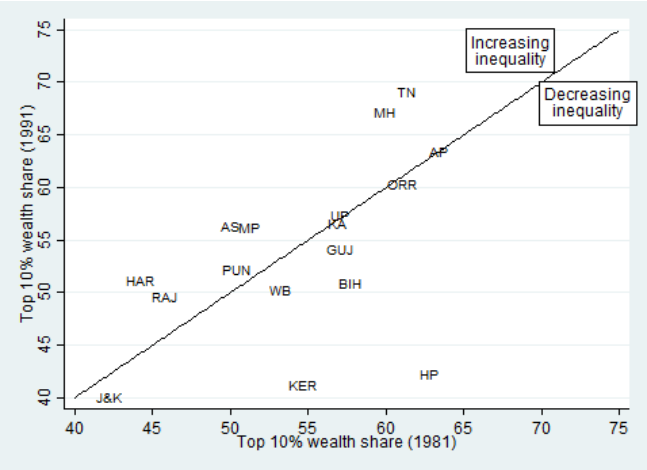
Urban sector information is present from 1981. Urban areas in every states have higher wealth inequality than their rural counterpart except in Punjab. Except Maharashtra, all states with top decile share more than 55% have seen decline in the top share. Haryana, Madhya Pradesh and West Bengal which had <55% top decile share in 1981, have

seen 10pp rise  65% by 2012.

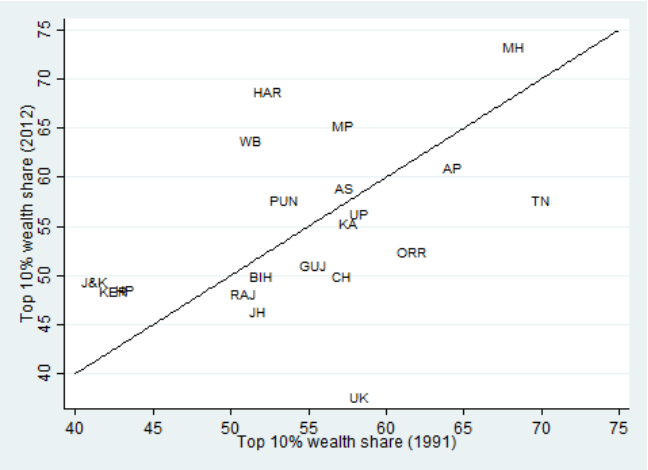
Looking separately into pre-liberalization time period, Kerala, Himachal Pradesh and Jammu & Kashmir experienced more than 10 pp reduction in top decile share. Tamil Nadu and Maharashtra increased top decile share by 8pp and both states have similar level of wealth inequality. These two states diverge in post-liberalization phase where Tamil Nadu saw reduction in wealth inequality level whereas Maharashtra observes increased concentration of wealth increasing upto 75% level. Haryana, West Bengal and Madhya Pradesh also increased top decile wealth share.

Figure 17: Urban: Wealth Inequality in Pre vs Post liberalization period

(a) 1981-1991



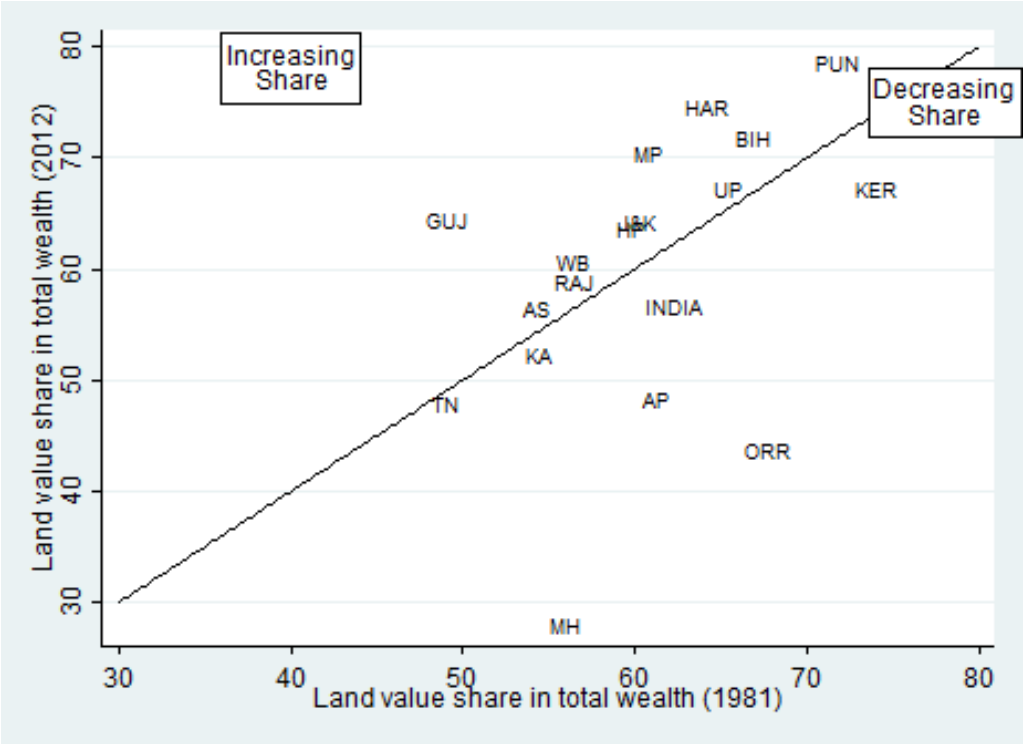

(b) 1991-2012




## 3.4 Contribution of Land in total wealth

Land forms an important part of the wealth. In this section I look at the variation across the states in terms of importance of land as an asset in total wealth of households. At All-India level, the contribution of land in total wealth has always remained quite high at around 60%. Some states like Punjab, Haryana and Bihar the importance of land has increased above 70%. Figure 18 show the change from 1981 to 2012. In most of the states, the share of land value in total wealth has increased over these 40 years, denoting increase in the land prices. Maharashtra is an outlier where land value has decreased to less than 30% in 2012 from 55% in 1981. Gujarat has seen an increase of around 15pp denoting increasing importance of land.

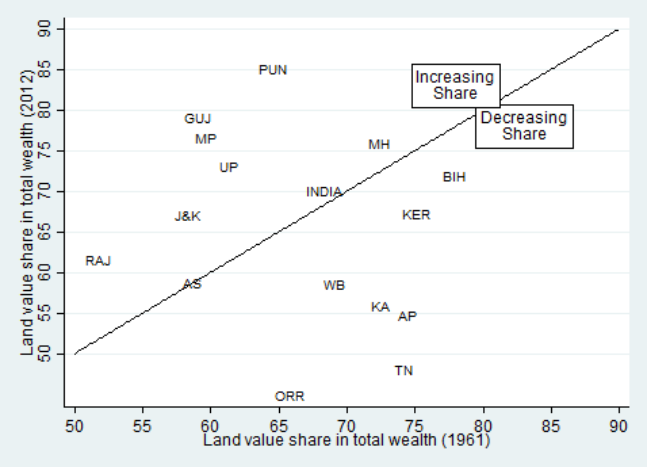
Figure 18: Contribution of Land in total wealth 1981-2012



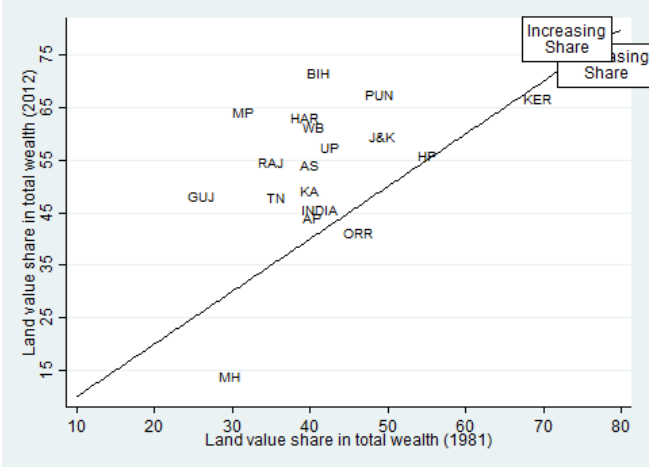

Next one can look the land contribution in rural and urban areas. In rural sector, we see a mix bag, where northern (including Hindi belt) and western states have seen rise in land contribution. In southern states and Bihar, Orrisa the share has declined since 1961. In urban sector, there is clearly a rise in the contribution of land in total wealth since 1981, except in Maharashtra.

Figure 19: Contribution of Land in total wealth

(a) Rural: 1961-2012




(b) Urban: 1981-2012



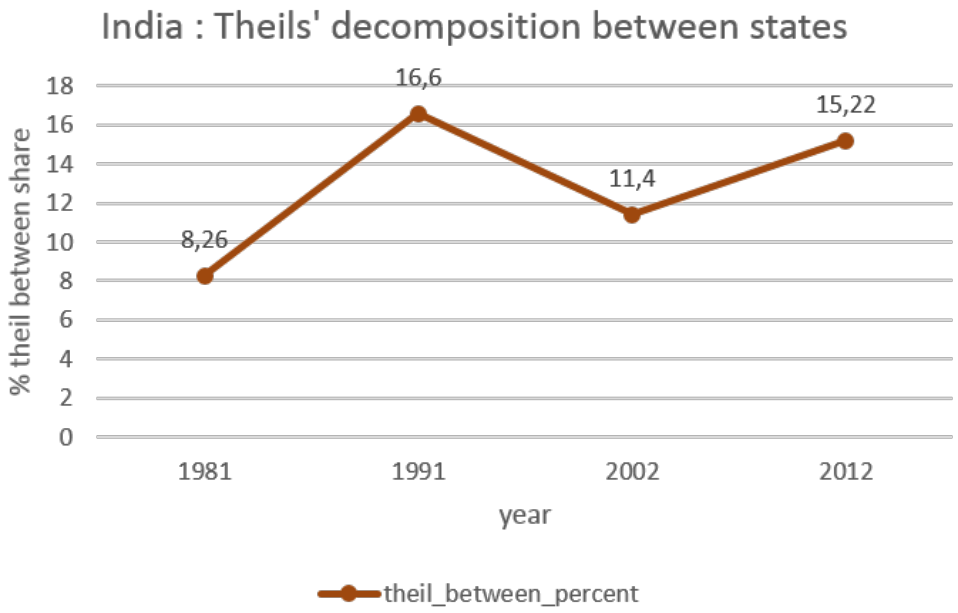

The importance of land in the total wealth and increase wealth inequality in the country begs one to look into the issue of land ownership and its evolution in detail. This becomes one of the main motivation to study land inequality at local level (i.e at village level).

## 3.5 Between-within state level inequality

In this section, I show the result from the decomposition exercise at state level. Figure 20 shows the between-state share of Theil index (decomposed additively between and within). Within state explains the largest share of Indian inequalities in entire period. However we observe that between-state inequality has risen from 8.26% in 1981 to $\sim$ 16% in 2012. The values are not very stable over the decades, however long run picture indicates that states are diverging.

One can also look this split in rural and urban sector separately. The major changes can be seen in rural sector, where rural areas of different states are becoming more different now.

Figure 20: Theil's decomposition: Inequality between states




# 4 India Level Analysis

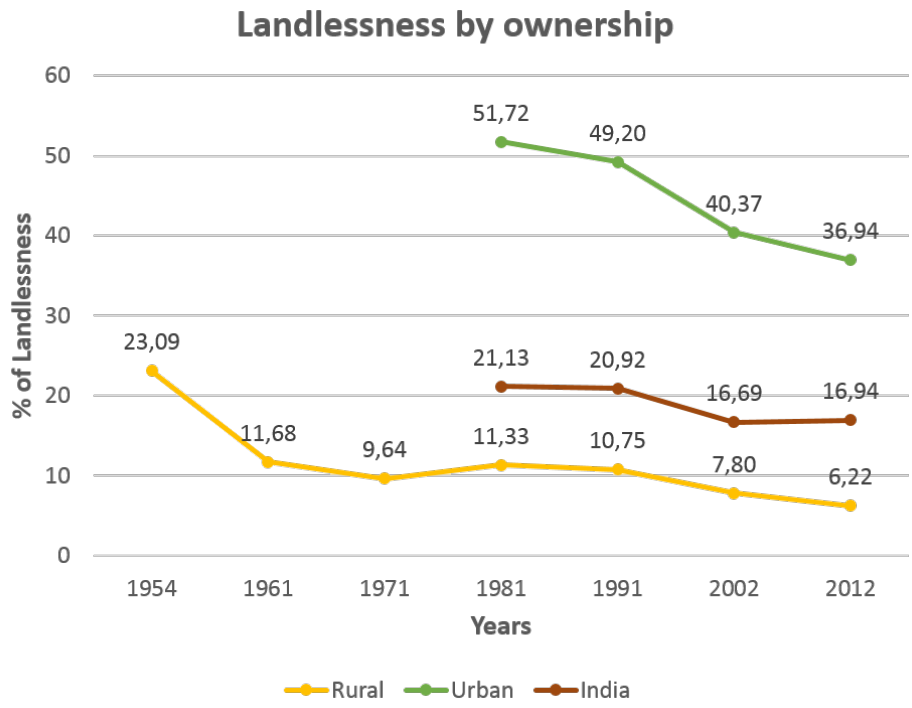
In the paper "Wealth Inequality in India:1961-2012" I showed how total wealth inequality in the country has evolved over last 60 years using survey and millionaire's datasets. Land turned out to be the most important asset in household wealth. In this section, I look into the land inequality specifically. Part of the increase in overall wealth inequality is coming from the change in land prices, so even when the top decile population is not buying new lands, the development around those land, has probably led to increase in land value.

I deal with the land owned by the households. The share of land owned by household with respect to the total land in India has declined from 40% in 1961 to 32% in 2012. The pace of decline increases over time and is highest in the recent decade. The decline can be devoted in general to the increased pace of development post 1991 liberalization, where the land is used for developmental purposes- roads, commercial buildings or other infrastructure development. The average area owned by household is also on decline. It has decreased from 2.56 acres in 1981 to 1.08 acres in 2012. Further in rural areas the decline is more from $\sim$ 4.8 acres in 1953-54 (3.16 acres in 1981) to 1.4 acres in 2012 in rural areas.

## 4.1 Landlessness

A corresponding interesting figure is the landlessness in the country. In general rural areas have low level of landlessness as most of the households tend to have their own house with land. Further from 2002 survey starts capturing the owned land upto three decimal points which shows in the reduced figure for landless. To compare across years, households with land less than .01 is taken as landless. Landlessness seemed to be stable at around 11% in rural areas till 1991, but has decreased to 6% in 2012.

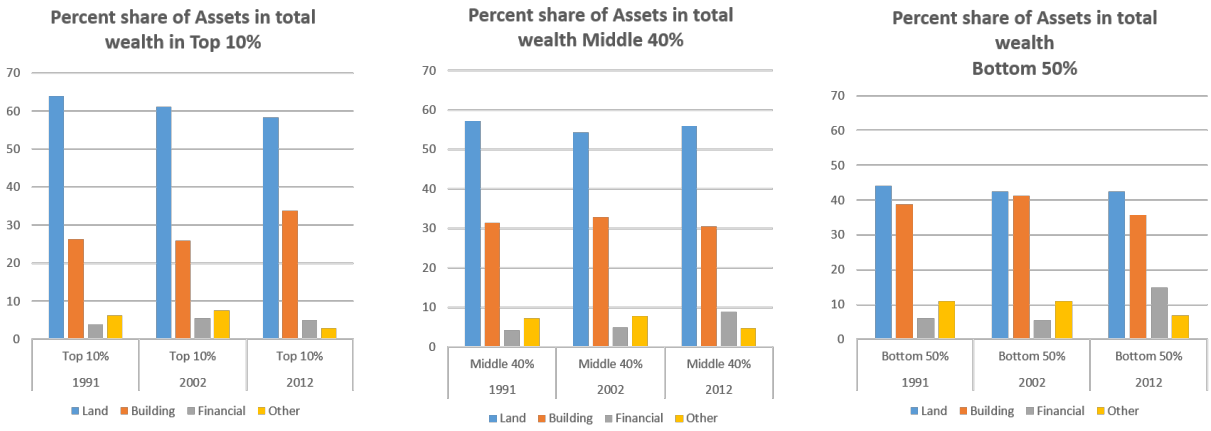
Figure 21: Landlessness in India (including housing land




## 4.2 Importance of Land by deciles

I create the deciles based on the total wealth for the years 1991-2012. We see from Figure 22 that land forms almost 60% of the total wealth for top decile population, 55% for the middle 40% population and 40% for the bottom 50% population. The contribution of land has slightly decreased over the years however it is still the most important asset for all the households.

Figure 22: Contribution of land by deciles




Check the total land area owned by the top decile, middle 40$ and bottom 50% population own. If there is any change in the types of land ownership?

## 4.3 Land inequality in terms of Land Area deciles 1961-2012

Table 1 shows the land owned by the top 10%, middle 40% and Bottom 50% of the population. There is a slight increase in land owned over the years at all-India level for top decile population. The top decile share is relatively stable in rural area (+1 pp), however there is a 10 pp drop (87% to 77%) in urban area. The corresponding land value share associated to these land area shows an increasing trend. It seems top decile population un urban area have let off their unproductive large tracts of land.

Table 1: Land Area and its Value distribution

| Percentage of Land Area Ownership | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Bottom 50 % | | | Middle 40% | | | Top 10% | | |
| **Year** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** |
| **India** | 4.10 | 4.01 | 3.84 | 45.83 | 41.33 | 35.88 | 52.18 | 53.01 | 54.48 |
| **Rural** | 6.68 | 6.76 | 6.79 | 44.98 | 44.47 | 43.78 | 48.34 | 48.76 | 49.43 |
| **Urban** | 0.86 | 1.77 | 1.36 | 16.05 | 11.27 | 20.96 | 83.09 | 86.96 | 77.68 |
| **Percentage of Land Value Ownership** | | | | | | | | | |
| | **Bottom 50%** | | | **Middle 40%** | | | **Top 10%** | | |
| **Year** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** |
| **India** | 21.67 | 24.80 | 28.83 | 43.72 | 42.99 | 41.67 | 32.50 | 33.88 | 35.30 |
| **Rural** | 15.01 | 15.92 | 17.85 | 51.12 | 48.47 | 44.00 | 33.87 | 35.61 | 38.14 |
| **Urban** | 27.53 | 30.80 | 23.02 | 45.13 | 39.39 | 42.66 | 27.35 | 29.81 | 34.32 |

**Source**:Author's calculation using NSS AIDIS datasets.Design weights are used to estimate these values.The deciles are based on land area.

## 4.4 Land inequality in terms of Value 1981-2012

**Decile based on Land Value**: The top 10% of the population based on land value, owned 53% in 1991 which increased to 61.5% in 2012. Interestingly, the share is quite close to the concentration of total wealth share we saw before. The corresponding share of land area at all-India level has decreased from 31.6% in 1991 to 29.1% in 2012. This again hints towards selling-off of cheaper/unproductive land.
For the middle 40% class, the land value varies more than the land area. The land value has decreased $\sim 5-6$ pp in both rural and urban area. Moreover there is a decline of share of the land owned by $\sim 2$ pp in Bottom 50% of the population.

Table 2: Land Value and its Area distribution

| Percentage of Land Area Ownership | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Bottom 50 % | | | Middle 40% | | | Top 10% | | |
| **Year** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** |
| **India** | 16.04 | 16.40 | 21.53 | 52.40 | 50.30 | 49.34 | 31.55 | 33.30 | 29.13 |
| **Rural** | 15.70 | 16.11 | 19.22 | 53.13 | 50.39 | 49.97 | 31.16 | 33.50 | 30.81 |
| **Urban** | 14.60 | 11.51 | 16.94 | 44.28 | 41.08 | 42.55 | 41.13 | 47.41 | 40.50 |
| **Percentage of Land Value Ownership** | | | | | | | | | |
| | **Bottom 50%** | | | **Middle 40%** | | | **Top 10%** | | |
| **Year** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** | **1991** | **2002** | **2012** |
| **India** | 8.11 | 8.54 | 6.21 | 38.84 | 38.68 | 32.28 | 53.05 | 52.78 | 61.50 |
| **Rural** | 8.00 | 8.81 | 6.81 | 39.61 | 39.09 | 33.67 | 52.39 | 52.10 | 59.52 |
| **Urban** | 8.90 | 9.12 | 6.84 | 36.09 | 37.20 | 32.85 | 55.01 | 53.68 | 60.32 |

**Source**:Author's calculation using NSS AIDIS datasets.Design weights are used to estimate these values.The deciles are based on land value.

## 4.5 Different types of Land and their share

The above analysis includes total land owned by households. However AIDIS data provides the types of land owned. For simplicity, I combine different land types first into agricultural and non-agricultural land. Within Agricultural land type there are three varieties, namely, crop with irrigation facilities, crop without irrigation facilities and plantation. Within non-agricultural land type, there is residential land plot and other land type.
In 2012 the land outside FSU is clubbed together. I assign these land in different categories in same proportion rest of the land is present under different categories in 2012.
Of the total land owned by households, till 2002, 94% of the land was agricultural land. Within agricultural land, half of the land is irrigated. The share of irrigated land increased by 6 pp in 1991-2002 decade. In the non-agricultural land housing takes 4% of the total land in 2002. In the next decade i.e from 2002 to 2012, the share of agricultural land dropped to 89% (5pp drop). There is increase of 1pp in housing and other 4pp in other non-agricultural purposes.

# 5 Survey versus Census

I use household level Socio-economic caste census (SECC-2011) to describe village level land inequality in ten states of India. Surveys usually provide information upto district level. Even at district level the sample size becomes very small. Census information at individual level is a very good source to understand the local level land inequality in the country. SECC has captured information on the land ownership at household level. The data helps in generating household level land inequality at different administrative unit upto the lowest one namely- villages in India. Since both the SECC and last round AIDIS survey (in 2012) were coducted at around same time, it provides an unique opportunity to estimate land inequality by area from census and compare it with survey. There is a big debate in inequality literature on the usage of survey or census datasets. I compare state level land inequality (in terms of area owned) from AIDIS and SECC. It is important to highlight at this point that in the earlier section of the paper I have used all types of land for land inequality. In this section, I will limit the ownership to only agricultural land. This is because SECC has captured only rural level agricultural land.

In terms of the availability of the data Figure 23 gives a snapshot of the total coverage of population. The dataset I have covers 623 million population which is 75% of the total rural population of India or 50% of the total population. Also as seen from the table, states are from all the parts of India. The big states are present.

Figure 23: SECC 2011: Rural Data Coverage

| Rural Areas | | | | | |
|---|---|---|---|---|---|
| **Region** | **State** | **Total Villages** | **Total HH** | **Total Population** | **Total Adult Population** |
| South India | Tamil Nadu | 15 352 | 10 084 510 | 39 632 360 | 27 387 743 |
| South India | Karnatka | 27 623 | 8 041 410 | 38 147 745 | 24 862 517 |
| South India | Kerala | 1 459 | 6 310 072 | 27 214 909 | 19 120 587 |
| Central India | Maharashtra | 41 899 | 13 835 228 | 63 936 212 | 41 046 798 |
| Central India | Madhya Pradesh | 52 994 | 11 266 931 | 51 646 466 | 29 332 367 |
| Central India | Rajasthan | 44 168 | 10 213 736 | 54 391 054 | 29 311 620 |
| North India | UP | 100 820 | 25 750 198 | 162 623 342 | 88 807 913 |
| North India | Bihar | 39 221 | 17 683 790 | 98 461 997 | 51 204 574 |
| North India | Punjab | 12 292 | 3 267 045 | 16 853 568 | 10 890 143 |
| East India | West Bengal | 38 384 | 15 633 607 | 70 745 486 | 44 367 630 |
| **Total** | | **374 212** | **122 086 527** | **623 653 139** | **366 331 891** |

The comparison between survey and census data is present below in Table : [FORTHCOMING]

# 6 Village Level Analysis

SECC limitation is that it provides only one year data. But it is still very useful since the land ownership structure doesn't change rapidly. In this section, I present a comparison of the states at village level inequality. The definition of village is same as it is present in the census. I also show the historical injustice in the distribution of land towards Dalits/SC, through a cross sectional regression. Controlling for all the geographical, demographic and census variables, I find that within a district, Scheduled caste population share is positively correlated to the land inequality. Increase in the population share increases land inequality at the village level.
I first present the characteristics of the villages present in these states using Census 2011. We can see different states have very different village characteristics.
*Number of Households* : On average villages in MP (220), Rajasthan (225), UP (274), Punjab (274), Karnatka (298) have less than 300 households. The total population in these states varies from 1000-1600. West Bengal and Maharashtra have more than 300 but less than 400 households in an average village. Bihar (455) and Tamil Nadu (635) villages have more than 400 households, but Bihar villages are more dense. Kerala is a peculiar case where the definition of village is very different. It has very large villages with 4000 households and 17k population. This makes very difficult to compare Kerala with other states at village level.

*Population density (number of persons/sq. km)* : Bihar(1420) and UP(1219) have very high population density, followed by West Bengal(957) and Kerala (918). MP, Rajasthan and Maharashtra have lowest rural population density.

*Sex Ratio (number of females/total population)* : Sex ratio of .5 will imply same number of males and females in an village. Except in Kerala, every state has less women and men. Punjab is the worst at .477.

*Scheduled Caste share (number of SC/total population)* : At all-India level the population share of SC is around 17-18%. In rural areas we see variations across states. Punjab has the highest SC SC share at 35.8%, followed by Tamil Nadu (28%) and West Bengal (27.5%). Kerala (10.5%), Maharashtra(11.3%), MP (14.6%), have lower level of SC population. However Maharashtra (20%) and MP (31.2%) have high level of ST population compared to all-India average of 8-9%.

*Literacy Rate* : Literacy rate in Bihar (49%), Rajasthan (50%), MP (53%) and UP (56%) are less than the national average of 63%. All Southern states have higher literacy rate with Kerala leading the chart.

*Working Population Share (total working population/total population)* : The average working population share pattern is very interesting. On one hand we have lower level literacy states like Bihar and UP with 34% and on the other hand Kerala (37%) and Punjab (35%) with the best educational and economic outcomes in the country.

*Agricultural Population Share (total working population in agriculture/total working population)* : Kerala (22%) has exceptionally the least agriculturally dependent working population. In other states more than half of the working population is engaged in agriculture and it is >70% in UP, Bihar, MP and Rajasthan.

Table 3: Census characteristics

| | Rural averages (2011) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **TN** | **Karnatka** | **Kerala** | **Maharashtra** | **Rajasthan** | **UP** | **Bihar** | **Punjab** | **West Bengal** | **MP** |
| **Households** | 635.0 | 298.2 | 4,090 | 327.0 | 224.9 | 274.2 | 455.9 | 274.6 | 355.5 | 220.1 |
| **Total Population** | 2,481 | 1,403 | 17,222 | 1,522 | 1,219 | 1,661 | 2,497 | 1,419 | 1,608 | 1,041 |
| **Population density** | 482.7 | 359.7 | 918.4 | 289.2 | 258.6 | 1,203 | 1,420 | 441.4 | 957.7 | 255.1 |
| **Sex ratio** | 0.499 | 0.495 | 0.518 | 0.491 | 0.481 | 0.480 | 0.481 | 0.477 | 0.489 | 0.483 |
| **SC share** | 0.281 | 0.209 | 0.105 | 0.113 | 0.175 | 0.238 | 0.186 | 0.358 | 0.275 | 0.146 |
| **ST share** | 0.0280 | 0.0869 | 0.0305 | 0.201 | 0.200 | 0.00716 | 0.0251 | 0 | 0.151 | 0.312 |
| **Literacy rate** | 0.651 | 0.615 | 0.830 | 0.661 | 0.501 | 0.557 | 0.494 | 0.654 | 0.628 | 0.529 |
| **Working pop** | 0.519 | 0.521 | 0.374 | 0.524 | 0.495 | 0.339 | 0.347 | 0.351 | 0.415 | 0.481 |
| **Agri share** | 0.532 | 0.626 | 0.223 | 0.682 | 0.729 | 0.706 | 0.738 | 0.518 | 0.653 | 0.778 |
| **Area** | 1,705 | 1,640 | 7,620 | 1,731 | 1,896 | 584.2 | 580.4 | 957.2 | 501.5 | 1,225 |

**Land Inequality Measures** :
SECC data provides agricultural land area ownership at household level. I create two statistics namely Gini and Top decile share (total land area share owned by the top 10% of the households in a village). I plan to create Theil's index later to perform between-within inequality analysis. Further the inequality measures can be estimated within all population or within the landowner population only. Agricultural land inequality within all population provides a good measure of overall deprivation, however people may work in non-agricultural sector. Hence it is important to keep in mind the agricultural population share in mind. For e.g in Kerala only 22% of the working population is engaged in agriculture and hence a skewed distribution is less of a problem than in Bihar where more than 70% working population is dependent on agriculture. Next, I create three more differentiation of land inequality statistics at different units - at household level, equal split among household individual and equal split among adults only. The data provides land area at household level and so I use household level figures in the paper to analyze the results. However it ignores the family size. Two families with same land but different household size is treated similarly. Hence I calculate other two measure where I divide the land area among all the household members or only among the adult members. Wherever the results varies a lot, I highlight.

## 6.1 Landlessness

In rural areas, the level of agricultural landlessness varies from 35% to 75% in different states. Among the 4 states where dependency on agriculture is very high, Rajasthan (35%) and UP (42%) have relatively lower level of landlessness than MP (53%) and Bihar (61%). Punjab is known for capitalist agriculture and it is seen with a very level of landlessness at 76%. The ranking of states even with both equal split measures doesn't change. Though in every state landless values decreases at individual/adult level implying landless families are in general smaller than the landowning families.

Table 4: Landlessness

| | Landlessness (%) | | |
|---|---|---|---|
| **State** | **Household level** | **Individual Level** | **Adult Level** |
| Rajasthan | 35.54 | 32.62 | 30.99 |
| Karnatka | 40.87 | 37.37 | 36.36 |
| UP | 42.62 | 39.77 | 38.45 |
| Maharashtra | 50.14 | 47.08 | 45.13 |
| Madhya Pradesh | 53.18 | 50.86 | 48.78 |
| West Bengal | 58.47 | 55.76 | 55.21 |
| Bihar | 61.15 | 58.61 | 58.06 |
| TN | 69.53 | 67.13 | 65.91 |
| Kerala | 70.78 | 69.68 | 69.18 |
| Punjab | 76.53 | 75.58 | 74.08 |

Though landlessness is a good measure, not all the households are engaged in agriculture. Hence in the next table I take into account the household share which is dependent on agriculture and create a statistic- households without land per landowning household. This is a crude measure which basically gives us an idea of dependency on an average village statewise. Roughly speaking it implies in an average village of Punjab with 275 households, 140 housholds are dependent on agriculture (52% working population in agriculture) and 66 of them own some piece of land. So on average 1.15 households are dependent on 1 landowning family. Among other states Bihar and Tamil Nadu have high dependency. UP differentiates itself from Bihar here, with much lower dependency of landless households on landowning population. Negative value means that there are more households which are not dependent on agriculture but own land. Only Kerala has negative value.

Table 5: Households dependent on Landowning households

| **States** | **Total households** | **Agricultural dependence (%)** | **Agriculturally dependent HH** | **Landlessness (%)** | **HH with Land** | **HH without land/HH with land (within agri dependent HH)** |
|---|---|---|---|---|---|---|
| TN | 635 | 0,532 | 337,82 | 69 | 196,85 | 0,72 |
| Karnatka | 298 | 0,626 | 186,548 | 41 | 175,82 | 0,06 |
| Kerala | 4090 | 0,223 | 912,07 | 71 | 1186,1 | -0,23 |
| Maharashtra | 327 | 0,682 | 223,014 | 50 | 163,5 | 0,36 |
| Rajasthan | 224 | 0,729 | 163,296 | 36 | 143,36 | 0,14 |
| UP | 274 | 0,706 | 193,444 | 43 | 156,18 | 0,24 |
| Bihar | 455 | 0,738 | 335,79 | 61 | 177,45 | 0,89 |
| Punjab | 274 | 0,518 | 141,932 | 76 | 65,76 | 1,16 |
| West Bengal | 355 | 0,653 | 231,815 | 58 | 149,1 | 0,55 |
| MP | 220 | 0,778 | 171,16 | 53 | 103,4 | 0,66 |

## 6.2 Top decile Land Share

The next important land inequality statistic is the share of total agricultural land owned by top 10% households (by land ownership) in a village. The ranking of states more of less remain unchanged. Top 10% of the hosueholds own 54% of the total land in Rajasthan and it increases to 88% in Kerala. Punjab, Bihar and Tamil Nadu have heavy land concentration in their rural areas. The values are very close to 80%.

Table 6: Top decile land share (%)

| | Top decile land share (%) | | |
|---|---|---|---|
| **State** | **Top 10%** | **Top 5%** | **Top 1%** |
| Rajasthan | 53.72 | 38.92 | 19.46 |
| Karnatka | 56.06 | 41.05 | 20.65 |
| Maharashtra | 60.22 | 43.84 | 20.49 |
| UP | 60.71 | 45.40 | 23.43 |
| Madhya Pradesh | 63.07 | 46.70 | 23.48 |
| West Bengal | 72.01 | 57.52 | 33.14 |
| TN | 77.23 | 61.06 | 31.56 |
| Bihar | 78.83 | 65.44 | 40.14 |
| Punjab | 80.13 | 68.04 | 40.61 |
| Kerala | 88.37 | 79.00 | 57.01 |

In the above table we can also the top 1% and top 5% share of the owned land. The concentration is high within top decile. For e.g in Punjab and Bihar, top 1% of the population own around 40% of the total household owned land which is 50% of the total land within top decile. Tamil Nadu has relatively more uniform distribution within the top decile.

The top decile share within the land owners community is provided in the appendix (Table 10)

## 6.3 Top 1,2,3 landholders share

The granularity of data allows me to produce another interesting statistic which captures the stronghold of the top 1, 2, 3 families in a village. I estimate the percentage share of land owned by the top 1, 2 and 3 families in table 7. Again Punjab and Bihar stand out. In an average village of Punjab top 3 families own 40% of the total land, whereas in Bihar it is 35%. The top landholding family own 22% in both states. This arises a bigger question of different level of development in both the states. Punjab is the leader of agricultural production whereas Bihar is on the other extreme. Why is two states developing so differently, provided the landownership structure in their rural areas is quite similar ? The answer lies in almost all the dimension, more land consolidation in Punjab, better irrigation facilities (Bhakra Nangal Dam, tubewell revolution etc), beneficiary of agricultural revolution, less casteism than in Bihar and progressive thinking of Punjabis. As hinted above, Tamil Nadu has relatively lesser top heavy distribution. Richest landed family own 12% and top 3 families own 22%.

Table 7: Top Landholders share (%) in villages

| | **Top Landholders share of land (%)** | | |
|---|---|---|---|
| **State** | **Top 1** | **Top 2** | **Top 3** |
| Maharashtra | 10.03 | 15.57 | 19.76 |
| Rajasthan | 11.30 | 17.03 | 21.30 |
| Karnatka | 11.48 | 17.17 | 21.37 |
| TN | 11.82 | 18.01 | 22.45 |
| UP | 12.48 | 18.53 | 23.03 |
| Madhya Pradesh | 13.80 | 20.73 | 25.87 |
| Kerala | 14.28 | 20.32 | 24.45 |
| West Bengal | 17.87 | 25.65 | 31.04 |
| Bihar | 21.36 | 30.08 | 35.81 |
| Punjab | 22.15 | 33.24 | 40.70 |

I think this statistic is very important because it helps in identifying the villages where one or more than one families have strong influence on other villagers. This influence can go beyond economic dependence, especially in elections. Work by Andres Siegfred on rural setup in France found that villages with high level of land concentration was voting more for right wing which suggests influence of big landholders in scuttling the process of democracy and fair elections. I am in the process of collecting electoral data at village level for these states to test the process. I will first try testing this at assembly and parliamentary constituency level.

## 6.4 Gini Coefficient

I also present the more often used inequality statistic, namely gini coefficient, here. The ranking of the states remain unchanged. We can see in all the states the level of gini coefficient is more than .6. It is not surprising given that around 50% of the population in the rural areas are landless. The level of gini coefficient is comparable to the land inequality in the Latin american countries.

Table 8: Gini Coefficient

| | Gini Coefficient (All Population) | | |
|---|---|---|---|
| **State** | **Household level** | **Individual Level** | **Adult Level** |
| Rajasthan | 0,618 | 0,614 | 0,596 |
| Karnatka | 0,644 | 0,634 | 0,626 |
| UP | 0,673 | 0,675 | 0,665 |
| Maharashtra | 0,71 | 0,703 | 0,688 |
| MP | 0,717 | 0,723 | 0,702 |
| West Bengal | 0,789 | 0,778 | 0,772 |
| TN | 0,826 | 0,822 | 0,813 |
| Bihar | 0,827 | 0,825 | 0,803 |
| Punjab | 0,844 | 0,84 | 0,829 |
| Kerala | 0,924 | 0,924 | 0,921 |

The gini coefficient within the land owners community is provided in the appendix (Table 11)

## 6.5 Factors affecting land inequality

In this subsection, I try to understand the factors explaining the land inequality at village level. The main factors in land inequality literature can be categorised under three heads. Institutional setup is usually have the largest effect on the land distribution in a country. In the Indian setup, the most important institutional features impacting land concetration are- historical caste system, colonial land revenue system and post-independence land reforms. Historically upper caste (and in few areas lower castes) is associated with more land ownership. In the medieval period, kings started paying to priests (brahmins) and military leaders (kshatriyas) in land for the state services. During colonial regime, British government, started awarding land titles thereby concretizing the land ownership. They introduced different land revenue systems in different parts of India with main objective as increased land revenue and rents but without doing major reforms. It is only after independence that India adopted land reforms in three waves : Zamindari abolition, Tenancy laws and land ceiling which helped in reducing land concentration to some extent. However due to various reasons the success in redistribution of land was partial.

In this section, I estimate the effect of Scheduled caste population share on land inequality within a district controlling for the relevant factors which affect land inequality. I combine land inequality dataset with census data (for demographic controls), World Bank dataset (for geographical controls like- temperature, precipitation, roughness etc). I use district fixed effects to absorb the different institutional factors (like historical colonial land revenue system, land reforms post independence etc).

Table 9: Gini Coefficient @ HH Level

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| **VARIABLES** | **tn** | **karnatka** | **kerala** | **maharashtra** | **up** | **bihar** | **mp** | **rajasthan** | **punjab** | **wb** |
| SC share | 0.117*** | 0.112*** | 0.105** | 0.128*** | 0.125*** | 0.147*** | 0.116*** | 0.138*** | 0.172*** | 0.0539** |
| | (0.00902) | (0.0124) | (0.0358) | (0.0204) | (0.00995) | (0.0119) | (0.0125) | (0.0165) | (0.0198) | (0.0192) |
| Elevation | -5.19e-05 | -8.17e-05 | -1.13e-05 | -0.000132*** | 1.09e-05 | -0.000903*** | -5.30e-05 | -2.63e-06 | 0.000226 | -0.000445** |
| | (3.35e-05) | (0.000109) | (2.19e-05) | (3.13e-05) | (0.000135) | (0.000176) | (3.40e-05) | (7.34e-05) | (0.000150) | (0.000168) |
| Roughness | 0.000170 | 2.03e-05 | -3.70e-05 | 0.000211** | -0.000518 | 0.00155*** | 0.000121 | 0.000275* | -0.000294 | 0.00166** |
| | (0.000114) | (0.000247) | (4.26e-05) | (0.000101) | (0.000456) | (0.000503) | (0.000121) | (0.000146) | (0.000404) | (0.000570) |
| Precipitation | 0.000532** | 0.000332 | -0.000259 | 8.92e-05 | -0.000331 | 4.69e-05 | 0.00116* | 0.000397 | -0.00203 | 0.000552 |
| | (0.000224) | (0.000253) | (0.000159) | (0.000234) | (0.000431) | (0.000306) | (0.000598) | (0.000723) | (0.00321) | (0.000440) |
| Observations | 14,689 | 26,734 | 1,013 | 40,059 | 88,734 | 37,280 | 47,914 | 42,558 | 11,046 | 33,411 |
| R-squared | 0.482 | 0.355 | 0.463 | 0.373 | 0.219 | 0.318 | 0.205 | 0.209 | 0.404 | 0.437 |
| Mean | 0.826 | 0.644 | 0.924 | 0.710 | 0.673 | 0.827 | 0.717 | 0.618 | 0.844 | 0.789 |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

In the table we can see that scheduled caste population share is positively and strongly correlated to the land inequality in every state. The coefficients are very close in every state. Elevation is negatively correlated to inequality in Maharashtra, Bihar and West Bengal, though the coefficients are very small.

# 7 Conclusion

This paper presents regional level wealth inequality and its evolution in India. The inequality seems to have risen post liberalization which is accompanied by high economic growth. Most of the inequality is driven from the urban areas and mostly from the formation of land and building assets. The increase in land and building prices are enormous and has helped the landed class more. The rural-urban divide is increasing at state level. Further the rural areas of different states are becoming more different than each other. This is primarily because increase in land prices in those states which are benefited from agricultural revolution or growth of service sector in post-liberalization period is more than other states.

Social structure of caste system is found to be an important factor in today's land inequality and since land is such an important asset in India, it leads to other kinds of inequality. In this regard it is important for the government to provide good quality mass health and education sytem to overcome the historical injustice towards the lower caste in distribution of land. The service-led economic growth is helping the economy to grow but it is creating high level of inequality in the country which in long run is detrimental.

Future work on this topic will involve further scrutiny of the economic growth model adopted by different states and its potential impact on the wealth inequality. Southern states seem to be doing well in maintaining the wealth inequality. Bottom 50% share of wealth has increased in those states, contrary to Maharashtra, Punjab and Madhya Pradesh. The next step will also involve village level study of inequality and

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# 8 Appendix

Table 10: Top decile share (Land Owners)

| | **Top decile share (%)** | | |
|---|---|---|---|
| **State** | **Top 10%** | **Top 5%** | **Top 1%** |
| Maharashtra | 40.93 | 28.89 | 14.93 |
| Karnatka | 41.51 | 29.91 | 16.44 |
| Rajasthan | 42.01 | 30.15 | 16.61 |
| MP | 42.54 | 31.11 | 18.43 |
| Punjab | 43.92 | 35.04 | 26.77 |
| TN | 44.09 | 32.10 | 17.83 |
| UP | 46.06 | 33.74 | 19.20 |
| West Bengal | 49.13 | 37.84 | 24.04 |
| Bihar | 55.56 | 44.59 | 30.31 |
| Kerala | 68.57 | 58.52 | 37.78 |

Table 11: Gini Coefficient (Land Owners Only)

| **Gini Coefficient (Land Owners only)** | | | |
|---|---|---|---|
| **State** | **Household** | **Individual** | **Adult** |
| Punjab | 0.368 | 0.379 | 0.376 |
| Karnatka | 0.415 | 0.433 | 0.427 |
| MP | 0.417 | 0.459 | 0.436 |
| Rajasthan | 0.424 | 0.451 | 0.434 |
| Maharashtra | 0.428 | 0.453 | 0.442 |
| TN | 0.447 | 0.479 | 0.472 |
| UP | 0.453 | 0.485 | 0.477 |
| West Bengal | 0.507 | 0.516 | 0.510 |
| Bihar | 0.545 | 0.574 | 0.534 |
| Kerala | 0.751 | 0.762 | 0.757 |