Do Caste and Religion Matter in Shaping Economic Inequality?

A Thesis

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by

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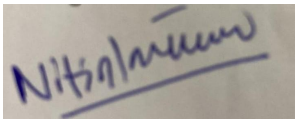
Certificate

This is to certify that this dissertation entitled “Do Caste and Religion Matter in Shaping Economic Inequality?” towards the partial fulfilment of the BS-MS dual degree programme at the Indian Institute of Science Education and Research, Pune represents the study/work carried out by Abhishek Saroha at the Department of Economics, Savitribai Phule Pune University, Pune under the supervision of Dr Nitin Tagade, Assistant Professor, Department of Economics, Savitribai Phule Pune University, Pune during the academic year 2022-2023.



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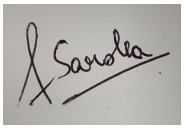
This thesis is dedicated to my Parents, my Sister, Shuvam, and Devyani.

Declaration

I hereby declare that the matter embodied in the report entitled “Do Caste and Religion Matter in Shaping Economic Inequality?” are the results of the work carried out by me at the Department of Economics, Savitribai Phule Pune University, Pune, under the supervision of Dr Nitin Tagade, and the same has not been submitted elsewhere for any other degree.



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ABSTRACT

Agricultural sector comprises the biggest workforce in the country. A country like India has historically earned its livelihood and based its economy around agriculture. It is only logical to look at all the possible aspects of the agricultural sector.

This two-part study consists of a literature review and analysis of a particular research problem. The literature review finds that Caste and Religion do affect economic inequality among different households. Secondly, we study the status of agricultural land distribution among different castes in India in 2004-05 and 2011-12. If there is growth, has that growth been inclusive? We looked at data from the IHDS survey done in 2004-05 and 2011-12 to determine whether the change is inclusive. We find that the situation of asset ownership has worsened with time. There is a tendency to accumulate resources towards the higher castes. The agricultural land ownership disparity was significant initially and has only increased over the years in rural areas. The Brahmins and the people from forward castes hold much of the agricultural land.

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INTRODUCTION

Economic inequality refers to disparities among individuals' incomes and wealth. This inequality can be in income/consumption expenditure, wealth, and wages. Before understanding the inequality in the above parameters, we need to know what they mean first.

Income refers to the total earnings of a household/unit, which come from wages(e.g. A job) and other sources like stocks, bonds, rents, royalties, et cetera. Consumption expenditure refers to the amount of money spent by a household/unit to carry out its functioning. One might notice that even though income and consumption expenditure mean different things, we use them interchangeably. We have seen that researchers generally prefer to use consumption expenditure instead of income levels. This is because it is a direct measure of the standard of life of different groups. The standard of living is more or less directly proportional to the consumption expenditure of a household. Thus, as it sounds, it is a vastly important measure, the data of which a lot of papers that we are about to see rely upon.

The wages represent the money people receive by renting their time, i.e. at their jobs. This is solely the money provided by working at a job (e.g. agricultural labour, bureaucrats). This is also an important measure that has been studied by many researchers.

Wealth measures the value of all the assets owned by a person, community, company, or country. Wealth is determined by taking the total market value of all physical and intangible assets owned by a particular entity and subtracting all debts. Essentially, wealth is the accumulation of scarce resources. Wealth ownership determines how high individuals are on the social ladder. Ideally, equal distribution among different sections of society is preferred. However, since earlier times, people from lower castes were not allowed to hold land. They were barred from societal interactions and forced to live on the outskirts of cities. Due to their forced representation in odd jobs, buying assets was out of the question. The caste system has affected the ownership of wealth significantly in these ways. As we shall see, in India, wealth inequality has not been studied that intensively, so the works are relatively sparse.

This review is part of another project that looks at how much of a role caste and religion play in the case of economic inequality. In that project, So, in the bigger project, we want to look at how much caste and religion matter as factors of economic inequality. Specifically, we shall be looking at the case of agricultural land.

Sarma et al. (2017) point out that in the Indian context, land has always been and continues to be a big dominator in the assets market. Over generations, the assets market was dominated and continues to be dominated by higher caste Hindus.

Before studying agricultural land inequality, a look at issues like asset ownership, inclusivity, and inequality is required. Let us tackle these step by step.

The research on asset inequality has not been as extensive as on wages and income/consumption expenditure inequality. The main works on asset ownership come from The main works come from Vaidyanathan(1993), Subramanian and Jayaraj(2006), Jayadev et al. (2007) and Sarma et al. (2017).

The questions that emerge relate to the understanding of this topic on a deeper level. Some of these are: What is the ownership share of each kind of asset for different social groups? What is the inter-group disparity in assets? What kind of asset is the most sought-after? Has there been growth in asset ownership? If there is growth, then how inclusive has it been?

Subramanian and Jayaraj (2006) showed the asset holdings of different communities of people based on their states, rural/urban regions, social belongings, and types of assets. They found that wealth was concentrated in certain sections, both vertically and horizontally. There were significant inter-state differences. Land was the most important asset.

They look at five rounds of the National Sample Survey Organization's Debt and Investment Survey corresponding to the years 1961-62, 1971-72, 1981-82, 1991-92 and 2002-03. Special emphasis is put on the last two rounds of the survey.

Jayadev et al. (2007) worked during the period of liberalisation. They found two distinct patterns in the Indian asset distribution scenery. When the population is divided into social groups like caste, occupation, et cetera, the wealth levels have, in general, increased for everyone during liberalisation. However, this increase has been unequal, clearly favouring the top quintile.

This favouritism increases as we look at the top decile and top centile.

Mandira Sarma et al. (2017) find that not only was asset inequality rampant in Indian society, but the situation has also gotten worse over the years. Land and buildings have continued to be the biggest investment for assets in the Indian population.

Like asset ownership, agriculture is another significant facet of development for India. In the pre-reform period, primary growth came from the agricultural sector. Sarkar and Mehta (2010) observe that agricultural labour is the most significant segment of the workforce in India. Therefore, the growth of this sector is a legitimate development goal.

Since agriculture, asset ownership and the caste system are so closely knit together, this issue is all the more critical. This present study wishes to undertake the issue of agricultural land ownership inequality in light of caste barriers.

We look at changes and patterns in landlessness, ownership share and inequality in the agricultural sector.

The following literature review is arranged such that we can study inequality as a whole as well as the specifics of agricultural land. It includes subtopics like work done on poverty, consumption expenditure and its calculations, inclusivity of development, opportunities available to the different castes and religions, measures and indices to calculate inequality and poverty, and finally, we see the effect of government policies and my ideas on the way forward to a country that has lesser inequality.

In the review phase of the project, We started with the hypothesis that caste and religion are strong factors that influence economic inequality to this day. However, as time passes, the inequality gaps between upper and lower castes, and Hindus and other religions are decreasing. The other hypothesis is that caste is a bigger contributor to economic inequality than religion. This comes from the idea that since the Hindus heavily outnumber the other religions, the effect won't be as pronounced. However, every religion has its scheduled castes and scheduled tribes. Thus, the inequality gap should be bigger since a larger section of the population is being maltreated.

A BRIEF REVIEW

This review is sequenced as follows:

- Poverty across the nation
    1. No. of poor people
       Multiple papers attempt to count the same. We look at them here.
        - Headcount Ratios
        - Aggregate Count of Poverty
        - The Constituency Principle and Designing the Third Measure

    2. The poverty line and its measurement approaches.
       There are a lot of attempts at calculating the poverty line. We look at the different approaches, like the consumption basket.
        - The World Bank's Approach
        - Commodity Bundle Approach

    3. Purchasing Power Parity
       A lot of works that talk about poverty look at purchasing power parity of different populations.

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       This section aims to provide the reader with an understanding of the attempts made to reduce poverty and what some factors that affect these attempts.

- Inclusivity of Development
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- Policy Implications
    My ideas on the way forward

POVERTY ACROSS THE NATION

1. Number of poor people

One of the first questions that pop into one's head when he/she thinks about poverty often has to do with the number of poor people in the country. Hence, we are looking at this topic first. Subramanian(2005) talks about two of the most used methods of counting the poor. Interestingly, the author shows why both of those counting methods

have fundamental flaws. He also shows another measure that combines the above-described measures to get the best of both worlds.

Headcount Ratios

We get the headcount ratios after dividing the number of poor people by the total number of people in a particular region. This ratio gives us an idea of the probability of a random person turning out to be poor. In theory, it seems pretty simple. However, it has a fatal flaw. Subramanian says that if we consider a population with some headcount ratio, then if some more people are added to that population, the headcount ratio decreases. Then, theoretically speaking, poverty has been reduced.

Subramanian rightly points out the above flaw. However, I think this is just a mathematical construct in the case of India since, with such a large population, it is difficult to add so many people that the headcount ratio is affected significantly. The addition or subtraction of people will become a substantial factor in the real world only when there are a significant amount of centrifugal or centripetal forces (mentioned in a later section).

On the flip side, another case that could be made for this argument put forth by Subramanian is that the child mortality rate must be higher for poor people. If we assume that the number of non-poor people significantly outweighs the number of poor people, then the increase in population due to new births every year must favour the non-poor population. Thus, the headcount ratio is decreased. However, I digress back to the original work at hand.

One more drawback of the headcount ratio I have felt is that it treats all the poor as equal. In reality, that is hardly ever the case. There are strata even in the people living below the poverty line. There are the low, and then there are the lowest.

Aggregate Count of Poverty

As is apparent by the name, it is the number of people living below the poverty line. It is just that simplistic. Subramanian says that the aggregate poverty count appeals to the intuitiveness of associating the extent of poverty with the likelihood that one will encounter one.

Say we have a population with 99 poor people out of 100 and another with 100 poor people out of 10,000. According to the aggregate poverty count, the poverty in the first population is lower, but intuitively we know that 99% per cent of people are poor in the first population. Conversely, only 1% of people are poor in the second population.

The Constituency Principle and Designing the Third Measure

Subramanian introduces us to the Constituency Principle. It says that if there's a group that we think is the most appropriate for the measure of any particular parameter, then if we were to consider any other parameters, the appropriateness of those other parameters should also be measured for their respective groups.

He then proves how the above-described measures are at odds with the constituency principle. Hence, the need for a third one.

He finally gives us this expression:
M(mixed headcount ratio)=A(1+H)

He also gives proof and examples of why this formula works. Sure enough, this seems to be a better measure.

2. Poverty line and its estimates

Imagine a person 'A' living in a particular country. Naturally, this person will have some basic needs that must be met to live comfortably. These needs could include rent, food, clothing, health services, clean drinking water, education, et cetera. These needs are identified by the country's government or any organisation that wants to determine the poverty line. Now, the government assigns a poverty line such that a person living just below that line would not be able to afford all the necessary basic facilities required for his/her survival.

Thus, the poverty line can be defined as the minimum sum of money a person needs to meet his/her most basic needs.

There have been multiple attempts to estimate the poverty line. Since this is a very arbitrary measurement, there have been a lot of criticisms of these attempts as well. In this section, we shall study some of these debates.

The World Bank's Approach:

The World Bank's approach is one of the most heavily criticised approaches. However, before studying the debate, we shall study what they did first.

In a first attempt, they chose the 8 poorest countries in the world. Each of these countries had its own poverty lines. The median of all these values was taken to

achieve the final poverty line of the whole world. They determined that the poverty line was $1.02 a day per person. In the second attempt, the 15 poorest countries were chosen and the poverty line was updated to $1.25 in 2005.

Needless to say, as outrageously low as the dollar-a-day poverty line sounds, it had a backlash. There were four main criticisms. They are listed out here.

- A dollar-a-day poverty line may be a little more than “destitution lines”.
  This means the poverty line is so low that one barely has any resources to sustain the provided money.
- Purchasing power parity exchange rates might be infected by prices of irrelevant commodities (non-essential) that the poor might spend lesser of their money on and also by the prices and consumption patterns of irrelevant countries.
  This point suggests that some goods bought by the wealthier sections of society might be deemed unnecessary for the poorer people. For example, this could include goods like perfumes, conditioners, et cetera, which, while not needed for survival, would be bought by the upper and middle sections of society. Due to the different purchasing power of the people of different countries and the cost of the goods themselves just getting converted to different currencies but not changing in actual value, this might cause some inaccuracies in the judgement of the poverty line.
- Poverty comparisons are meaningful only if a “common standard” of comparison is employed. It is shown with an example that for 2 countries with currencies $ and Klong respectively, if 2005 is taken as a base year, and that we try to calculate the poverty line for 1993, the answer that is achieved by adjusting for CPI is the same for both countries only by fluke. This leads us to question the validity of this poverty line.
- The lower the poverty line, the more flattering the resulting decline in poverty.
  This is self-explanatory as the lower the poverty line, the more the people above it.

Since there is pretty extensive criticism of the World Bank’s approach, there has been literature that defends it too. Martin Ravallion(2008) answers the above criticisms in the following way.

These answers are listed in the same order as the criticisms above:

- Ravallion clarified that the poverty lines include an allowance for non-food spending too. India’s official poverty line has been attained the same way, which amounts to about $1 per day. Calling it destitution is an exaggeration.
- The second argument is considered valid by him. However, he says that the article does not consider that different PPPs have been used for people near the

poverty line, which is different from the PPPs of the middle and upper classes. This is done using the 2005 ICP data and resolves the issue that the article talks about in the case of spending on non-essential goods.

- Ravallion says that the answer given by the method is not a fluke. One must realise that the “PPP for the non-benchmark year must be calculated with the differential inflation rates between the US and the country in question.”
- Lastly, according to him, we are not at the lower limit of the poverty line. Thus, we don't have to worry about getting a pleasing trend just because we are abusing arithmetic.

There have been debates and discussions on this reply as well.

Subramanian(2009) talks about the International poverty line itself first. He points out that it is unclear why the median of only the poverty line of the 15 poorest countries should be taken as poverty lines for the whole world.

The next issue he brings up is that the article makes the error of not recognising a section of poor people.

Ravallion thinks that applying a different PPP will resolve the irrelevant commodities problem. However, the newly employed PPPP (PPP for the poor) will only solve that problem. There still remains the irrelevant countries' problem (refer to Reddy and Pogge(2008)). Previous literature on the topic refers to making the common standard take root in an identified set of human capabilities instead of a political bundle. This is an essential idea for us that we shall return to later. He also goes into thorough detail about the problem of comparisons across time. He points out the inconsistencies in Ravallion’s logic that led him to believe the poverty line mentioned earlier for both countries with currencies klong and $. Subramanian feels that the explanations provided are not satisfactory and points out the flaws in them as well. He thus insists that it shall be a fluke only.

Commodity bundle approach:

First of all, we need to talk about the commodity bundle to provide sufficient context for the following discussion. Earlier, we talked about the definition of the poverty line. Goods and services were mentioned in that discussion. Now, each of these goods or services will have a price. This is the price you need to pay to afford said goods or services. As a governing authority, you select these goods and services you deem necessary for survival. When we club all of this together, the final price that comes out is the price of that commodity bundle or commodity basket. This is your final poverty line. This approach is called the commodity bundle approach.

The Indian Government has conducted two significant studies. The inadequacy of the first study led to the formation of the Tendulkar Committee, which was formed to rectify the mistakes of the first one. However, we should discuss the study done by the first group to understand the need of the second one properly.

In the methodology used by the group of 1993-94, they assign a commodity basket/consumption bundle to each person. It is set at 2400KCal per day per person in rural areas and 2100KCal per day per person for urban areas. This is the same standard as the one set in 1973-74. The price is attached to that amount of calories by estimating the price of groceries required to fulfil these calorie requirements. Now, for subsequent years, the poverty lines are obtained just by revaluing this consumption bundle to current prices for following years. This gives a pleasing trend of declining headcount ratio. It should be stressed at this point that there is nothing special about a particular year considered as base year. If the base year is moved forward(i.e. from 1973-74 to 1977-78, 1983, and so on), then the declining trend of poverty is preserved. However, the actual magnitudes of poverty keep on increasing.

However, we shall now move on to the methodology of the Tendulkar Committee. The work done by them was thoroughly disappointing and received criticism as well. They claimed that they would stray away from the methodology of the group of 93-94. In actuality, they just ended up updating the price of the commodity bundle.

Subramanian(2011) claims that a commodity bundle does not give rise to a poverty line. A poverty line is a more basic unit in this argument.

There were other problems with this work as well. Even though the Tendulkar Committee was clear in distancing itself from rooting the estimation of the poverty line based on calories, it was unclear what it was based on.

To illustrate the inadequacy of the estimated poverty lines, a hypothetical cumulative distribution function is plotted. Subramanian explains using this graph that the poverty lines can only work for the base in the year the commodity bundle is assigned. Not for preceding or subsequent years.

He followed up on this work after the 2014 Rangarajan group worked on estimating the poverty line in Subramanian(2014).

He says that one of the things common in approach of the Ranganathan Expert Group (henceforth REG) Lakdawala Expert Group (henceforth LEG) and Tendulkar Expert

Group (henceforth TEG) is the fact that all of them talk about a poverty line basket that they use to compare across different regions and times. The poverty line basket is a sum total of goods and services one requires in order to survive.

A lot of harsh criticism has been made of all these groups' methodologies. One question, however, stands out. Simply, why must the consumption basket be unvarying with time? The needs of the population might change. Then the basket is rendered useless.

When we look at different schools of thought, like Sen's capability-based approach, we can derive the poverty line from a different context. Capability-based approach states that a person is non-poor if he/she can perform all the tasks that comprise that can ensure their well-being. So, according to Subramanian, treating income levels as a be-all-end-all can lead to some problems in estimating the poverty line.

The LEG and REG share some similarities in the sense that both of them use food as their basis. LEG looked to provide a certain number of calories per person per day, while REG integrated that with the number of fats and proteins needed for the day as well. Other than this, other basic expenses were also considered. However, as earlier, the problem remains in considering a particular year as the base year. There is no reason why a particular year is special.

These problems lead Subramanian(2014) to be thoroughly sceptical of the REG group too. It is a bit shameful that even after multiple attempts, we can't even seem to get our concepts right.

At last, we want to look at another attempt. While the attempts we studied earlier were based on the methods that the World Bank followed, there are authors like S. S. Bhalla that have doubted this methodology. He proposes his own method called the SAP method. The essence of that method is that poverty is an issue at the level of an individual. Thus the real problem is not at the bottom 20% of any country but the bottom 20% of the world. This method involves calculator poverty and inequality based on the expenditure distribution data. This book studied the number of poor people in the context of globalisation. Interesting thing is that he arrives at very different results than the ones obtained by other studies. He believes that growth has been pro-poor and that the number of poor people are 650 million (in 2000), which is about 500 million short of what the World Bank proposed. This comprises 13.1% of the population in developing countries. There is an improvement when we considered the 1.48 billion poor people in 1980. Such low number of poverty, while encouraging, could also suggest the need to raise the poverty line.

3. Purchasing Power Parity

We have been studying poverty in India. However, poverty is not an inherently Indian phenomenon. It exists worldwide. Since it exists worldwide, researchers will inevitably make cross-country comparisons. These comparisons can help us examine how better one country is faring in poverty than the others, even if they have different populations and ideas of poverty.

As we begin to study this subject, we realise that an issue arises when poor people are compared across different parts of the world. Since poverty lines are different everywhere, the problem is slightly more complex. Ravallion(2008) has tried to target this problem. A basic guide for measurements is that no matter where two people live, they should be treated the same way if they have the same consumption level.

However, not everyone tends to see globalisation as something that has caused problems. S. S. Bhalla, in his book, believes that globalisation has ushered the economy into a “golden age of development”. He points out various facts supporting his argument, like the acceleration of growth by 0.15% during globalisation. He believes that inequality has not only decreased but is at its lowest ever point by 2000. Bhalla arrived at these results using a different methodology than conventionally used. His argument is that since World Bank’s statistics are the only ones that exist to calculate poverty, how can one be sure that these estimates are accurate? He also describes various tests to check the validity of these estimates. After this, he ends up calculating the number of poor people himself.

He arrives at completely different results based on his new methodology called SAP which has been talked about in an earlier section. He believes that the conventional wisdom is based on faulty methodology and globalisation was actually very good for the poor in the sense that the growth was pro-poor.

4. Poverty Reduction

Now, talking about attempts to reduce poverty, it is not a simple concept. One might think that economic growth implies reduction in poverty. That is far from the case in the real world. Although it is a factor, it is not the be-all-end-all. Radhicka Kapoor(2013) talks about how poverty reduction does not just directly follow economic development. It entails the composition of that growth too. There can be multiple factors that influence poverty reduction, like initial conditions and the growth elasticity of poverty. This is a bit different from what is generally agreed upon in a wide range of literature. The growth rate is thought to be directly proportional to poverty reduction (Kraay 2006). If we fix a particular poverty line, any well-behaved measure of poverty will be a strictly decreasing

function with an increase in mean income. Technically speaking, this is correct, but this also includes the case where the poverty rate is stagnant but not decreasing.

According to Kapoor, inequality matters in 2 ways:

- The first way is that if we consider initial conditions, the countries with high inequality at the start have a huge range of incomes. Thus, at the same relative growth rate, the absolute growth will differ hugely, and consequently, the poor will suffer.
- Secondly, the consequences of the above lead to lesser progress in reducing absolute poverty.

The author says that consumption inequality tends to be lower than income inequality because of consumption smoothing (creating a balance between saving and spending during different phases of life to achieve a higher standard of life) by households. Another factor is that richer households have more savings, which leads to discrepancies in consumption expenditure.

Coming to the methodology used by Kapoor, we see that they have designed HCR as a function of the poverty line. She says that there are two components of change in poverty. One is growth, and the other is distribution. So, not only does the growth of incomes matters but what also matters is the composition of that growth. The data that she chooses suggests that economic growth can reduce poverty in 2 ways. First is, as already discussed, the increase in average income. The second one is when the income is higher on average, the elasticity of poverty increases.

At its heart, what Radhicka Kapoor wants to convey is that even though India has reduced poverty despite rising inequality, one cannot take it to mean that inequality doesn't matter. It just means that the increase in income was so huge that it overturned the effects of inequality, which are still substantial. If there was lesser inequality, we could have seen an even more impressive rate of poverty reduction.

Inclusivity of Development

1. What is the Meaning of Inclusivity in Growth?

In simple terms, inclusivity means involving every person in the growth process. Economic growth should be distributed fairly across society and give equal opportunities to all. Essentially, the aim is to create an egalitarian society.

We know that all the communities in a particular country are not equal. This means that different communities will require different amounts of 'push' in order for them to grow

and compete with other communities. Only then can we say that growth is inclusive. Thus, this not only includes providing resources for every community to grow, but also allocating those resources in a way that every community is treated fairly. It could involve allocating these resources in a way that is proportional to the size of these communities. Alternatively, this could also include allocation based on the shortfalls of each community in a particular measure. These methods have been discussed in further sections.

However, even after all these efforts, the growth has barely been inclusive. We lag in the development of the various underprivileged communities to this day. Let us study this in further detail. However, before that, we need to study one more term. This is called ‘pro-poor’.

2. What does pro-poor mean? Is it the same as inclusive development?

Pro-poor growth refers to any sort of growth that benefits the poor. This is virtually any growth that leads to a decrease in poverty. We know that poverty reduction depends on two factors: Growth and the composition of that growth. There must be some sort of growth in society for the poor to progress. For the second factor, the composition of that growth matters because to reduce poverty, efforts should be made to focus more on the poor. If a particular policy favours only the rich, that is not pro-poor. Thus, at the very least, the benefits of the said scheme should be felt in every section of society.

As we shall find out, looking at the following literature, there is a need for a more egalitarian, pro-poor growth process in India. Ravallion (2000) gives his own suggestions on what he feels should be the way forward. His article defends four claims:

- “Composition of growth matters to the poor”
  Studies have shown that consumption poverty tends to decrease in India (like other developing countries) with an increase in mean household income/consumption and GDP. However, we’d like to see why there is a difference in impact on consumption poverty with this change among different countries. Other than this, the geographical, sectoral and rural vs urban areas matter to the consumption poverty as well.

  Ravallion decomposes the impact on poverty reduction based on growth in different sectors. He claims that the results seem to point to the fact that the economic growth of the rural areas is going to be an effective strategy to reduce poverty over the years to come. This seems like a fair assessment according to the data, as well as intuitively also.

- “Higher agricultural productivity is a key factor in rural poverty reduction, though there are multiple channels, and the process is not necessarily rapid”.
  If we look at it logically, it makes sense. In the first point, he proved that the economic growth of rural areas should be the priority. Further, we know that agriculture is more prevalent in rural areas. Before undertaking this review, I knew that the agricultural sector is one of the sectors with the most disguised unemployment. It is also the biggest sector in India. Thus, it would make sense if agricultural productivity increased. Sure enough, Ravallion points to data that supports his argument again.

- “A more pro-poor process of (urban and rural) non-farm economic growth will require progress in both rural development and human resource development.”

  As said in earlier points if the rural labour is absorbed into other sectors, i.e. industries, the labour will increase productivity in other sectors without decreasing the poverty of the agricultural sector. Thus, it will lead to growth.

  Now, the non-farm economic growth will lead to a more pro-poor process. However, this process is more pronounced in some states compared to others. What is the basis for that? The answer lies in the initial condition of the states. It depends heavily upon literacy, farm productivity, living standards, et cetera. Thus, the quality of human resources matters heavily for the growth of this sector. Hence, progress in both rural and human resources is required for better(more pro-poor) results.

- “Higher public spending on basic health and education can bring large gains to India's poor.”

  We have seen earlier how initial conditions can help to make the growth process more pro-poor. However, as data points out, there is lesser enrolment in schools from the poor class. So there should be programs that encourage the poor to send their kids to school. The mid-day meal scheme is a very good example. This helped the poor kids get to school since procuring food was necessary, and the poor were helped this way.

There has been some literature explaining what pro-poor is. According to Jean-Yves Duclos(2009), to understand it, we need to go beyond simple averages and summary poverty statistics. He goes into detail explaining what being pro-poor means. He starts with fundamental mathematical axioms. Then using them proposes simple mathematical techniques that can help us in assessing whether anything is pro-poor.

As an example, let us consider the income case. Take that the income grows from y1 to y2 in some time period. In the paper, he says that for the income case, according to different standards, income should grow in the following ways to be considered pro-poor.

- Relative Standards:
  Income should grow proportional to the ratio of the mean of y2 to the mean of y1.

  I.e. Income growth $\propto$ (y2 mean)/(y1 mean)

- Absolute Standards:
  Income should grow by the same amount as the growth of the indicators of welfare.

- Statistical Standards:
  Income should grow by the ratio of the y2 median to the y1 median.

  I.e. Income growth $\propto$ (y2 median)/(y1 median)

- Political Standards:
  To be considered pro-poor, income must grow according to the standards set by the government.

This was just one example; there are other tests he provides to check the pro-poorness of any growth.

3. Inclusivity of development in India

In this section, we would like to analyse one of the most successful periods for poverty reduction in India. This is the time between 2004-05 and 2009-2010. The headcount ratio decreased from 37.2% to 29.8% during this time. This is pleasing news; however, to understand it, we must look at it from a deeper perspective. We need to look at the composition of this reduction. Then, we can find out how inclusive it really was. This is done by Shukla and Mishra(2014).

The paper tries to calculate inclusiveness by introducing relative disadvantage. Here, the achievement of any particular group is looked at and judged based on the average outcomes. Ideally, the situation should be that any group's achievement should be directly proportional to its share of the total population. The author develops an index based on the above concept called the Relative Disadvantage Index (RDI). This index

measures the disadvantage of a group compared to the rest of the population. Technically speaking, this index can be employed for any quality that one wishes to compare between subgroups. Thus, if the results it provides are trustable, then this is a supremely valuable index.

They considered four main groups. These were segregated on the basis of states, sectors, social belongings and occupation. However, the insights of this investigation were not desirable. The poverty reduction was not inclusive, with some of the poorest states experiencing no decrease and, in some cases, an increase in their relative disadvantage. In terms of social belonging too, the trends were undesirable. Thus, the picture that is painted is rather grim.

When we scrutinise the works of Ravallion(2009), we can see that even India had more elasticity of poverty, it could have achieved an even more impressive rate of poverty reduction. This leads us to the fact that inequality matters in the case of reduced elasticity of poverty. Now, here, only one kind of inequality was considered, i.e. consumption inequality. There are other forms of inequalities that matter too. They need to be addressed as well for India to progress in poverty reduction.

Unfortunately, India needs to double down on reducing poverty by addressing these issues through better policies, the creation of jobs, et cetera.

Inclusivity is a big goal of every government that comes to power. They want to ensure that society's lowest strata can keep up. Thus, the government tries to bring new policies and innovations to try and help India’s poor. An era of massive reforms was 1993-94. Thus the time before and after it is called the pre and post-reforms period, respectively. The government changed its strategies for growth quite radically.

Post-reforms, the growth structure changed. Thus, for inclusivity purposes, we need to study the issue of whether the post reforms period has been kind to the socially underprivileged. Thorat and Dubey(2012) tackle this problem. They start out with pro-poor growth as a subset of inclusive growth. The indicators of said pro-poor growth is the growth of income, reduction in poverty, and the level of inequality.

In this particular paper, to determine the inclusiveness of growth, the authors use the rate of change in incidence of poverty and growth of consumption expenditure. To what extent have these changes in inequality influenced the efficacy of the growth process in reducing poverty? This is also looked at here in this paper.

The growth is considered pro-poor if: The incidence of poverty declined at a higher rate than the previous measurement; the change in income exceeds the previous measurement; If the Gini changes very little and the growth effect coupled with the distribution effect contributes to poverty reduction.

This paragraph summarises the results. Rural poverty declined during 1993-2010, with a major acceleration in 2005-10. This is true for all groups during the 2005-10 period. However, there is a difference in how much each of the groups has gained across the board. SCs had a lower decline than Muslims, STs, and other religious minorities. Similarly, in the urban areas, poverty decreased at a higher pace during 2005-10. The regular salaried households seem to fare much better here. Even here, the higher caste households seem to do better than the others. This works for casual labour households also. The major trend here is that even among subgroups in these categories, some subgroups seem to do systematically better than others.

Ultimately, this decomposition exercise demonstrated that the growth of consumption expenditure was the primary source of poverty reduction. However, increasing inequalities have affected poverty reduction in the 2000s.

Finally, the author suggests that this is not a poor specific issue. So solutions that are poorly focused and group focused need to be implemented to see a better change.

Before we wrap up this section, let us also study the inclusivity among different groups as the better part of the issue of inclusivity arises from historically underprivileged groups.

Jayaraj and Subramanian(2013) talk about inclusiveness across groups in the context of increased consumption expenditure. There are two rules of inclusive allocation considered here. The Pareto Respecting Proportionality (PRP) rule and the Pareto Respecting Equal Division (PRED) rule. This paper follows the PRED rule only.

PRED rule: This rule states that, for a particular subgroup, the amount it is allocated is equal to the base year mean consumption level + share of incremental productivity of growth which is proportional to the size of that group. The difference between PRP and PRED is that PRP is radically egalitarian and PRED is barely egalitarian. However, we shall find that the picture is bad enough as it is. So PRED is used.

What was observed is stated as follows. Actual/warranted growth rates are systematically <1 for SC/ST, while others are >1. This is true for rural areas every year except when the base year is 2004-05, where the situation is reversed (barely). The

situation is even worse for urban areas, with it being true every year. We expected that there must be some sort of catching up between unequal parties.

Even though the expectations from the PRED rule were very low, they were not achieved. This signified that the growth was not all-inclusive. The situation is worse in rural India but even worse in urban India. Even when different occupations are considered as a factor, the result is still the same.

This paper was different in the sense that it didn't judge inclusiveness by the conventional growth rate comparison standard. This actually tries to go in deeper.

Measurements and Indices

To study different issues, we need to look at data. However, data by itself is meaningless. We need to learn to interpret it. This is where these indices come into play. Mathematical constructs like these help us to study data. The value that they provide helps us to understand the overall picture. Take, for example, the Gini index. Say we have data for income levels for a society with ten people. The Gini index provides us with a value between zero to one. If all the income is concentrated at one person, the Gini index value will be one. Or if everyone has equal income, the Gini value will be zero. Thus, with one value, we can get an overview of the whole population. Measures help us measure real life phenomena like economic inequality, poverty, standard of living et cetera. These are incredibly helpful when one wants to quantify a particular occurrence. It allows the reader to stay objective and not get swayed by the author's own opinions that may have crept in inadvertently.

Now, let us study how they are classified:

1. **Centrist, Leftist and Rightist measures**

Measurements regarding inequality are usually classified on three bases: Rightist, Leftist and Centrist measurements. To understand these, let's take the example of two people. Let's define an income vector such that each dimension of that vector represents the income of a person. So, in this case let's say that the incomes are 10 and 40. Thus the income vector will look like (10,40). Let's say, due to some reason, the incomes of everyone are doubled. Thus, our income vector will transform into (20,80).

Now, if we look at it relatively, inequality is unchanged as incomes increased by the same factor. This is called a relative measurement, or a 'Rightist measurement'.

Conversely if we look at the difference of the two values, it increased from 30 to 60. This is called ‘Leftist measurement’ or absolute measurement.

2. **Creating a Centrist measure: The Intermediate Gini index**

A third school of thought exists. These measurements try to take the middle route and capture both the facets of absolute and relative measures. These are called the centrist measurements. We can study these in the context of Gini indices.S. Subramanian and D. Jayaraj (2013) try to use Gini index in its relative and absolute form to create the intermediate Gini, a centrist measure.

The relationship between the absolute measurement Gini value and relative measurement Gini value is given by:
Absolute Gini (G_A) = Relative Gini (G_R) * mean income

However, we understand that both of these values capture a different facet of inequality. If we can find a way to design such a measurement that captures the essence of both of these, then it can be even better.

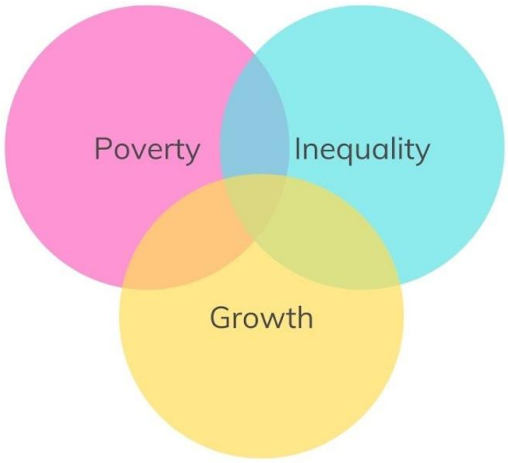
According to Subrmanian and Jayaraj, it would involve measures such that they rise when all incomes go up by the same percentage and fall when all incomes are increased by the same absolute amount.

This measure will be represented by an intermediate Gini:
$G_I=G_R * G_A$
Another centrist measure could be k, where
k=coefficient of variation * standard deviation (developed by Krtscha(1994)).

3. **The Quintile Income Statistic**

As one might expect, the Gini Index is not the only measure. There are different measures that can help us understand inequality and help the government understand how to make better policies. One such measure is the Quintile Income Statistic. Let us find out its advantages and disadvantages.

S. Subramanian(2011) defines the quintile income statistic. He starts with an idea. The idea is to capture the basic aspects of inclusiveness in the areas of poverty, inequality and growth. This is the region in the intersection of the following illustration.



Subramanian says that there is already an index that does all that we hope to do in this idea and goes on to describe the quintile income statistic. It is defined as the income of the poorest 20% of the society. The quintile income is a good measure in the sense that if it is maximised, development can be achieved since it is this lowest strata that needs help the most.

Subramanian also develops two variables called the mean per capita expenditure(M), and the quintile per capita expenditure(Q). Now, it might seem that if Q>M, then the poorest people have grown more than the average society and we can all say that the work is done for the day. However, upon closer inspection and challenging this inference just a bit, it falls apart. Subramanian gives us an example to show this. Consider a 2 person distribution with incomes(1,100). If there is growth and after some time, the income of the individuals increases to, say, (2,105). The richer person has only grown 5 percent but the growth of the poorer person is 100%! Can we then really say that the growth is egalitarian? Of course not! Thus it is important to know what kind of measures are applied in particular scenarios to avoid such errors. So, this is why we need to see the base level at which every party is starting.

Subramanian, provides his own solutions for the problem. These are (in the order of increasing egalitarianism):

- The least poor gets and equal share of growth to everyone else.
- The poor get a share of growth based on how far they were from the poverty line.
- The most egalitarian solution is the Rawlsian lexicographic maximum solution. Here the poor get the share of progressive income equalising transfers (according to how poor they are), while the rest receive nothing.

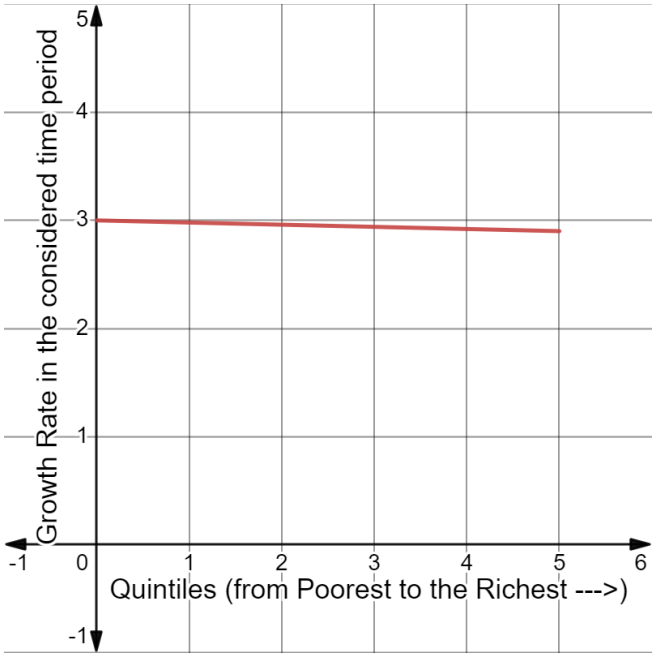
Another paper that talks about the Quintile Income Statistic is written by Subramanian and Jayaraj (2016) argue that it would be naive of us to consider that just because a

person is living above the poverty line, it means he is able to afford all the different activities that can make one consider them non-poor. It is here that we need money metric measures.

The Quintile Income Statistic is considered to be a very good measure by the authors and that policies can be formed targeting specifically to increase this measure. We can use the ratio of the warranted growth of the quintile income from a particular policy to the actual growth obtained.

Ratios of the average income of any particular decile in a particular year to the base year can be taken. This ratio will help us determine whether the growth is inclusive or not.

Let's consider the least egalitarian case shown by the hypothetical graph here. The condition is that at the very least, the growth of the poorest quintile is marginally above everyone else.



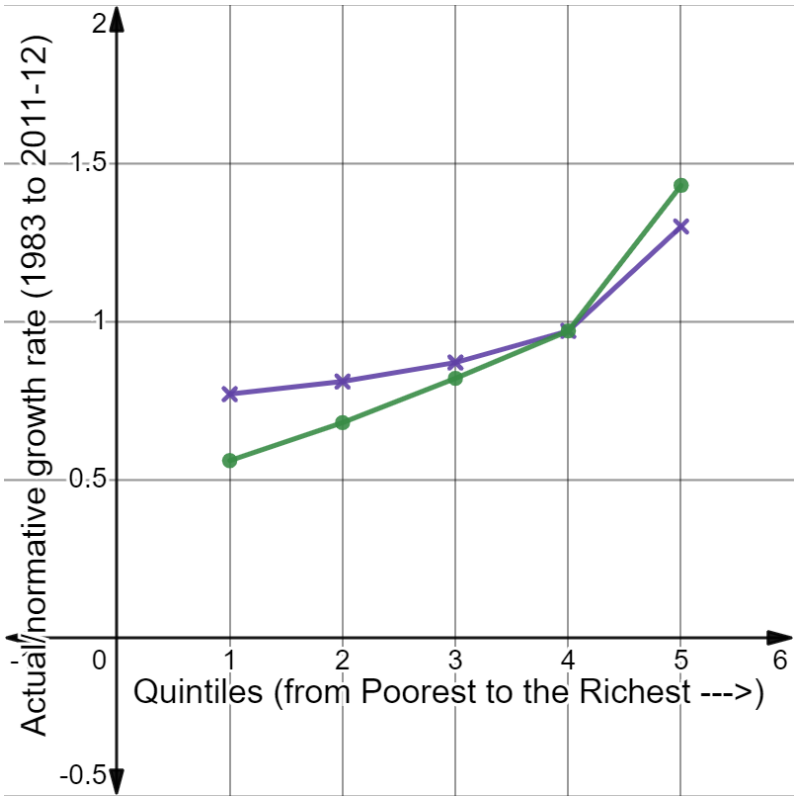
This is the graph of the ideal scenario. Here, it will show a marginal decline with a very slight negative slope.

It should be noted that the numbers on the y-axis do not mean anything as we are just looking at the growth rate in this case. In the following case, we talk about the ratio of actual to warranted growth rates. There, the numbers will have to be accurate and will be based on real data. Here, they are just used to represent some non negative growth rate.

The numbers on the x-axis represent the quintiles from the poorest to the richest.

Now, if we look at the reality of things, the state of affairs is abysmal. This growth is shown by the next graph that shows the Indian situation. It can be easily seen that the growth is not only inegalitarian, it increases in exponential fashion (qualitative inference) as we move towards the richer quintiles.

The crosses represent the rural case and the dots represent the urban case.



This graph has been made using the calculations made in table 6 that the author of this paper provides.

The author believes that even though this measure has its own conceptual problems, the benefits it provides outweighs them. Other measures of poverty are equally ridden with conceptual problems and loopholes.

Now after all this, my opinion is that the quintile income is the only measure that seems to be reliable. Since it is the poorest who suffer the most, it seems only fair that they are given importance that they require.

Inequality

Broadly speaking, inequality is of two types, horizontal inequality and vertical inequality. Vertical inequality refers to the inequality between individuals or households. However, for our purposes, we focus on horizontal inequality more. Horizontal inequality refers to the inequality that doesn't directly arise from an inherent difference in factors like skill, education level, experience, attractiveness, et cetera. These arise between different ethnic, racial, national groups, et cetera.

Mathematical Attempts at Quantifying Inequality:

D. Jayaraj and S. Subramanian (2006) try to present the concepts of different kinds of inequalities to us using mathematical constructs. The purpose of that paper is to study the relative disadvantage between groups from a mathematical perspective. They also

try to derive some measures of vertical inequality through the measures of horizontal inequality.

1. **Income**

This section shall be comparatively short. This is because a lot of the literature doesn't look at income levels. It is generally accepted that we study consumption expenditure rather than income. This is because of two reasons. People are more likely to underreport their incomes, thus causing distortion of data and, consequently, the real picture. Secondly, a look at the consumption expenditure data can give us an insight into the standard of living of different households. This is why this data is so meaningful.

Employment growth is seen mainly in the self-employed sector. The growth of wage employment stayed more or less the same. According to Chandrashekhar and Ghosh (2007), it is more of a movement that rises from the distress of the wage employment sector. However, because the renumeration in self-employment is much less than ideal for the vast majority, it gives rise to income inequality. First, we shall look at income inequality and then proceed to wage inequality in the following section.

Now, let us talk about the inequality in income levels. We have seen multiple times now that income inequality increased in the post-reform period. Sandip Sarkar and Balwant Singh Mehta(2010) analyse the data from different sectors, regions, gender, households, et cetera. As the growth accelerated in the post-reform period, the decline in poverty decelerated. Inequality continued to persist in the sense that about half of regular workers had a slower increase (halved) in the wage rate than the upper half. As we keep going up to the richer quintiles, the wage rate increase accelerates to 5%.

They collected data in the pre and post-reform periods and compared them together. They found that there exists significant inequality based on wages and income in different spheres. We shall talk about income inequality here and wage inequality in the following section.

The measure used here was the Gini coefficient, general entropy measure, and the k density function. Data analysis showed that income inequality kept monotonously increasing until the post-reforms period, where it showed a steep increase. Income inequality rose even in the upper-income groups, especially for urban households in the post-reform period. If employment status is considered (casual/regular), inequality rose, especially for upper-income groups in urban areas in the post-reform period.

So, we can clearly see that inequality is unequivocally increasing. The trends are absolute, and some that we don't want to see.

The Nutrition Problem: A Consequence of Income Inequality

As one can imagine, income inequality has a direct correlation with the nutrition that the general population is receiving. It is evident that people who live in abysmal conditions get less nutrition in general. However, there is a flip side to this problem. While there is a group that suffers due to being under nutritioned, there is a growing problem of the population that is over nutritioned. This is studied by SV Subramanian, Ichiro Kawachi and George Davey Smith(2007).

This particular study was women-centric in the sense that the subjects considered were female only. A possible explanation I can think of is that women are in general more oppressed than men. So, to avoid another variable that could complicate the study further, only women were considered. However, this explanation might be a stretch considering the number of factors SV Subramanian et al. have considered(age, religion, caste, marital status, education, standard of living, occupation, living environment, smoking, drinking, tobacco chewing, malaria, and tuberculosis).

They start with the hypothesis that income inequality can be correlated to under and overnutrition groups. They say that consumption expenditure is looked at in place of income levels. This is because incomes are not taken record of as strictly. Furthermore, a person is highly likely to underreport his/her income. On the contrary, consumption expenditure data helps give us an insight directly into the standard of living of any particular household. Without getting too much into mathematical detail, this particular paper found a relationship between income inequality and levels of nutrition, indicating that this was indeed a valid question and that the two are not disjoint from each other.

After adjusting for the aforementioned factors, the study finds that economic inequality does in fact promote inequalities in consumption. This data was interpreted based on the BMIs of individuals. The authors provide a theory based on the fact that since a huge cause of famines is the maldistribution of food, the same could be said about the question that this paper undertakes. This can lead to all sorts of other problems like corruption in the distribution of food. Studies show that non-poor people are more likely to get the benefit of public schemes than the actual poor who need it the most. The authors also point out problems in the ICDS scheme that is designed to help children and women. Another interesting thing to note is that even though women in richer states are likely to be overnourished, there is no evidence to suggest that the risk of being underweight is lower in these states.

A problem with this study is that it takes BMI as an indicator of proper nutrition. This is inaccurate as BMI works for a huge range of populations, not a particular individual. Thus, there is always a chance of error.

Coming to wages, let us now study some literature regarding wage inequality:

2. Wages

State-wise Inequality

Looking at Amaresh Dubey (2009), we compare different indicators of welfare across states. This is important to study as intra-state inequalities have increased over time. To study this problem, Dubey uses consumption, inequality, and the incidence of poverty. The basis for choosing these states was that these had relatively similar initial conditions. So as far as I can reason, this would allow for a better comparison between the states. Well-known earlier literature by Kuznet(1955) suggests that inequality tends to rise with economic growth(or even decline, for that matter). This led to him giving his famous Kuznets curve.
It has an inverted u shape that suggests that eventually, inequality will sort itself out. However, multiple papers refute this claim citing the different conditions of every country.

In earlier similar work, Mathur(1983) confirmed the existence of disparities, but he couldn't find any trends. After that, Debroy and Bhandari(2007) studied the years from 1983 to 1993-94 and found that the disparities increased at a moderate pace between 1973-73 to 1983 and stagnated from 1983 to 1993-94.

There is a large variation of hcr across the states. The Coefficient of Variation of the HCR has also increased between 1993-94 to 2004-05. Now, even though the Gross State Domestic Product Coefficient of Variation is over 21%, the poverty incidence decline Coefficient of Variation is still 55%. Since they are so varied in value, it must mean that the annualised Gross State Domestic Product growth does not depend on poverty reduction and vice versa.

In this paper, 3 indicators were used. The mean PCTE (per capita total expenditure), the Gini coefficient and the HCR (headcount ratio). They represent consumption expenditure, inequality, and poverty, respectively. On top of that, since the data sets were taken from the same source, the difference due to bias was minimised.

Finally, analysing the pattern, we find that it is interesting and different from what was expected. Kerala, even though it had the highest mean PCTE, had the most vertical inequality.

The intra-state case suggests that Punjab had the highest inequality, followed by Gujarat, Kerala, Orissa and Haryana with the least. Now, the poverty case suggests that the intra-regional disparities in these states was more or less similar. However, the Coefficient of Variation of HCR invariably increased in all states, with Kerala being the highest and Orissa being the lowest.

The final verdict that the authors provide is that the intra-state disparities have increased presently compared to what they were in 1993-94.

The Reforms Period and How it Impacted Inequality

The period of 1993-94 was when India brought in a lot of economic reforms that changed the composition of its growth and accelerated it into a period of poverty decline. However, as we have studied before, economic growth leads to increased inequality. There is a paper by Sabyasachi Kar and S. Sakthivel (2007) that addresses this issue. It is titled" Reforms and Regional Inequality in India". For three decades after independence, the growth rate was stable at around the figure 3.5%. However, in the 80s and 90s, namely the pre and post-reform periods, it increased to an impressive 6% annually. However, there is much difference between these growths as the composition of that growth was different.

In the 80s, the government focused on the public sector for growth. The private sector was heavily regulated. In contrast, the growth in the 90s focused on privatisation and globalisation of the Indian economy. Both had their own advantages and drawbacks. The industrial sector was main in the 80s while the services sector was main in the 90s.

A very basic concept that exists in economics is marginal productivity. Assume that there is a type of capital that is required to produce a certain good. Marginal productivity refers to the increased production of that good, provided we have one extra unit of capital. This productivity is a curve that increases at first. However, its rate of increase decreases with the amount of capital. After a certain point, this productivity becomes zero. In the long run, it is said to be equal to the rate of labour augmenting technical progress. This results in the per capita income convergence to steady-state levels. Thus, economic inequality is reduced over time. However, this model worked for developed countries very well. However, the results obtained have been mixed for developing countries.

Therefore, an alternate model is needed. This model says that economic activities tend to cluster in certain areas (for example, Silicon Valley in the US and the industrial sector in Pune). So, naturally, the peripheral regions would fall behind over time. These kinds of economies are called agglomeration economies and provide a significant advantage to employers and labour. Some of these advantages include sharing of inputs, emerging labour market with better skills, and knowledge transfer between different types of workers to name a few.

The Krugman model says that centripetal forces (that allow for migration towards the agglomeration economies) increase regional inequality and centrifugal forces (that help increase the workforce outsourcing) decrease regional inequality.

Now, talking about regional disparity is our main focus here. It didn't increase much in the 80s, however, in most studies conducted, it increased in the 90s.

The work that Kar and Sakthivel conducted is to test whether the disparity really increased or not. There are different claims regarding the increase or decrease in inequality in the 80s and 90s. However, when the authors test it they find that it didn't change much in the 80s (the centrifugal and centripetal forces were balanced) but increased in the 90s(the centripetal forces dominated over the centrifugal forces).

In addition to the above, Kar and Sakthivel also provide a possible explanation. In the 80s the forces were balanced. The centripetal forces due to agglomeration economies balanced out the centrifugal forces due to government efforts to direct growth towards the backward areas. In the 90s, the reforms weakened centrifugal forces and strengthened centripetal forces.

Now, it is time we delve deeper into the contribution of each sector separately. They quantify the contribution of each sector as a product of the inequalities within the sector, relative size of the sector, and the strength of the linkage between the sector and the economy.

It turns out the during the 80s aggregate inequality is unchanged along side the sectoral contributions at most times. In the post reform period, only agricultural inequality stayed the same while the rest increased. Even for the aggregate period of 80s to 00s, the inequality stayed more or less the same for agriculture, with inequality increasing during the 90s, but the decrease in size balancing it out. In the industrial and services sector, pre reforms, the regional inequality decreased, but increased post reforms. In conclusion we can't point out a single trend for regional inequality in the Indian case. When we look at agricultural sector, contrary to earlier studies, it also contributes to the

divergence significantly. Due to the government promoting the industries sector, the agglomeration economies thrived, and inequality increased with its growth.

Other authors talk about this too. Sandip Sarkar and Balwant Singh(2010) found that the average daily wage increased in both pre and post-reform periods. The increase was slower for casual workers compared to regular workers. Regular wages increased relatively slowly in the post-reform period. The author claims that this is due to the lower growth rates of regular wages in rural areas. On the contrary, the casual labour wage rate accelerated in the post reforms period.

The Agricultural Sector: Since agricultural labour is the biggest segment of the workforce, if it is doing well, we can more or less say that the agricultural sector is doing well. The non-agricultural wage rate has been higher than the agricultural wage rate historically. My personal theory is that since disguised unemployment is the most in the agricultural sector, this means that due to redundancy of workforce the value placed on it is not as much as other sectors that might even require a higher skill set. I digress at the original point. In the pre and post reforms period, this gap is narrowing down. This higher growth rate in the agricultural sector was mostly due to the decrease in the size of the workforce in the agricultural sector, as they had gone towards government jobs. If we look at educational patterns, even with the same educational level, rural people still earn lesser than urban people due to other institutional barriers. However, a higher education level implies more money earned. In this case, casual workers' wages showed no pattern.

The Secondary and Tertiary Sectors: They found that post reforms, the wage gap increased for the secondary and tertiary sectors in urban areas. On the contrary, it decreased for the agricultural sector in the rural areas for regular workers. Now, the possible explanation is that in the post-reform period, the services sector was being grown more by the government. As we know, economic growth entails an inequality increase; thus, it makes sense.

The regular workers had higher inequality in wages than casual workers, possibly due to a huge variation in skills, education, et cetera compared to the casual workers. This just means that the pool of regular workers is just more varied than the casual one.

Composition of Wage Inequality

We now turn our heads towards wage inequality and its composition. This is talked about in the paper titled “Wage Inequality in India: Decomposition by Sector, Gender, and Activity Status” by Panchanan Das(2012).

Differences in wages are present everywhere. These could be due to different levels of skill, and various discriminatory factors like gender, caste, et cetera. The point is that these differentials are present everywhere. *We would hope that if global competition allowed for free mobility of labour and capital across the country, the income levels would hopefully come closer. Thus that gap would be reduced.* However, as hardly anything ever is, this situation is not ideal, and in practice, this is never the case.

The authors think that finally, only the efficiency of labour would matter, and labour productivity would increase. However, as we have seen in previous literature, discrimination still persists, leading to employers taking a loss unnecessarily. However, I digress at the paper at hand.

Das uses the Gini index and a wage regression model to analyse and study wage inequality. He finds that the Gini index follows the Pigou Dalton principle: *"If income goes from the rich to the poor, the resulting distribution is more equal".*

Let us move on to what Das found out. As I pointed out earlier, even his observations agree with the fact that the labour market is discriminatory and unequal. This is a big factor in determining the labour force's living standards. Effectively, this study aims to look at the different kinds of workers and analysing the difference in wages that exists among them based on whether they are males/ females and formal/informal sector workers. Sure enough, massive inequalities exist. The people working in the informal sector are paid less than one-third of the people working in the formal sector. On average private formal sector earns more than the public sector. Women and rural workers are more prone to wage differentials than men and urban workers, respectively. Women are paid less than men. In the public sector, the inequality in wages is highest among women. Even though within-group inequalities are high. It is seen that a significant part of wage inequality comes from inequality between groups. The main part of the inequality is inequality between the sectors, except for the gender case, where it is mainly explained by within-group inequality. Unfortunately, it is the women who always seem to get the short end of the stick. The wage regression model tells us that even though factors like technical skill, education, and experience matter, they matter to a different degree for different sectors. Das extrapolates that this is why within-group inequality might persist. Finally, education seems to be one big determinant of the kind of wage the labour is receiving.

3. Assets

An asset is a resource with economic value that an individual, corporation, or country owns or controls with the expectation that it will provide a future benefit. Therefore, assets are highly sought out, with companies and individuals investing in firms and new ventures to own a certain percentage of that project so that they can make future profits. This is just one example of assets. Others could include bonds, royalties, land holdings, jewellery, et cetera. All of these have the potential to provide more wealth. As must be natural to the reader by now, there is huge inequality among individuals based on the assets they hold. Mandira Sarma et al. (2017) studied the issue of how much inequality there exists between different individuals in terms of their assets. They also tried to assess the trends over the years in the same.

Sharma finds that asset inequality is a widespread phenomenon, with most of the wealth being concentrated at the top while the poorest struggle to accumulate any. She wants to add to earlier studies by Subramanian and Jayaraj (2006) and Jayadev et al. (2007), who have noted the rise of asset inequality between 1991-92 and 2002-03. Here, she adds another decade of data, i.e. from 2002-03 to 2012-13.

To look at trends, we must have some sort of preliminary idea about the initial conditions of asset holdings. In the rural areas, land (more than two-thirds) and buildings (about one-fifth) dominated the assets. Others, like agricultural machinery, livestock, transport, et cetera have decreased. In the urban areas too, land and buildings were of prime importance (about 83% in 2002-03 to 92% in 2012-13), followed by financial assets. Transport and business equipment again declined over the years, with other assets described above having a minuscule proportion of the pie.

Now, we turn to the inequality of asset distribution for rural households. As I mentioned earlier, the asset distribution is unequal. The assets keep getting concentrated in the upper deciles. The top decile went from 50% in 1991-92 to 56.5% in 2012-13, with the top 5% at 37%. The bottom 10% live in the same abysmal conditions, with 0.21% in 1991-92 to 0.25% in 2012-13. The share of the bottom 60% declined from 14% to 12.6%.

Talking about urban households, the condition there is even worse. The top decile was at 64% in 2012-13. The bottom 60% declined from 8.6% in 2002-03 to 6.7% in 2012-13. The net wealth decreased for everyone except the topmost decile.

The Gini coefficient is a simple but powerful measure of inequality. The Gini coefficient rose between 2002-03 and 2012-13. In 2002-03, the Gini coefficient for gross assets was at a staggering high of 0.74 which rose to 0.84 in 2012-13. The poorer sections are

affected by debts more than the richer households, which negatively impacts their assets.

Even though trends might be different for different types of assets, in the end, the trend in the land decides what the final position of inequality will be.

As will be the theme in the following sections on caste discrimination, we look at asset inequality on the basis of caste. The average asset holding of SC/ST households is much lower than non-SC/ST households. This is because, historically, due to marginalisation, they have little to no land ownership. The ownership of land has been divided generationally into non-SC/STs only. Thus, leaving the underprivileged in a worse-off situation.

The authors also define an index called the access index. We had seen similar calculations before when we talked about egalitarianism. It gives the value of the ratio of the held assets of a group to the population share of that group. The interesting thing is that, for the marginalised groups, the access index is showing a decrease over time, signalling an increase in inequality. This directly goes against the hypothesis I started with.

The paper also uses the Theil index to measure the weight of different causes of overall inequality. In 2012-13, inequality among urban households was the major cause of inequality. The contribution of intra-group inequality also increased substantially between 2002-03 to 2012-13. The disparity between social groups was a major contributor to increasing inequality in both urban and rural areas. The Theil index of rural-urban disparity also increased during this time, showing an increasing contribution here too.

In conclusion, the situation is going from bad to worse. In urban areas, it is especially bad as both the starting value and the pace of inequality increase are alarmingly high. Land and buildings are especially important assets. Finally, social group disparity is also a major cause of inequality.

Opportunities or lack thereof

1. **Discrimination**

What is Discrimination?

Discrimination refers to the unfair practice of treating an individual differently based on caste, creed, race, disability, et cetera. We know that in earlier times, the caste system was prevalent in India. The people hailing from the so-called lower castes were excluded from society. They were forced to take up mean jobs and were not allowed to study, drink, eat, or pray with the upper caste people. This systematic exclusion spanning centuries led the people from these castes to be underdeveloped. After the independence in 1947, the caste system was abolished, and everyone was to be treated equally according to the Constitution of India in 1950.

Does Discrimination even exist anymore? Some Critical Literature

In a bid to make these underprivileged groups catch up, the government introduced reservations for these groups, namely the Schedule Castes, Scheduled Tribes and Other Backward Classes. These reservations were aimed at helping them secure government jobs, seats in government colleges, et cetera.

After the introduction of reservations, some decades later, researchers like Beteille(1965) and Desai(1984) started working to prove that caste-based reservations were unnecessary. Beteille(1965), in his study of a village in Tamil Nadu, showed how caste no longer determined a person's hierarchy in society. Desai(1984) strongly opposes caste-based reservations stating that if caste is used as a measure to measure backwardness, it is essentially acknowledging the caste system. Desai thinks that this is counter-productive and would essentially just promote caste-based discrimination.

There is a thought that there are some sections that are more underprivileged than others in every caste. Ashish Singh, Kaushalendra Kumar and Abhishek Singh(2015) have showed this for the underprivileged castes. Therefore, it is unfair to consider a whole caste as backward. He also argues that we cannot treat caste in urban and rural areas similarly.

Rajnish Kumar, Satendra Kumar, and Anup Mitra (2009) study the contemporary significance of caste in India. They construct a well-being index that considers a lot of factors like health expenditures, family income, assets, et cetera.

It considers four cities. Out of these four cities, 500 households are selected for each. These 2000 households are scrutinised, and conclusions are drawn based on their composition. It seems that religion is a bigger factor in determining the composition of the slums rather than caste. People of all castes seem to be present in the slums. However, on further econometric analysis after pooling all 2000 households together, the distinction between different castes is brought out sharply. It seems that after a

particular limit of the wellbeing index, the upper caste groups are more likely to be present.

That said, in individual cities, this pattern is non-existent. This signals a major implication for further policies. This means that further policies need only aim at economic factors like family income and abandon caste-based factors.

The authors believe that these analysis don't take into account centuries of segregation and a lack of literacy. These factors prevent them from taking advantage of said caste-neutral occupations to this day.

Evidence for Caste-Based Discrimination

If one reads the above section, one might think that everything is good with the world and the issue of caste has been tackled successfully. However, there is overwhelming evidence for the existence of caste-based discrimination too. In fact, it seems that their is much more literature that seems to argue for caste specific policies than against them.

Take, for example, the case of occupations. People belonging to the so called upper castes would rather stay unemployed than work in these sectors as we shall see in the following sections.

Thorat(1993) observed that people belonging to the lower caste make up a larger population of today's agricultural labour. To this day, there is a tendency for certain castes to cluster in certain occupations (Panini 1996).

Deshpande (2003) looked at the relationship between caste and poverty, and not surprisingly, people from a historically underprivileged caste had a higher chance of being poor.

There has been a belief that landlessness and lack of assets in villages is a propelling force for migration to the urban areas. Dandekar and Rath (1971) point out that a big portion of urban poverty is due to the fact that poor people from rural areas move into urban areas in search of livelihood. Like in the case of Mumbai, if they're unable to find ways to sustain themselves and their families, over time, it causes the rise of slums. Thus, the second-largest slum in Asia in Dharavi was formed.

The Extent of Caste Inequality

Work has been done that attempts to quantify the extent of caste inequality. This is great for us as this is similar to the work I aim to do in my bigger project. One specific paper involves looking at Kerala and studies the role of caste in the case of disparity between different groups. Kerala is an interesting choice for doing research based on caste inequality. In my opinion, Kerala was chosen because it has the highest literacy rate (94%) in India. So as the most educated state, one would expect the state of affairs to be the most egalitarian out of all the other states.

So this adds an extra layer of complexity to this problem because we can study how education matters in the case of caste inequality. This is also where research could point in the future.

However, returning to the study, Ashwini Deshpande(2000) tried to quantify caste inequality based on the Demographic and Health Survey(DHS) data. He constructed an index called the Caste Development Index(CDI)(Deshpande(2000)).

How this index works is that it maps the trends in caste inequality based on the regions and defines the caste disparity as the distance between CDI for two categories. These are the Scheduled Caste people and the Others.

25 states were then selected in India. Using the measures described above, these 25 states were segregated into low, middle, and high disparity regions. There are three essential expenditures: food, clothing, and housing. Of these, only the first two are considered in this paper. One could argue why only the most essential expenditures are being looked at here. The answer lies in the author’s interests. He says he wants an idea of inequality at the most basic level. Thus, only the most essential expenditures are considered.

As we have seen in a previous chapter, consumption expenditure is a better factor to consider compared to income level when we want to see the living standards of a particular household. This is true in the case of developing countries.

Focusing on consumption gives us a direct insight into the kind of life a particular household is leading.

Following the preliminary discussion, Deshpande presented us with some data and the interpretations of said data. Urban areas showed more disparity. The mean landholding for the “Others" category was more than twice the SCs. Even the difference between education levels is pronounced. The mean education level of rural households for the SCs fell to literate but below the primary level. However, for the others, it was between

primary and secondary school. The education level in urban STs is the maximum, falling between secondary and high school. My theory is that ST households that have struggled and moved to urban areas are much more likely to understand the importance of education. This is why their education level is the highest in that category.

Looking at factors such as food expenditure, clothing expenditure, land-holding, and educational level, we can see the differences between households according to their castes. Deshpande(2000) also describes a model that helps us look at inequality within and across ethnic groups. We find multiple things. First, the within-group disparity is sharper in the other category than within the SCs and STs. Second, and more relevantly, the root cause for overall disparity still seems to be caste inequality. Even states like Kerala that one would expect to do better seem to falter.

As we know, when we look at poverty levels in our country, one fact regardless of religion stands out. The poverty level is higher for SCs, STs, and OBCs is higher than the others category(Borooah 2010).Through Thorat(2010), we look at rural poverty because a majority portion of poverty is in rural areas only. In this particular paper, we look at headcount ratios for SCs, STs, OBCs and others for the religious categories Hindus, Muslims, Christians, Buddhists, Sikhs, Jains, and others. These estimates are made using the Planning Commission's poverty lines.

Now, after studying so much literature, we know that caste is a factor in determining the education level, occupation, skills, and wealth that produces income. Thus, the author also estimates poverty for different castes and religions according to their economic characteristics like job type and education. This paper has a very interesting idea behind it, in the sense that it wants to provide a mathematical model to determine the risk of being poor for a particular social category in a particular religions. They hope to do this using logistic regression.

When we look at nationwide data, The Buddhists have the highest poverty rate compared to other religions, while the Jains have the lowest. Unsurprisingly, when caste wise data is looked at, the STs show the highest poverty ratio, followed by the SCs, OBCs and others in descending order. This pattern does not leave us even when caste-wise data is seen for every religion separately. It is almost always that the SCs and STs seem to get the short end of the stick. An interesting fact is that even after conversion to a different religion, the people of lower castes cannot seem to shake off their castes prior to the conversion. They still face discrimination in some way, shape or form. If economic conditions are looked at, we see that people from the lower castes cluster in some sorts of occupations a lot. Here too, the pattern is that the SCs face higher poverty rates in most religions. If it is not the SCs, it becomes the STs group that

is suffering invariably. These arguments work for when we look at the educational levels also.

Finally, after all the above data has been gathered, using logistic regression, we can find out the likelihood of a particular group. The Buddhists are the most likely to be poor, with their odds being 25 times more than any individual from any other religious group. This wording sounds dubious as it is a bit weird to compare from any random individual that will have his/her own religious affiliation and, therefore, different odds. However, it could be that the author meant for a hypothetical individual having an average value for all the parameters. The Buddhists are followed by the Muslims and Hindus at 15 times. If the added complexity of castes is added to this problem, the Hindu and Sikh STs seem to suffer the most. The SCs suffer the most in the case of Christians and Muslims.

In summary, the STs and SCs are always worse off, and the others group is always at the best condition. A long time of seclusion has had a significant impact that even the efforts in recent times are unable to counter. Lack of proper education, lower caste people being forced into certain occupations, and seclusion doesn't seem to wane. Even converting to another faith doesn't seem to reduce the plight of the people.

Economic Consequences of Caste Based Discrimination

We discussed a bit about the economic inefficiencies that arise because of caste favouritism. Now, we want to continue that discussion by talking about consequences for economic growth itself through Thorat and Newman (2007) . We have seen that inefficient allocation of labour leads to market failure. Thus, it is in everyone's interest to increase economic efficiency. It can also be decreased if the labourers think of themselves as victims of discrimination, which leads to low morale and, thus, reduced job commitment and effort. Further, when they are forced to take up jobs that are usually considered demeaning, the job satisfaction that every employee should get isn't there.

The remedies suggested in popular literature have been along the lines of introducing penalties for discrimination. It would lead to more economic loss than gain. In reality though, the opposite is true. Market discrimination prevails and is quite durable. It is clear that the non-interventionist policy isn't working. The other school of thought is the interventionist policy. This is because the non-interventionist policy takes too long for the market to self-correct.

There are two policies that emerge in order to decrease caste inequality and discrimination in India. These are economic empowerment and equal opportunity.

Economic empowerment entails the encouragement of the ownership of wealth like capital, land, skills, education, et cetera. On the other hand, equal opportunity is provided through policies like reservation. This paper is a part of 4 papers, and when these 4 papers are taken together, they provide strong evidence for continued discrimination against Dalits and Muslims.

These observations and the shrinking size of the public sector have made some agree to extend the reservations. As has been the stance of Corporate, they continue to oppose this extension.

Consequences of Caste-Based Discrimination: Nutrition Levels

Needless to say, the economic hampering of the underprivileged social groups invariably results in them being more malnourished. We look at this facet of caste inequality, according to Sabharwal(2011).

There has been a lot of discussion and debate on whether reservation should be on an economic basis rather than on a caste basis today. The people who make these arguments forget that the poor are not equally disadvantaged everywhere. Their caste plays a role in how people are treated in society. Thus, it leads to unequal disadvantage, the suffering of which is borne by underprivileged groups like the Scheduled Castes, Scheduled Tribes, and Muslims. Before looking at caste-specific factors, let us look at general factors that lead to child malnutrition.

The author used logistic regression to figure out the salient factors that lead to child malnutrition for 2005-06. It turned out that children from wealthier households have lower incidence of malnutrition. When all other factors are held constant, the possibility that a child from the poorest quintile is malnourished is roughly about 3 times that of child from the richest quintile.

The factors that matter in the case of nutrition level are:

1. Income matters in the case of nutrition level. This is shown above.
2. The education level of the mother also matters. Child of an illiterate mother is more than 2 times more likely to be malnourished than a child of a mother with at least secondary education.
3. Access to health services. The child of a mother that does not get healthcare is 1.5 times more likely to be malnourished than that of a mother with proper access to healthcare.
4. Likelihood of an SC/ST child is 1.4 times more likely to be malnourished compared to the other category.

If we look at women themselves, Muslim women are in the worst conditions, followed by ST and SC women.

These group-specific factors are a consequence of their facing discrimination on a daily basis. For example, SC children face discrimination while getting the mid-day meals. (Thorat and Lee 2010)

The main theme of the above literature is that malnutrition is not only a consequence of direct factors like income levels but indirect factors like discrimination also.

Thus, the results show that policies have to work both ways. First they have to benefit the poor in general. Then, after that, there have to be specific schemes that focus on the upliftment of the lower castes and the Muslims.

2. Discrimination in Job Opportunities

A very interesting paper we found on discrimination in job opportunities was written by Sukhadeo Thorat(2005) titled “Reservation and Efficiency”. The paper points out something quite ironic. Let’s take a look at what it is.

The major corporate players have always opposed reservations based on caste in their sector. Since the 1950s, even the government has supported this view. The thought process behind it was that it would lead to inefficiency and, thus, lower productivity in the market. The Private Industry has also always insisted that its methods are fair and discrimination-free.

Neo-Classicism has taught us that discrimination in the labour market causes severe inefficiencies that should be remedied through an intervention like anti discrimination policies (reservation is an example). The optimal growth should be attained using these measures that allow for a more egalitarian process.

Ambedkar and Akerlof have argued that if caste is a legitimate factor in employment, it would cause a situation where people are higher caste people are voluntarily unemployed (due to not taking up a job beneath their caste status) and lower caste people are involuntary unemployed (due to being prevented in taking up jobs that require a “higher” caste status).

Corporate argues that its efficiency will reduce if sub-optimal workers are hired. However, this argument can be easily falsified if one knows the fact that just because a

specific representation of different communities is needed doesn't mean the standards for employment are different. Then efficiency is not at all hampered.

Time and time again, the corporate sector has argued that its recruitment policies are fair, but that has been debunked by scholars like TS Papola, who have proved that the hiring process is exclusionary in nature.

There are however, two kinds of remedies that can be derived from standard neo-classical theory. In a market where perfect competition exists, discrimination is a transitory phenomenon and will be self-corrected by the market. Thus, there is no need to interfere. However, there is no guarantee that this discrimination won't persist for a long time. Perfect competition is not a sufficient condition, and most markets are not competitive anyway. This leads us to the other solution where intervention is needed.

However, even after all these inputs, the corporate tries to give its own solutions, like training and skill development, completely disregarding caste-based discrimination. This is a general solution to a specific problem. Corporations need to understand that reservation is needed just as much as equity.

We have been consistently mentioning labour market discrimination, but how does it actually happen? Thorat and Attewell(2007) try to go into detail about labour market discrimination in the private sector. In this study, the author sends a bunch of applications for the same opening with equivalent qualifications. However, they differ in one way. The caste and religion of each applicant are different. An upper-caste Hindu, a lower-caste Hindu, and a Muslim.

As discussed above in the previous paper, the cause for lack of a particular social group's representaion is attributed to low education level or their economic conditions. Discrimination is treated like it is a thing of the past. Therefore, it is really hard for people from these stigmatised groups to convince their fellow citizens of the discrimination that happens to this day (Thorat et al. (2005)).

However, as we have time and again seen in this review, the decision making of the employers stays heavily skewed towards the Hindu upper caste applicants.

How the author conducted the experiment is that he used a distinctively high caste, low caste and Muslim name for each applicant. An outcome was termed successful if it ended in acceptance towards the second round. The author himself realises that this study is not complete in itself. This is also where future research could be pointed at. We can look at the discrimination that happens during the interview round. However,

that's a much more complex question, out of the scope of the present paper. For jobs that required a degree higher than a bachelor's degree, an unqualified higher caste candidate and an appropriately qualified lower caste candidate was sent.

The dichotomy of the outcomes allowed the author to use logistic regression. A total of 4808 applications were made to 548 vacancies over the course of 66 weeks. A Dalit candidate had 0.67 times the odds of a high-caste Hindu. The Muslim candidates had 0.33 of the odds of the latter. A second model also predicted 0.68 and 0.35 of the odds of a high caste Hindu compared to the Dalit and Muslim, respectively.

If the special case is looked at (unqualified high-caste Hindu applying for a job), the odds are not significantly lower than an appropriately qualified Dalit. Caste does really add weight to an applicant's application. Thus, caste favouritism is not just a thing of the past and plagues the private sector to this day.

3. In the Grand Scheme of Things (At the International Level),

There is work that looks at India from an International perspective and compares the caste system to the systematic oppression faced by the blacks. Darity and Nembhard (2000) believe that economic inequality has strong correlations everywhere it occurs in the world, where the underlying factors are race and ethnicity. Just because the growth rates of a particular region are high, doesn't mean the economic inequality between different groups will decrease too.

This paper looks at cross country comparisons. We look at the Indian case here. Consumption expenditure is talked about when we refer to the Indian case. The SC/Other ratio strongly underestimates the divide between the two because other includes all the castes other than SCs and STs.

4. Demographic of Corporate Boards

We have seen a considerable amount of literature discussing the poor condition of the lesser privileged caste groups regarding well-being measures like education level, income, employment, consumption, et cetera. However, now, I want to draw the reader's attention toward a lesser talked about issue. This is the underrepresentation of the lesser privileged groups on the corporate boards of different companies.

This issue might seem far-fetched, considering there are many more basic indicators we need to look at first. D Ajit et al. (2012) emphasise that this issue is just as important as the other indicators because these boards control giant companies in India. These companies, in turn, control corporate India. Further, it has been seen that there is

evidence of corporate power influencing political and economic decisions. This directly impacts everyone. We believe that this is enough justification for why this problem needs to be studied.

Earlier research in India has shown substantial discrimination in the labour market concerning recruitment (Thorat and Newman, 2007, 2010). Other literature is also presented; however, the central theme is that the SCs and STs are systematically disadvantaged in most ventures.

In India, this study is relevant because, here, the factor of colour is replaced by caste. Becker's models showed that the employers who gave a certain colour a preference were losing out on money because they didn't prioritise productivity. The labour from the lesser privileged groups is usually available for cheaper. Thus, the employer lost money there too.

In the study by D Ajit et al.(2012), they considered the top 1000 of the 4000 companies from the OSIRIS database. This was based on the total amount of assets held by the company as of 2010.

To identify the castes of these board members, their surnames were used as identifiers for their castes. Then they were divided into 4 categories: the forward castes(Brahmins, Kshatriyas, Vaishyas), the Other Backward Classes, the Scheduled Castes and Scheduled Tribes, and lastly, others, which included companies with foreign directors. In the cases where the surnames were caste neutral, the social networks of the authors were used.

In this study, the Blau index was used to measure the diversity of the boards. The Blau index varies from 0 to 1, where 0 is the least diverse, showing monopoly from one particular class, and 1 is the most diverse, with equal representation from all classes.

The results were thoroughly disappointing but just as expected. About 93% of the board members were forward caste. The OBCs and SCs/STs were at a mere 3.8% and 3.5%, respectively. A shocking fact is that the median of the Blau index is 0, which indicates no diversity. Only one company out of a thousand had a Blau index of 1. Nearly 70% had zero, 5.6% had between 0.01 and 0.25, and 24.7% between 0.25 and 0.50.

It is difficult to accept that this is based solely on the capabilities of the individuals and has nothing to do with caste discrimination.

5. **The Caste Divide: Discrimination Within the Underprivileged Castes?**

At this point, we should look at the inequality within the lower castes as well. This is because there has been literature that points to the fact that a whole caste is not backward. There are sections within each caste that seem to do much better than the other sections. So, in this particular paper written by Ashish Singh, Kaushalendra Kumar and Abhishek Singh(2015), we look at the discrimination faced by the lower strata of the lower caste, i.e. the lowest of the low.

If we look at the three decades from 1983-2012, we can see that the economic disparity ratio has worsened for STs and especially the SCs. The Gini coefficient indicates that inequality has increased for SCs in both urban and rural areas. For the STs, it has increased in urban areas but stayed roughly the same in rural areas. Specifically, in the post reforms period, we saw that it had a remarkable decrease in poverty, still there was an increase in interstate inequality within the SCs and STs for both rural and urban areas.

This debate about inequality lies in the regime of horizontal inequality (that has nothing to do with things an individual can control). While the SCs have struggled with social exclusion, the STs suffered from physical isolation. Now, even within these underprivileged groups lies a group at an even lower level. In states like Bihar, these people have been granted special status and are called the ‘Mahadalits’. We want to know whether such a decision by the Bihar government is economically justifiable or not. One thing is certain, the people belonging to this category are substantial in number; constituting about 31% of the SC population of Bihar.

Two measures are used here, the economic disparity ratio(ratio of the monthly per capita expenditure of the richest to the poorest decile) and the Gini coefficient. It was observed that the economic disparity ratio increased for both SCs and STs(more for SCs). It was also seen that the increase in economic disparity ratio is more for rural areas than the urban areas.

At this point, it should be noted that this was not a caste-specific observation. The economic disparity ratio increased for the ‘Others’ category as well. It is just that in this case, we are looking at the lower castes specifically.

The Gini coefficient tells a slightly different story. It does say that the inequality increased for all categories, but that for STs, it is greater than the others. This disagrees with the economic disparity ratio. So, this particular measurement might not be as reliable. In the post-reform period, the rate of inequality is significantly higher than in the pre-reform period.

The results obtained by the authors allow us to infer the following.

1. Economic disparity ratio has increased substantially for both SCs and STs in both rural and urban areas as well as the 17 major states considered in this study.
2. SCs suffer more than STs.
3. Gini coefficient suggests that inequality increased for both SCs and STs in urban areas. It increased for SCs in the rural areas, too but stayed the same for the STs.
4. In the post-reforms period; inequality increased substantially for everyone.
5. Interstate inequality within the SCs and STs has increased substantially in both urban and rural areas.

Thus, we can make a case that the Bihar Mahadalit Vikas Mission is a good initiative. The other states should also consider this model and try to learn from it in order to uplift the lowest section of their society.

POLICY IMPLICATIONS

Poverty and inequality can breed conflict among subsections of society. This is what is generally accepted in society. However, what is the actual reason? The answer to that question is not as easily evident as one might think. Even the wealthier areas aren't immune to low-intensity violence (verbal, for example).

One might think that the solution to this problem is then, economic growth. However, as seen earlier, economic growth can lead to increased inequality, thus, breeding more conflict. When organisations get united for a particular purpose, i.e. when they think they are being treated even mildly unfairly, it can lead to riots and revolts.

What does one do in this situation? The previous that we have generally seen talk about specific caste based action as well as general policies that benefit everyone. However, there is a small section of literature that talks about general economic grwoth and no caste specific targeted policies.

One might think that there is a simple solution. To take caste specific as well as general action. I don't think it is quite that simple. If the policies are biased towards the underprivileged too much or vice versa, it will breed conflict. This is already a problem that we have been seeing with movements like the "Jat reservation agitation" of 2016 in Haryana and surrounding areas of NCR. Violent protests have to be avoided at all costs, and thus, the government has to very carefully curate policies that benefit everyone proportionately with as little conflict as possible.

PROBLEMS

The main problem is that little work is done on asset inequality, much less on agricultural land inequality.

Land and buildings have been significant components of the Indian asset distribution landscape since long ago. Agriculture also provides the most significant workforce segment. Therefore, one can imagine that a combination of those two areas must be crucially important as well. Thus, we want to study the inequality of agricultural land as well.

Caste-based discrimination is definitely a part of the problem and needs to be studied in its gory detail in order to tackle it. The agricultural land inequality must, therefore, be also scrutinised through this lens.

OBJECTIVES

In this study, we would like to study the status of agricultural land distribution among different castes in India in 2004-05 and 2011-12. If there is growth, as has been suggested by Sarma et al. (2017), has that growth been inclusive?

METHODOLOGY

For Landlessness

To answer the first question, we would use the IHDS data of castes of participants, their agricultural land, and whether they reside in urban and rural data. The agricultural land was given in the local units, which was converted to acres using the conversion factor given for each case. Using that data, we found out numerous variables like total land owned for the rural or urban cases, average agricultural land owned per household, et cetera. We also found various statistics related to landlessness.

For Agricultural Land Distribution

Another important statistic we found was the weighted percentage share of each group. We knew that since the populations are not equally represented, we couldn't judge anything from the total land owned per social group data. So, we estimated the weighted percentage share of land for each group. Let us say there is a group "1". We know the average land owned per household of "1". So, we divide that number by the sum of average land owned per household of all the groups. We multiply that by 100 to obtain the weighted percentage share.

Why the above method works is because we have represented each group equally in taking "average agricultural land owned per household" by that group. So, then calculating percentages from there is elementary.

Now, we have the values of the above parameters for two rounds of the IHDS survey. This data will help us to compare how far apart these social groups are in both these years.

For Gini Coefficient

Secondly, to measure inclusivity, we used the Gini coefficient at the household level to measure inequality in both years if the disparity has decreased from 2004-05 to 2011-12. if growth has been there, it has been inclusive.

We arranged the groups in the order of who performed the worst to best. This is so we can arrange them on the x-axis according to the requirements of the Gini coefficient graph. Next, we calculate the cumulative population for the x-axis and the cumulative percentage of total land owned for the y-axis. We plotted the graphs and did the calculations from the Lorenz curve to obtain the Gini coefficients.

Considerations

- For 2011-12, the data for the area of land owned was given according to the crops grown on that land, i.e., kharif, rabi and summer crops. Logically speaking, the area given for all three should be equal. However, in some cases, there were some slight discrepancies. Therefore, to reduce the error, we took the average of the land from all three crops given.
- For 2011-12, the land data for the 'Others' category was given in two parts. These two parts were forward castes and others(non-privileged but still not backward castes). Since there was no way to compare it with the data from 2004-05, which only consisted of the 'Others' as a whole, we decided to add the data of the two parts in 2011-12. Thus, making the comparison easier.

TABLES & RESULTS

Landlessness: An Overview

Table 1: Overview of Ownership of Agricultural Land

	2004-05		2011-12	
Does the Household own any agricultural land?	No. of cases	Percentage	No. of cases	Percentage
Yes	17510	42.138	18874	44.776
No	24044	57.862	23278	55.224
Total	41554	100	42152	100

On preliminary investigation of Table 1, we find that percentage of landlessness has decreased, albeit not a lot, but the situation on aggregate has become a bit better. Now, we shall decompose and observe it bit by bit.

Table 2: Change in Landlessness between 2004-05 and 2011-12.

	landlessness ratio		Change in Landlessness
Caste	2004-05	2011-12	
Brahmin	0.599	0.531	0.068
OBC	0.551	0.538	0.012
SC	0.669	0.652	0.017
ST	0.452	0.411	0.041
Others	0.587	0.551	0.036
Total	0.579	0.554	0.024

Even though landlessness has decreased, the decrease has not been uniform for everyone. The Brahmins have had the most significant decrease in landlessness at 6.77%, followed by STs at 4.13 per cent and the Others at 3.58 per cent. It should be noted that the 'Others' consist of every caste that does not fall in the backward category except the Brahmins. This means that it also includes the forward caste, where, as we shall see, most of the progress comes from. The SCs and OBCs are the least progressing communities, with change in landlessness being roughly 1.69 and 1.24 per cent, respectively. Surprisingly, STs have seen an impressive reduction in landlessness. They already started out with a relatively low instance of landlessness which they

managed to reduce pretty impressively. This could be because a lot of them live in villages in close connection to the forests. So, they usually depend on agriculture for their livelihood and survival. The average decrease in landlessness was 2.4 per cent. Brahmins, STs and Others are the categories above the average.

The highest amount of initial landlessness is seen in the SCs (in 2004-05). Surprisingly, a very high amount of landlessness is seen among Brahmins, followed by Others. We shall see in the following discussion that more or less, Brahmins and Others have a significant amount of development compared to other groups. Then, with such high landlessness ratio, it is logical to think that there must be a lot of inequality within these groups as well. However, that question is beyond the scope of the present study.

Agricultural Land in Averages and Percentage Shares

Table 3: Change in percentage share of agricultural land by caste. (2004-05 to 2011-12).

	Total percentage share of agricultural land of different castes		Change in percentage share
	2004-05	2011-12	
Brahmin	6.756	6.398	-0.359
OBC	42.387	43.598	1.211
SC	9.234	8.615	-0.619
ST	11.457	10.163	-1.294
Others	29.944	31.174	1.230

Except for OBCs and the Others, everyone's land share has decreased. The share of Brahmins has decreased the least. The Brahmins hold a massive percentage of the land compared to other categories considering it is just one caste. However, how disproportionate their share is will only be found when we look at their population share.

The STs have taken the most brutal hit, followed by the SCs, and the Brahmins. The Others benefitted the most, followed closely by the OBCs, showing that government policies worked disproportionately for different communities.

In 2011-12, the IHDS split the data for the Others community into two parts. The first one is the data which included all the castes that were not considered backwards but still weren't privileged. The second part is the "forward castes" data. This category considered the castes which were historically privileged (except Brahmins). This gives us additional insight into the composition of this category.

Unsurprisingly, the majority of land ownership in this community is dominated by the forward caste people. Out of the 31.174 per cent that 'Others' hold, a staggering 29.634 per cent, while all the other castes in that category hold a meagre 1.5 per cent. This is one of the strong pieces of evidence for caste-based discrimination in the assets market.

Table 4: Average agricultural land owned per household by caste in 2004-05 and 2011-12. (The Rural case).

	RURAL			
	2004-05		2011-12	
Social Group	Average Agricultural Land Owned per Household (acres)	Weighted Percentage of Land Owned	Average Agricultural Land Owned per Household (acres)	Weighted Percentage of Land Owned
Brahmin	3.191	27.249	2.591	27.717
OBC	2.280	19.473	1.900	20.317
SC	0.930	7.945	0.677	7.239
ST	2.456	20.976	1.655	17.701
Others	2.852	24.357	2.527	27.027

Table 5: Average agricultural land owned per household by caste in 2004-05 and 2011-12. (The Urban case).

	URBAN			
	2004-05		2011-12	
Social Group	Average Agricultural Land Owned per Household (acres)	Weighted Percentage of Land Owned	Average Agricultural Land Owned per Household (acres)	Weighted Percentage of Land Owned
Brahmin	0.550	33.939	0.396	27.261
OBC	0.373	22.982	0.304	20.887
SC	0.105	6.482	0.099	6.825
ST	0.282	17.411	0.309	21.261
Others	0.311	19.187	0.345	23.766

The rural case (as should be obvious) has, in general, a higher agricultural land ownership per person than the urban case. Land owned by each group has more than doubled in every case. Agricultural land owned per person is highest for Brahmins in both urban and rural cases. In the rural areas, Brahmins are followed by the Others, STs, and OBCs. The SCs are in the worst situation, with them not even being one-third of the Brahmins.

In the urban areas, the situation is slightly different, with STs and SCs being in the worst and second-worst situations, respectively.

Earlier, we had said Brahmins had a low percentage share of the land owned, but they had a comparatively very low population as well. Here we try to correct for the differences in population with the weighted percentage of land owned for each category. The answers are not disappointing but not startling. The percentage share of Brahmins, which was a measly 6.756 % and 6.39 per cent for 2004-05 and 2011-12 respectively, skyrockets to more than 27% in each case when weighted percentages are considered. It means that if every social group had equal representation, the percentage share of land owned by the Brahmins would be more than 27%.

In the rural case, the weighted percentage share of the Others, Brahmins and OBCs have increased, while the STs' and SCs' shares have decreased. The main takeaway here is that the Brahmins and Others have dominated the agricultural land scenario.

For the urban case as well, we have similar results, but with one key difference. The share of Brahmin agricultural land has decreased significantly. However, even with that decrease, they're still at the top. It shows how far apart they are from the rest of the pack. There is one other category that always seems to be lagging far behind the pack, i.e., the SCs. Unfortunately, that is the case for every aspect we decided to look at.

Table 6: Change in the average agricultural land owned (Rural case)

Category	Change in average agricultural land owned per household (in acres)	Percentage change
Brahmin	-0.600	-18.789
OBC	-0.381	-16.701
SC	-0.254	-27.256
ST	-0.801	-32.622
Others	-0.325	-11.407

It is very clear that even the improvement is disproportionate for different groups. The SCs are at the worst position. Even though there is an improvement, it is much lesser than what the other groups are receiving. This could point to discrimination in availing government schemes where future research could be headed.

Table 7: Growth in the average agricultural land owned (Urban case)

Category	Change in average agricultural land owned per Household (in acres)	Percentage Change
Brahmin	-0.154	-27.967
OBC	-0.069	-18.497
SC	-0.006	-5.575
ST	0.027	9.506
Others	0.034	11.080

In the urban case also, the story is a little different. The SCs show the smallest decrease among the Brahmins, OBCs and SCs. The STs also show good improvement here. The Others are at the top, followed by the STs and Brahmins. However, there is one other thing to note here. We can see in Table 5 that the case of the STs is very small compared to other groups. So it might not represent the true behaviour of the actual population on the large. So it is important that this result not be taken that seriously.

Inequality: Determination of Gini Coefficient

Table 8: Calculations for Gini coefficient determination in 2004-05. (Rural Case)

2004-05						
RURAL CASE						
Poorest to Best performing category	Population	Cumulative population	Average land Holding per Household	Total Land Owned by this group	Percentage of Total land owned	Cumulative Percentage of Total Land Owned
SC	6011	6011	0.930	5592.427	9.559	9.559
OBC	10834	16845	2.280	24705.342	42.228	51.787
ST	2940	19785	2.456	7221.461	12.343	64.131
Others	6118	25903	2.852	17449.694	29.826	93.957
Brahmin	1108	27011	3.191	3535.514	6.043	100.000
			GRAND TOTAL:	**58504.438**		

Table 9: Calculations for Gini coefficient determination in 2004-05 (Urban Case)

2004-05						
URBAN CASE						
Poorest to best performing category	Population	Cumulative population	Average Land Holding per Household	Total Land Owned by this group	Percentage of Total Land Owned	Cumulative Percentage of Total Land Owned
SC	2322	2322	0.105	243.977	5.213	5.213
ST	499	2821	0.282	140.839	3.009	8.222
Others	4956	7777	0.311	1541.459	32.935	41.157
OBC	5452	13229	0.373	2031.140	43.397	84.554
Brahmin	1314	14543	0.550	722.924	15.446	100.000
			GRAND TOTAL:	**4436.361**		

Table 10: Calculations for Gini coefficient determination in 2011-12. (Rural Case)

2011-12						
RURAL CASE						
Poorest to best performing category	Population	Cumulative population	Average Land Holding per Household (acres)	Total Land Owned by This Group (acres)	Percentage of Total Land Owned	Cumulative Percentage of Total Land Owned
SC	6298	6298	0.677	4262.387	8.817	8.817
ST	3129	9427	1.655	5178.448	10.712	19.529
OBC	11103	20530	1.900	21090.355	43.627	63.156
Others	5885	26415	2.527	14870.472	30.760	93.916
Brahmin	1135	27550	2.591	2941.197	6.084	100.000
			GRAND TOTAL:	**48342.860**		

Table 11: Calculations for Gini coefficient determination in 2011-12 (Urban Case)

2011-12						
URBAN CASE						
Poorest to best performing category	Population	Cumulative population	Average Land Holding per Household (acres)	Total Land Owned by This Group (acres)	Percentage of Total Land Owned	Cumulative Percentage of Total Land Owned
SC	2643	2643	0.099	262.224	6.319	6.319
OBC	5953	8596	0.304	1807.560	43.555	49.874
ST	515	9111	0.309	159.172	3.835	53.709
Others	4348	13459	0.345	1502.195	36.197	89.906
Brahmin	1057	14516	0.396	418.895	10.094	100.000
			GRAND TOTAL:	**4150.045**		

We made tables 8, 9, 10, and 11 to calculate the Gini coefficient on the group level. It turns out that caste-based inequality does exist in the agricultural land case. The Gini coefficient in the rural areas increased from 0.168870524 in 2004-05 to 0.199009256 in 2011-12. However, the situation looks a little promising for the urban areas, with the gini coefficient going down from 0.180768795 in 2004-05 to 0.154418625 in 2011-12. However, the urban case does not matter much since this study is about agricultural land and the total amount of agricultural land in urban areas is very low compared to the

rural areas. So, as a whole, the reduction in inequality in urban areas does not cause much of an impact on the country.

Agricultural Land: At the Household Level

Table 12: Average Agricultural Land owned per Household in 2004-05.

2004-05		
Total Agricultural Land owned(acres)		
Aggregate	Rural	Urban
63184.776	58504.438	4680.338
Average Agricultural land owned per Household (acres)		
Aggregate	Rural	Urban
1.521	2.166	0.322

Table 13: Average Agricultural Land owned per Household in 2011-12.

2011-12		
Total Agricultural Land owned (acres)		
Aggregate	Rural	Urban
52492.905	48342.860	4150.045
Average Agricultural Land Owned per Household (acres)		
Aggregate	Rural	Urban
1.248	1.755	0.286

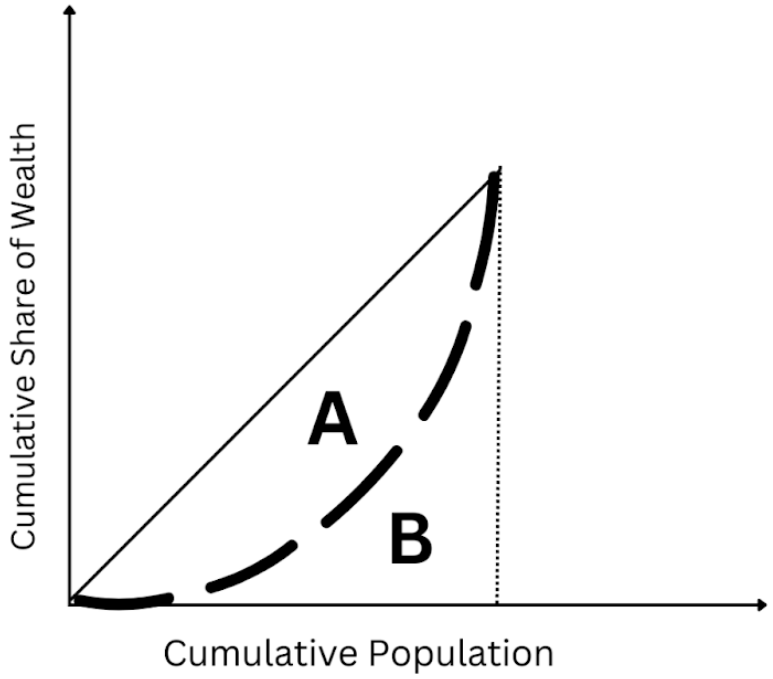
Tables 12 and 13 talks about the average agricultural land owned per household. In 2004-05, the average agricultural land owned per household was 1.521 acres. For the rural areas, it was 2.166 acres, and for urban areas, 0.322 acres.

For 2011-12, the aggregate average agricultural land owned per household was 1.248 acres. For the rural areas, it was 1.755 acres, and for the urban, 0.286 acres.

CALCULATIONS

Calculating the Gini coefficient:

Graphs 5, 6, 7, and 8 are called the Lorenz curves. The formula for the Gini coefficient is found using the areas under the Lorenz curve.



$$Gini\ Coefficient = \frac{A}{A+B}$$

- **Gini at the Group level (Rural Case) 2004-05**

We break up the area under the curve into multiple polygons and calculate the area under the curves as follows:

A = (0.5)*(27011)*(100) - {(0.5)*(6011)*(9.558979774) + (0.5)*(9.558979774 + 51.78713)*(10834) + (0.5)*(51.78713 + 64.13057208)*(2940) + (0.5)*(64.13057208 + 93.95684529)*(6118) + (0.5)*(93.95684529 + 100)*(1108)}

A	228068.086

B	1122481.914
A+B	1350550
A/(A+B)	0.169

Therefore, Gini Coefficient for the Rural case during 2004-05 = 0.248360445

- **Gini at the Group level (Rural Case) 2011-12**

Similar to the above case, we calculate A, B, and A+B to then calculate the Gini coefficient.

A = (0.5)*(27550)*(100) - {(0.5)*(6298)*(8.816993526) + (0.5)*(8.816993526 + 19.52891167)*(3129) + (0.5)*(19.52891167 + 63.1555314)*(11103) + (0.5)*(63.1555314 + 93.9159633)*(5885) + (0.5)*(93.9159633 + 100)*(1135)}

A	274135.251
B	1103364.749
A+B	1377500
A/(A+B)	0.199

- **Gini at the Group level (Urban Case) 2004-05**

A = (0.5)*(14543)*(100) - {(0.5)*(2322)*(5.212808678) + (0.5)*(5.212808678 + 8.221963811)*(499) + (0.5)*(8.221963811 + 41.15673337)*(4956) + (0.5)*(41.15673337 + 84.55402221)*(5452) + (0.5)*(84.55402221 + 100)*(1314)}

A	131446.0295
B	595703.9705
A+B	727150
A/(A+B)	0.180768795

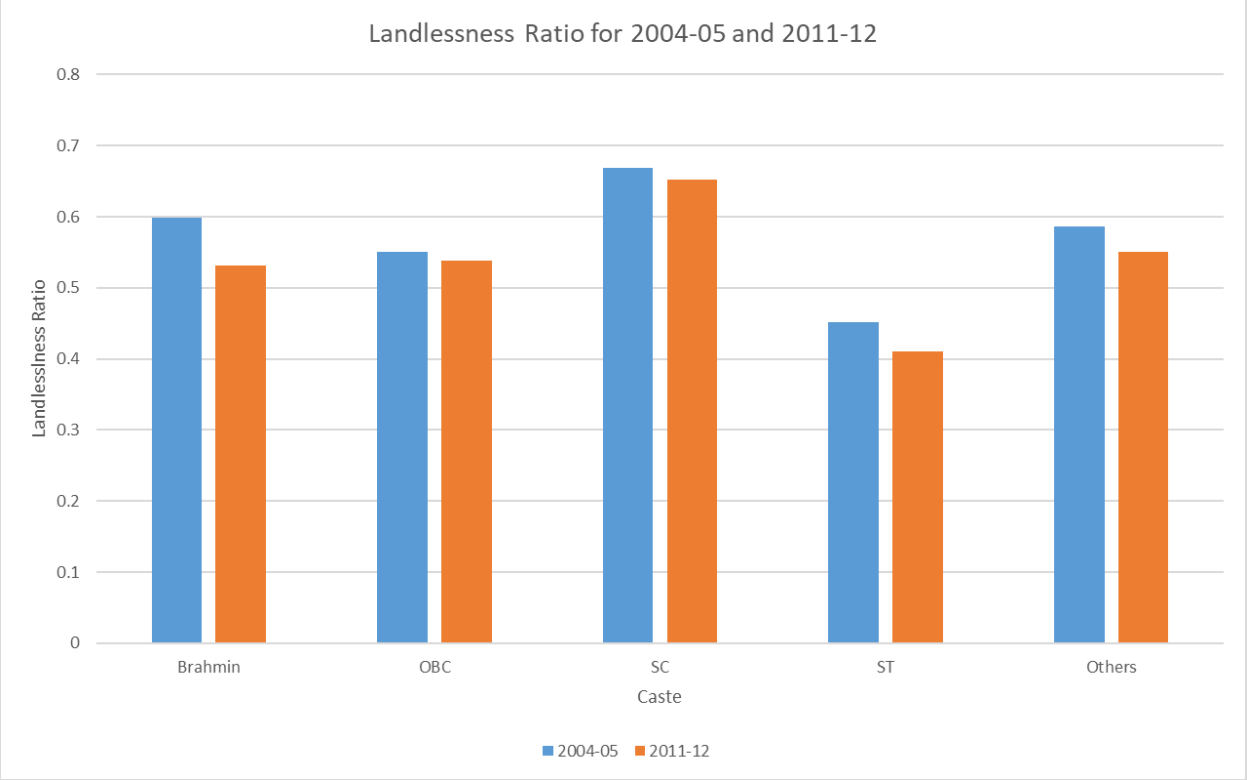
- **Gini at the Group level (Urban Case) 2011-12**

A = (0.5)*(14543)*(100) - {(0.5)*(2643)*(6.3185734) + (0.5)*(6.3185734 + 49.87376325)*(5953) + (0.5)*(49.87376325 + 53.70918083)*(515) + (0.5)*(53.70918083 + 89.90625147)*(4348) + (0.5)*(89.90625147 + 100)*(1057)}

A	112285.5034
B	614864.4966
A+B	727150
A/(A+B)	0.154418625

GRAPHS AND DISCUSSION

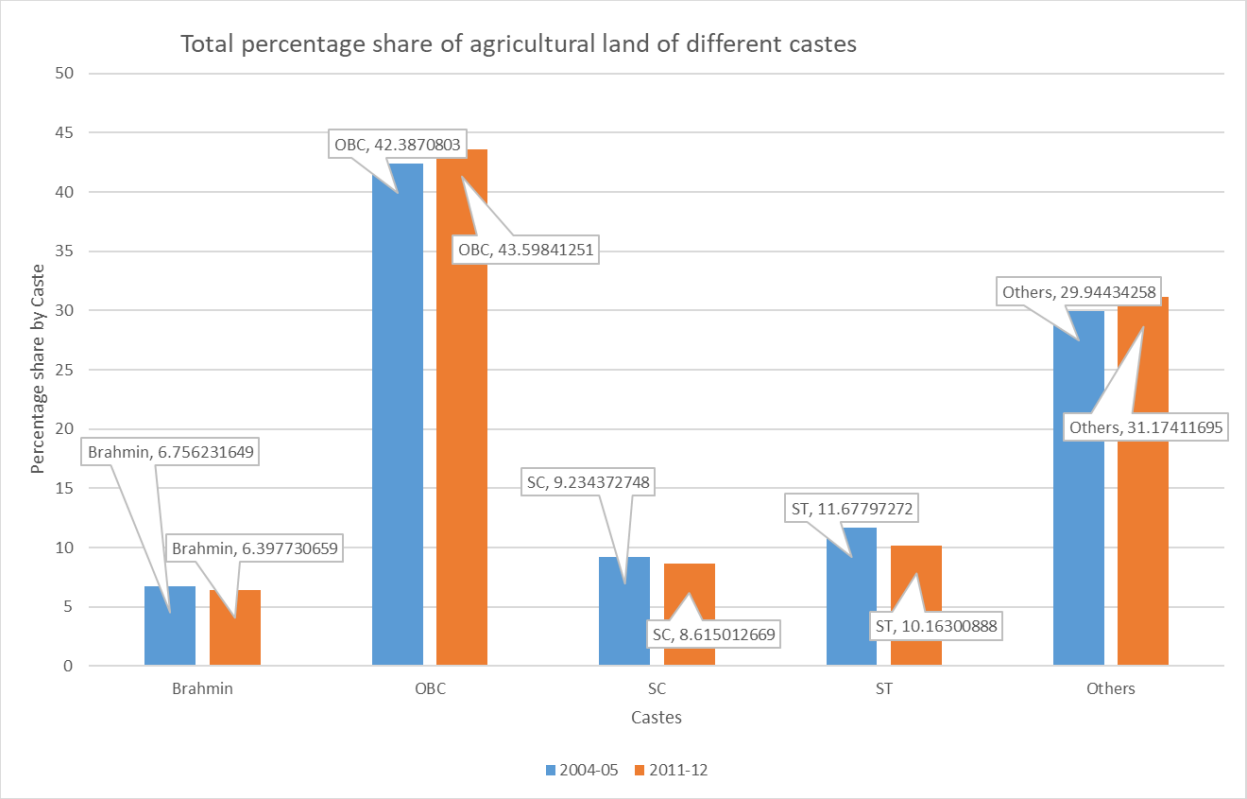
Graph 1: Landlessness ratio for 2004-05 to 2011-12



Let us start step by step. Tables 1 and 2 give us an idea of landlessness on an aggregate and are arranged according to caste. In accordance with Sarma et al (2017), it seems that the situation is pretty dire. The majority of the population is landless, even after improvement in the following round of the survey. The caste-based situation is even more appalling, with the SCs having more than two-thirds of the population in the landless category in 2004-05. Even the improvement they had was the worst out of all the other caste categories. The STs had a really good performance here. Even their improvement was very impressive at 4.13 per cent. This could be because of their close connection with forests and agriculture. It makes sense that their main job would be in agriculture. It suggests that they don't face as much discrimination in the areas that they live in. A possible reason is their case of physical isolation. Since their villages are physically isolated from every other caste, they don’t face discrimination there. Thus, the impressive results. If the above theory is correct, then the urban case for the STs ought to be bad due to caste-based discrimination. It should be stressed that even after improvement, the landlessness is above 50 per cent in all cases except the STs.

The biggest discrimination has historically been faced by the SCs, and it shows with the data available. They are nowhere close to other categories even after improvement. Even the increase in agricultural land is minimal. Graph 1 is an illustration of all these above mentioned facts which shows just how abysmal the situation is.

Graph 2: Total Percentage Share of Agricultural Land of different castes

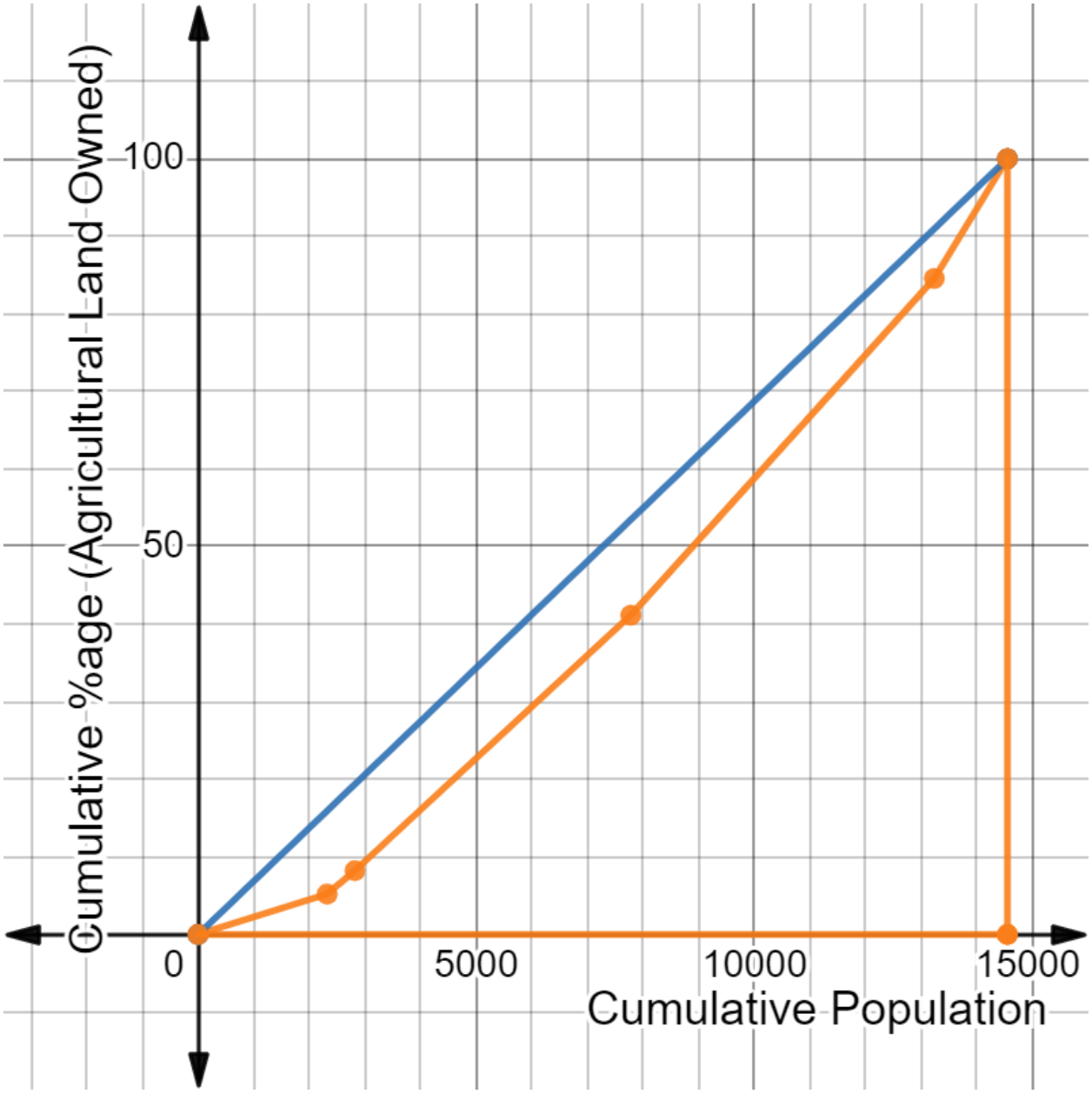


Moving on to Table 3, which is represented by Graph 2, we can see that OBCs and Others have taken up the increase in percentage share. The case of the STs, which seemed like it was progressive, starts to fall apart on closer inspection. They, along with the SCs have gone down the most in terms of percentage share of total agricultural land. So, it seems that the image that we had might not be that good after all. The OBCs, take up the most percentage share. However, that particular measure is not as important since the number of cases in the OBC population was much more recurring than in other castes. So, in this scenario, the change in percentage share, which is represented in Table 3, and average agricultural land per person are more important variables.

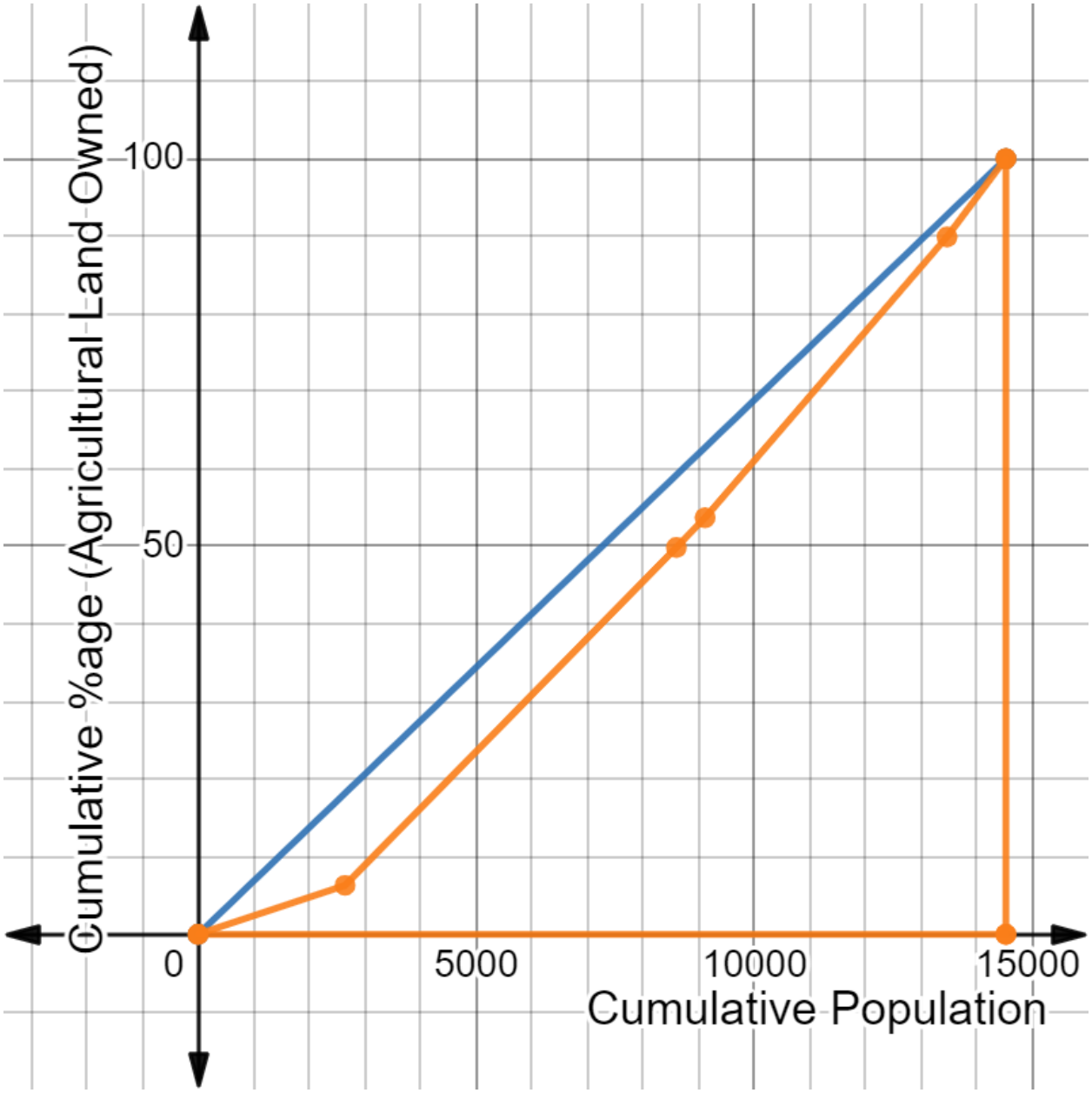
Tables 4 and 5 paint a rather grim picture. It is here that the dominance of the upper castes and the discrimination against SCs and STs really show. Since average agricultural land owned per person is a significant variable, we should study it a bit

more. Tables 6 and 7 show us the change of this variable in the rural and urban cases respectively.

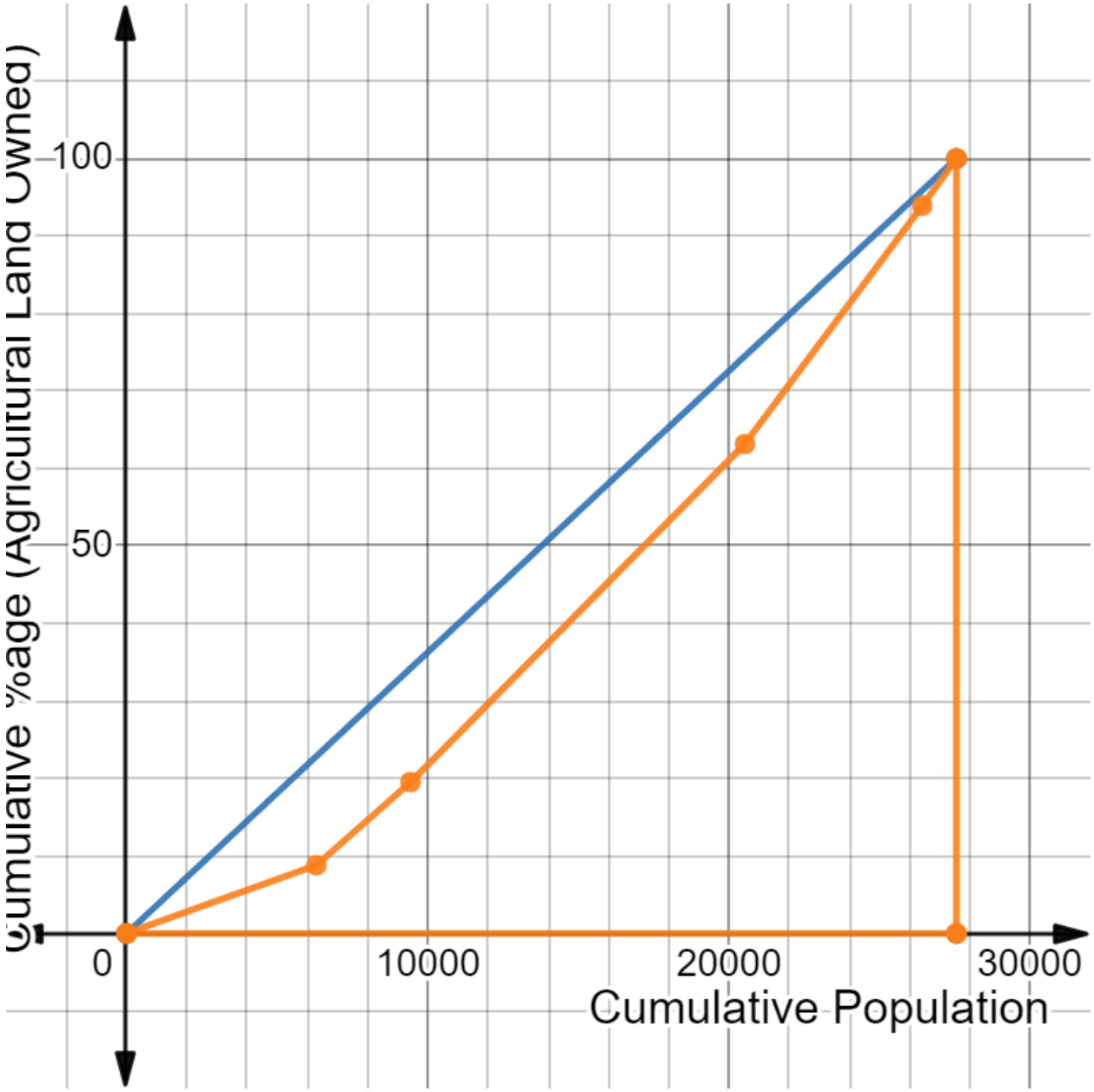
Graph 3: Gini at the Group level (Urban Case) 2004-05



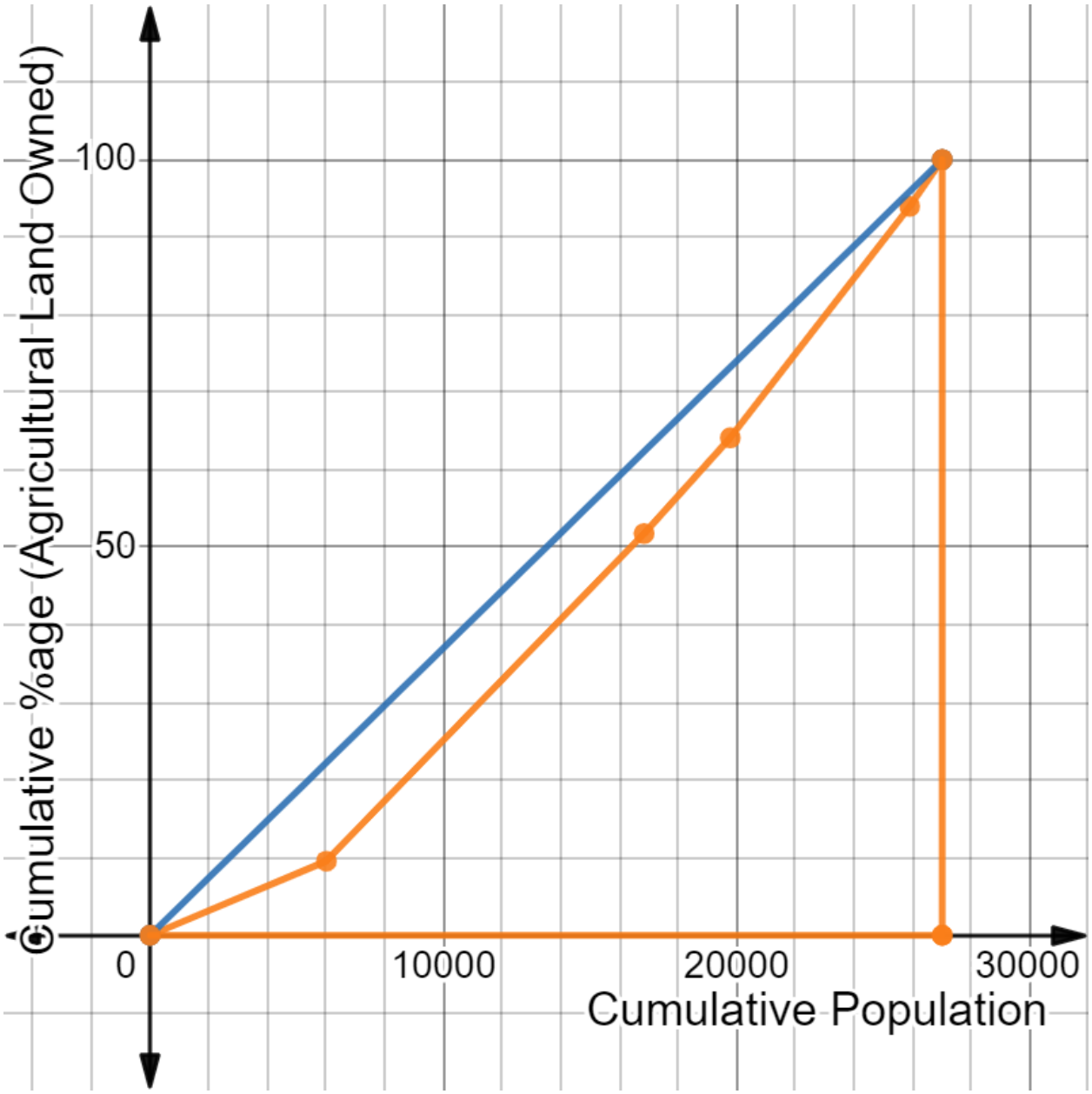
Graph 4: **Gini at the Group level (Urban Case) 2011-12**



Graph 5: Gini at the Group level (Rural Case) 2011-12



Graph 6: Gini at the Group level (Rural Case) 2004-05



To analyse the agricultural land framework in India, we calculated the group level gini coefficient. We calculated the cumulative percentage of agricultural land owned (tables 8, 9, 10, 11) by different castes. We say it is a group-level Gini coefficient is because of the following reason. We have considered the cumulative percentage of land share as a straight line for every category, i.e., perfect equality. While doing this, we disregard the inequality within the castes themselves because we want to study inter-group disparity in this context, not intra-group disparity. Singh et al. (2015) confirmed the existence of intra-group disparities in the case of the discriminated castes. However, that is not the question that we are trying to deal with right now.

One difference in our analysis from the traditional Gini coefficient is that the distance between points on the x-axis, i.e., is not equal. This is needed since the survey didn't consider an equal number of people from different castes. If we had taken the points as equidistant, then the percentage share of land per person would have appeared inaccurate. According to the Gini coefficient, the rural areas have increased in inequalities. This is in line with all that we have observed up until now. If we consider the urban case, then it shows the reverse trend. However, it is not as important as the rural case, as mentioned before. So, on the whole, it does not amount to much.

Tables 12 and 13 try to find out the average agricultural land owned for both survey rounds at the household level. Let us compare that with the average land holding per household by caste given in tables 4 and 5. In 2004-05, everyone except the SCs is above the average in rural areas. The Brahmins are way above the average. They are the only ones that bring the average down, signifying a huge gap between them and all the other groups. A similar situation prevails for the urban case, where every other group is around the average only. It is just the SCs that are lagging behind immensely and the Brahmins at the top. A similar situation exists in 2011-12 rural and urban cases as well.

CONCLUSIONS

Summing up, we see the trend that agricultural land owned has in general decreased. This makes sense because the government policies are such that we have focused more on the service sector rather than the agricultural or primary sector. So, over time, with more focus on the services sector, the agricultural sector has perished a little.

As we had expected, Brahmins and other forward castes dominate the Indian agrarian land shares. Our findings conclusively support and reaffirm the work that has already been done in the field. In the words of Mandira Sarma et al. (2017), we can say that the situation has gone from bad to worse.

In the end, the result is neither something new nor surprising. Even in the studied literature, caste-based discrimination has pervaded and tainted every little nook and cranny of social life in India. From the most basic level of nutrition levels among different households to the middle-class problems of job opportunities, right up to the richest level of Indian society, i.e. the corporate boards. At this point, it is an unavoidable fact for life that the excluded sections will have to face for a long time coming.

To solve this issue would require immense conscious effort from the government as well as the citizens. The policies need to be specifically aimed at uplifting the underprivileged castes, especially the SCs, who are in dire need of upliftment.

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