LUISS

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Course of Microeconomics

Unequal growth? Examining the impact of economic development on poverty and inequality in India

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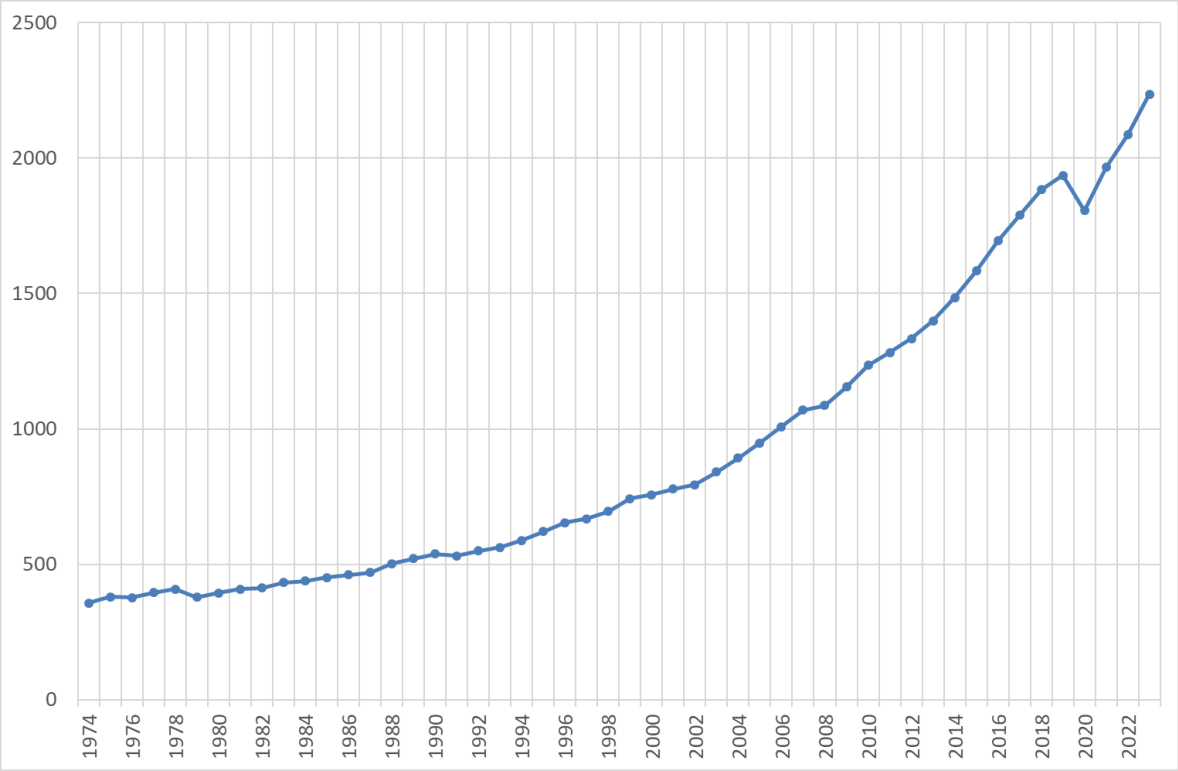
1. Introduction

What constitutes prosperity for a nation is a matter of great dispute between economists, sociologists and every researcher concerned with the evaluation of societal well-being. Countless literature and analytical metrics have been developed in an attempt to pinpoint what exactly should quantify growth and development, with results which couldn't stray further from a univocal common ground, even for the smallest facet of a people's livelihood. The question has grown increasingly complex since the first industrial revolution and the rise of early capitalism in 19th century England. This era promised to permanently reduce time and intensity of work with the assistance of machinery, and provide the opportunity to employ many unskilled workers who could be tasked with trivial labour. A promise which is starting to demonstrate its short-sightedness with the tremendous strides in development of new technologies capable of substituting human labour in its entirety at a faster rate than the policies which will need to regulate its usage and consequences on the job market. It can be argued that those who own the means of production have historically benefited the most and are likely to continue to do so, therefore trying to get a sense of a nation's economic growth by looking at measures such as GDP is simply not sufficient. Nevertheless, it is worth asking whether there is a relationship between GDP growth, poverty rates, and measures of income distribution.

In what follows I will examine the aforementioned research question focusing on the case of India, which has been one of the fastest growing economies in the world from the beginning of this century.

Figure 1: GDP per capita



Note: Constant 2015 US$.

Source: World Bank

GDP per capita has been accelerating, from an average growth of 2.6 per cent since the mid-1970s to 1990, to 3.7 per cent between 1990 and 2004, to 5 per cent from 2004 to 2023 (Figure1). Its growth, however, has predictably not been uniform for the entirety of its population. It is clear that the overall income of the country has grown; however, what is less obvious is whether this wealth has mainly reached the pockets of said owners of the means of production. Being one of the largest and recently the most populated country in the world, India makes an intriguing subject for economists to analyze, but what is particularly interesting is its unique social structure and foreign policy.

In the rest of this work, I will begin by discussing the relevant stylized facts, presenting the available data for India's poverty and inequality levels. Different sets of data for inequality will be utilized, given the variety of methods employed to collect

consumption data. In order to provide context for the analysis of poverty and inequality data, a review of India's socio-historical context is warranted. This analysis will begin with an examination of the ramifications of the caste system, followed by an investigation into gender discrimination and female participation in the workforce. The review will conclude with an assessment of India's foreign trade policy evolution and regional growth disparities.

I will provide a literary review of the discourse on the relationship between inequality and national growth. The relevance of policy to address these issues will be explored in accordance with the arguments presented. To that end, an experiment will be conducted using a new World Bank tool called the Long-Term Growth Model. This will allow for the display of the effects of potential policy reforms to incentivize female labor force participation and increase the earnings of the bottom 40% of earners. According to the simulation, these reforms are the most effective strategies for promoting more equitable economic growth in India. The final section will offer concluding remarks on the findings and implications of applying this model to determine policy reforms for promoting more equitable economic growth in India.

2. Stylized facts: poverty and inequality in India

In this section I will describe the evolution of different definitions of poverty and inequality in India since the late 1970s. The World Bank uses three income thresholds to define poverty and I will be analyzing India’s poverty trends over the period of its economic growth at all three of these poverty lines (World Bank Group 2024). The lowest standard of poverty is the international extreme poverty line, set at $2.15 per person per day using 2017 prices. The meaning of this threshold is that any person estimated to afford a maximum daily expenditure of $2.15 is considered to be in absolute poverty. As of 2024 about 700 million people worldwide are judged to be living by this standard.

Despite progress in the reduction of this figure, the extremely low-income nations and those affected by political turmoil remain the ones primarily affected. Between 1990 and 2015, the extreme poverty rate decreased by an average of one percentage point per

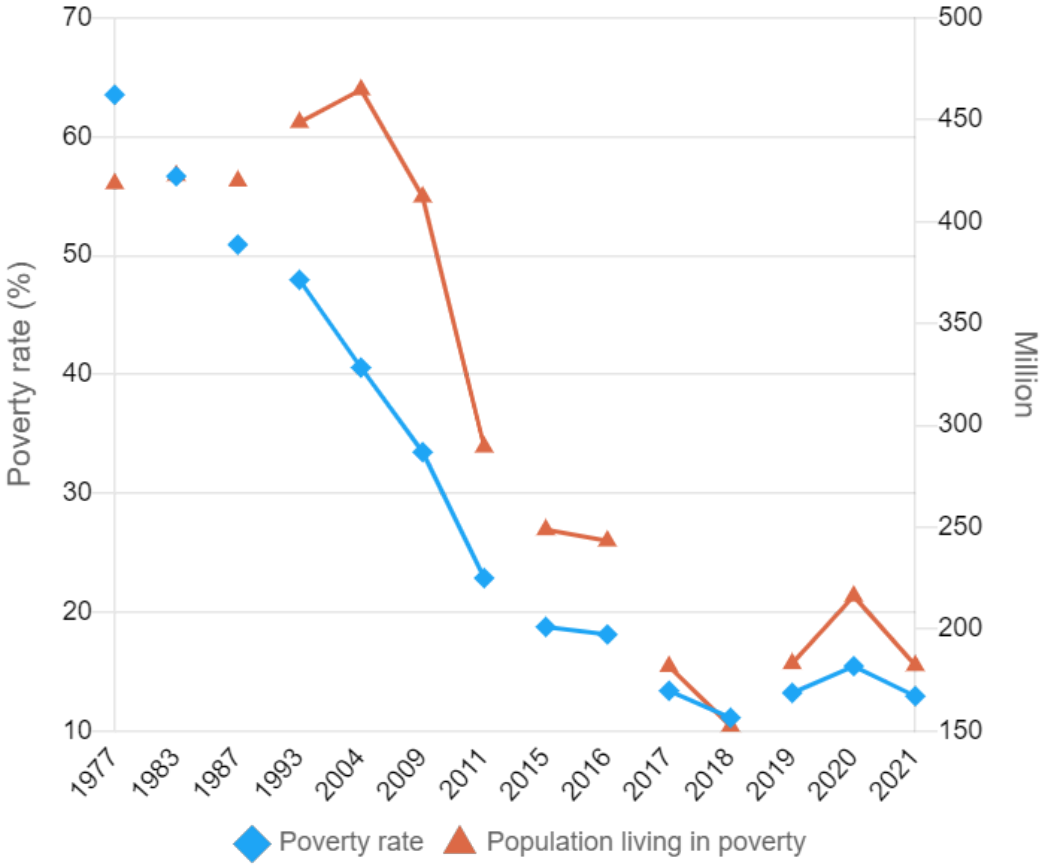
year, falling from nearly 36% to 10%. However, from 2013 to 2015, the rate only declined by a single percentage point. Moreover, the overall number of people living in poverty in Sub-Saharan Africa has been rising. This region in fact hosts a larger portion of people in extreme poverty than the rest of the world, and even by the most optimistic predictions, poverty will remain in double digits through the year 2030 (World Bank 2018).

That said, the standard of poverty is not the same for every country. While one side of the world grows wealthier, concentrating extreme poverty on the other, the question over the viability of utilizing the same poverty standard was raised. Considering $2.15 as too low of a bar for lower and upper-middle income countries, the World Bank developed two new poverty lines which are set at $3.65 and $6.85.

2.1 Poverty

In the case of India, the numbers that concern absolute poverty are unequivocable. The following chart from the World Bank (figure 2) depicts the rate and total number of the Indian population living under the poverty line set at $2.15 per day from the year 1977 to 2021.

Figure 2: Poverty measures (2.15 US$ per day)

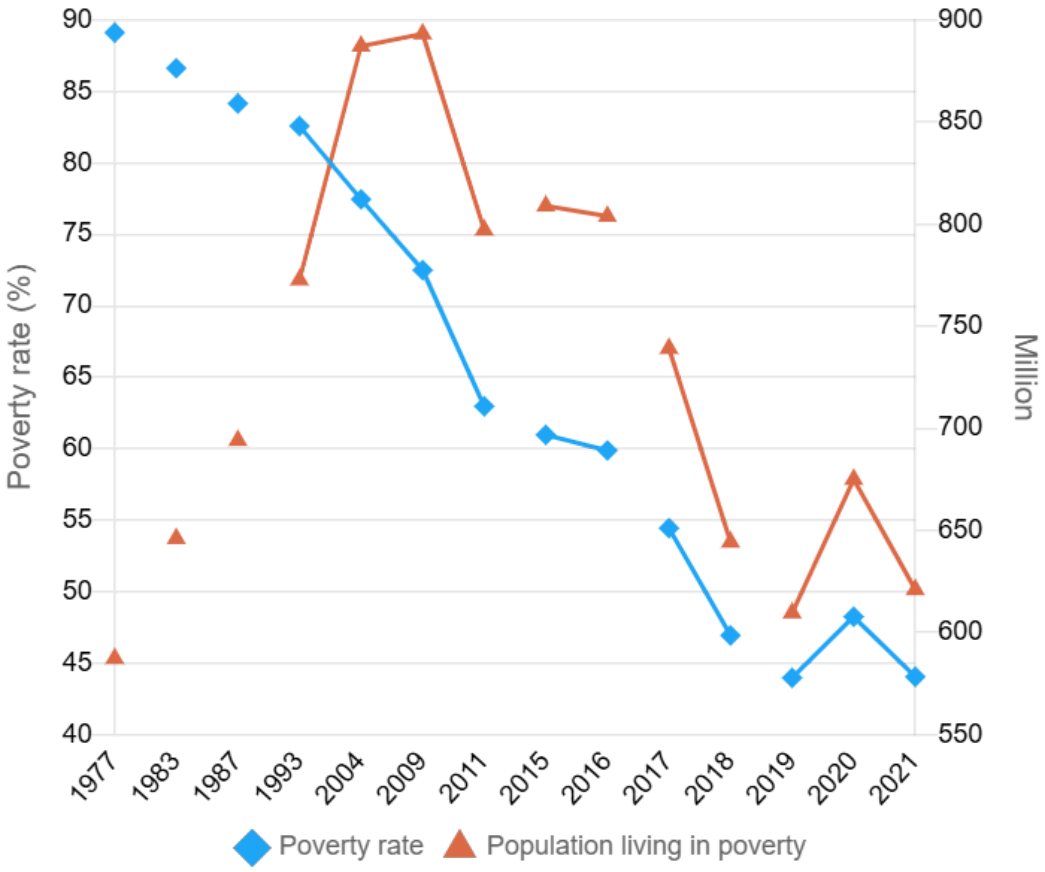


Source: World Bank

As demonstrated, the economic growth experienced during this period had a positive impact, leading to a significant decrease in the total number of individuals living below that specific poverty line. This figure fell from 418.73 million in 1977 to 182.13 million by 2021. Interestingly, the graph illustrates a peak of 464.83 million around the year 2004. However, upon examining the poverty rate, we can conclude that this spike was primarily driven by an increase in the overall population, as the percentage of the population living under the poverty line displayed a steady decline over time through that same period. To be precise, in that period between 1977 and 2004 the population grew from 651.7 million to 1.136 billion which is about a 74% increase ((MACROTRENDS, 2025). Around the year 2020 there is another increase, but the same goes for almost any country in the world given the global crisis caused by the COVID-19 pandemic, therefore making it

neglectible to the topic. Nonetheless, the number of people living in extreme poverty is still quite high in 2021, as it implies that more than 20% of the extremely poor of the world live in India.

Figure 3: Poverty measures (3.65 US$ per day)

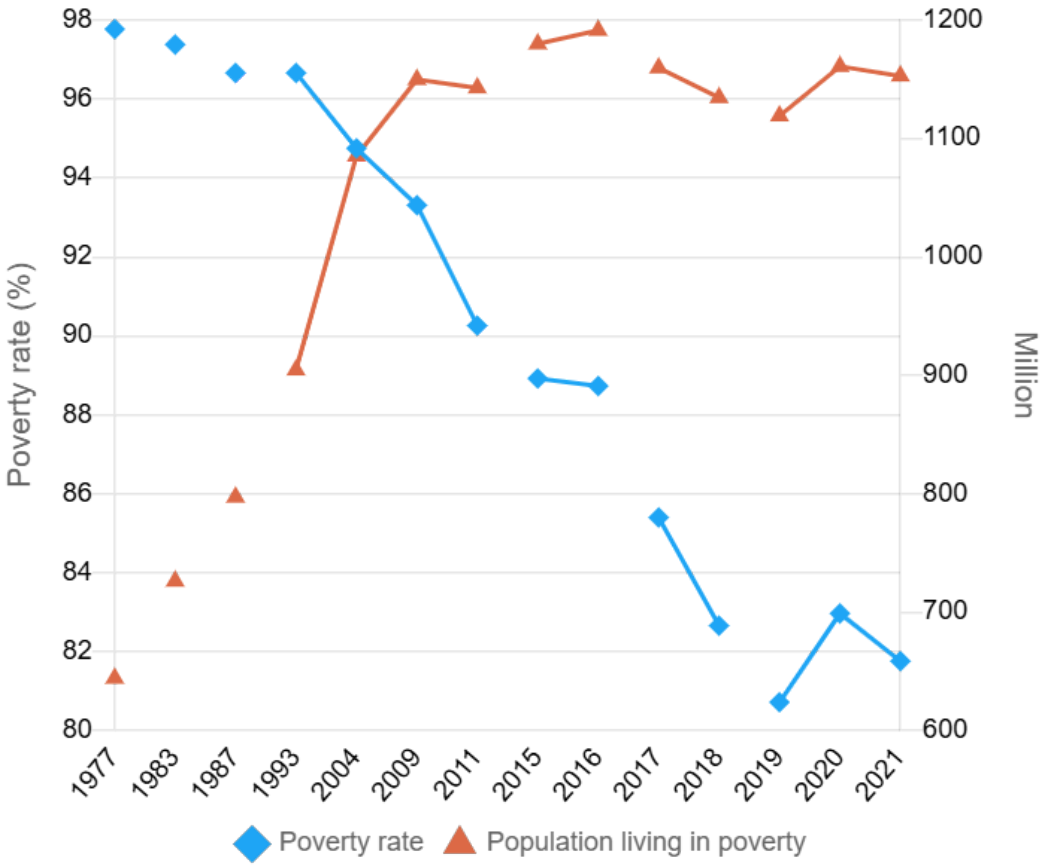


Source: World Bank

If we decide to set our new benchmark at the next lowest poverty line given by the World Bank of $3.65, we see some minor differences (Figure 3). As far as the poverty rate is concerned the trend is almost identical. Obviously the rate is consistently higher by about 25-30 percentage points throughout the entire period, but that is normal given that the new line comprises a new share of the population which lives in between that $2.15 and $3.65 mark. The increase in population living in poverty between 1977 and 2004 that is present in

the previous graph is extant in this one, but with an even higher rate and a peak reached in 2009. On top of that, we begin to see a slight increase in the velocity at which the poverty rate is declining starting from the year 1993.

Figure 4: Poverty measures (6.85 US$ per day)



Source: World Bank

Figure 4 depicts the poverty rates and total population at the last given poverty line of $6.85 a day, the so-called middle-income poverty threshold. This time the results are substantially different from the previous ones. Immediately we can tell that in 1977 almost the entire Indian population (a portion of the population as large as 98%) was living in said poverty level. Its trend is similar to the one followed by the other poverty measures. Although, this poverty rate at the end of the period is still about 82%, meaning that it has only decreased by 18 percentage points circa. In the previous two cases the difference was

way more significant as the reduction consisted of about 50 and 45 percentage points respectively. In this graph we can also see a more significant difference in the velocity of the poverty rate reduction starting from 1993.

A notable distinction emerges when comparing the total population living in poverty to the earlier counterparts. While the growth in the population living in poverty from 1977 to 2009 aligns with the trends depicted in the other graphs, the subsequent years do not demonstrate a decline. Instead, the figures remained relatively stable until 2021, exhibiting minor fluctuations, including the absolute peak in population at that level of poverty in 2016. The phenomenon can be attributed to the fact that a large portion of the population living below the $2.15 and $3.65 poverty thresholds has experienced an increase in living standards, yet not to a sufficient extent to surpass the new $6.85 threshold.

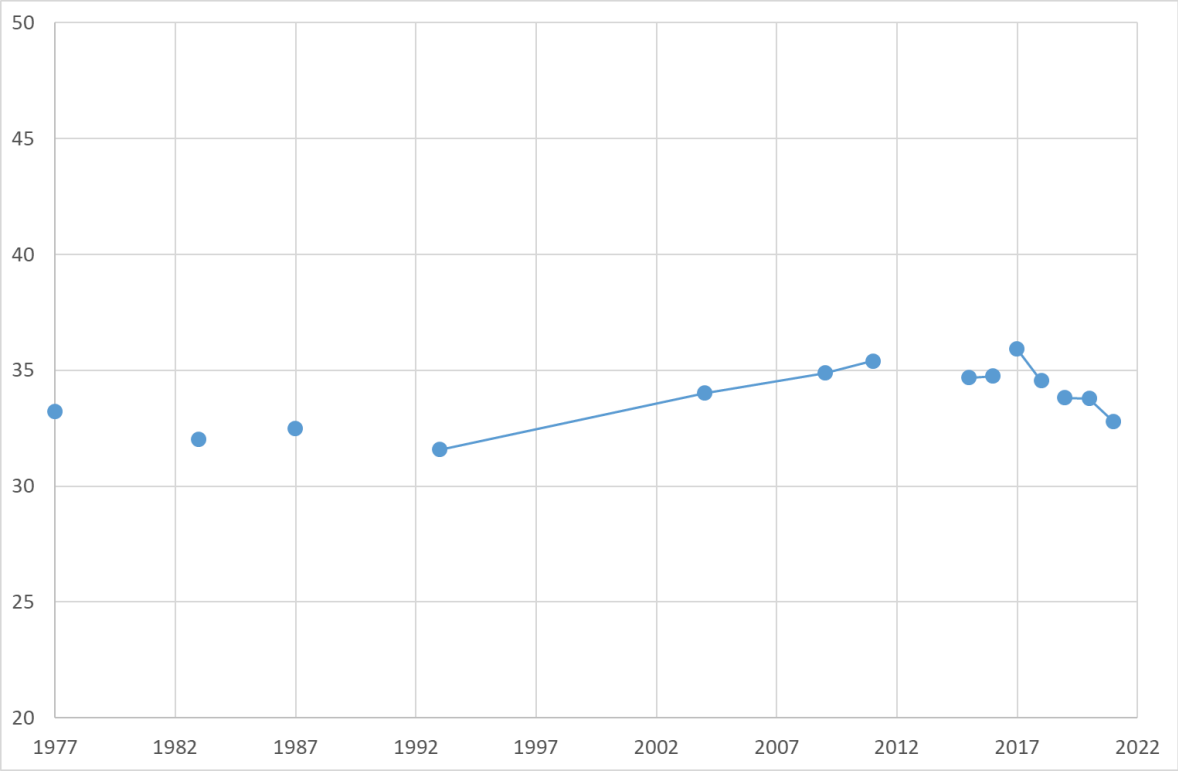
2.2 Inequality

While the poverty numbers are relatively simple to gauge, inequality is more intricate. The measure used by economists to evaluate it is the Gini coefficient or index. The Gini index measures the extent to which the distribution of income (or, in this case consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. The data for income inequality, presented in the World Bank's poverty and inequality platform shows a very deceiving picture for various reasons.

When looking at Figure 5, we can see that the Gini coefficient remained fairly constant throughout the entire period spanning once again from 1977-2021 at a level slightly over

30. This is where the previous demonstration of poverty data comes in handy, because as it was put in the World Bank glossary, the measure is very limited in providing an insight on poverty. In fact, if we were to look at it on its own we could conclude that India is in a similar state to a country like Germany for example since India's Gini index stood at 33.81 in 2019 while Germany's stood at 32.43 in the same year.

Figure 5: Gini coefficient of consumption expenditure



Note: National reporting level; lines link comparable spells

Source: World Bank

In fact, a shortcoming of the Gini index is its inability to paint a full picture for its sub-groups, as the total measure is not equal to the aggregate sum of the Gini coefficient of its sub-groups. Given that the World Bank inequality numbers were not very telling, and India has a complex urban composition, I deemed it necessary to look at its consumption inequality data from another perspective. This data is provided in an Oxfam paper

(Himanshu 2018) which shows both consumption inequality and a sub-group dissection of its figures.

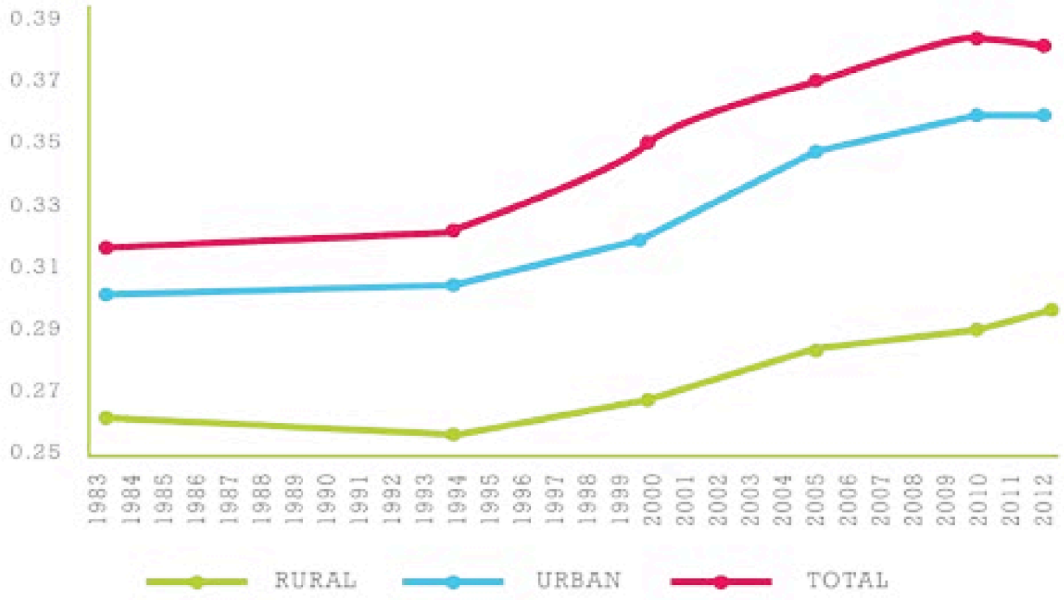
The primary source for tracking consumption inequality, despite its non-comparability with other countries, is the consumption expenditure surveys by the National Sample Survey Office (NSSO). The NSSO collects data on consumption expenditure in India, and it is regarded as a trustworthy source for analyzing changes in poverty levels, inequality, and overall well-being trends. In this paper, they used consumption expenditure data from the NSSO for the 'thick rounds' in 1983, 1993-94, 2004-05, 2009-10, and 2011-12, and the results are depicted in the following two figures. Unfortunately these data are not yet available beyond 2012.

Table 1

SHARE OF VARIOUS GROUPS IN TOTAL NATIONAL CONSUMPTION EXPENDITURE	1983	1993-94	2004-05	2009-10	2011-12
BOTTOM 20%	9.0	9.2	8.5	8.2	8.1
BOTTOM 40%	22.2	22.3	20.3	19.9	19.6
TOP 20%	39.1	39.7	43.9	44.8	44.7
TOP 10%	24.7	25.4	29.2	30.1	29.9
RATIO OF AVERAGE CONSUMPTION OF VARIOUS GROUPS					
URBAN TOP 10%/RURAL BOTTOM 10%	9.0	9.2	8.5	8.2	8.1
URBAN TOP 10%/URBAN BOTTOM 10%	22.2	22.3	20.3	19.9	19.6
URBAN TOP 10%/RURAL BOTTOM 40%	39.1	39.7	43.9	44.8	44.7
GINI OF CONSUMPTION EXPENDITURE					
RURAL GINI	27.1	25.8	28.1	28.4	28.7
URBAN GINI	31.4	31.9	36.4	38.1	37.7
ALL INDIA GINI	29.8	30.0	34.7	35.8	35.9

Source: Oxfam

Figure 6: Gini coefficients of consumption expenditures for selected groups



Source: Oxfam

These numbers provide a somewhat more nuanced story about India's inequality than that obtained through the standard total Gini. India's inequality is not stable according to this different set of data. In Figure (5, 6) we can see that throughout those years, inequality is actually increasing. Looking at Figure 5, Inequality, as indicated by the Gini coefficient of consumption expenditure, decreased between 1983 and 1993-94, but has been rising since then. This upward trend in inequality is evident from other inequality measures as well. For instance, the ratio of average consumption expenditure between the top 10% in urban areas and the bottom 10% in rural areas remained stable from 1983 to 1993-94 but has increased thereafter. Similarly, the consumption share of different income groups has shifted, with the top 10% and top 20% seeing a rise in their shares, while the shares of the bottom 20% and bottom 40% have declined.

In Figure 6 we can see that the overall total consumption Gini has risen from 0.30 in 1983 to 0.36 in 2011-12. While rural inequality saw a slight increase from 0.27 in 1983 to 0.29 in 2011-12, it is the urban Gini that is primarily driving the increase in overall inequality. Urban inequality surged from 0.31 in 1983 to 0.38 in 2011-12. Interestingly, the two periods of economic growth acceleration show differing trends.

3. Socio Historical Context of India

As we have seen in the previous chapter, the data on poverty and inequality show variations in trends with some notable consistencies with regards to the timing and the contingents of society who are most affected. It is important to note that a country's economy does not develop in a vacuum, and these changes happen for a reason. In this chapter I will attempt to explore what I expect to be some of the possible reasons behind them. Policy, societal norms and the natural resources are a few of the many reasons as to why a country's economic growth does not saturate homogeneously.

In India's case, it would be an unforgivable oversight to omit the impact of its caste system, its gender discrimination within the workforce and their troubled policy refoundation following the independence from British colonialism. Moreover, with India being an extremely vast country and the most populated in the world, the regional subdivision of the country merits consideration when examining its economic development.

3.1 The Caste System

Although India is host to a variety of religious beliefs, the most prevalent one is hinduism by a substantial margin. Hinduism is the oldest religion in the world and it originated between 2300B.C. and 1500B.C. in a region which would now be part of modern-day Pakistan, meaning that its teachings are tightly knit into the fabric of the societies that developed around that area. As stated by Goghari and Kusi (2023), one of the

Hindu beliefs derived from the sacred texts is that people can be classified in four official castes or *varna* in descending order of purity: Brahmins (priests and teachers), Kshatriyas (warriors and rulers), Vaisyas (merchants and traders) and Sudras (labourers and craftspeople). The first three categories were believed to be twice-born and therefore considered purer than the fourth and especially, the fifth unofficial category most commonly known as *dalit*, who were considered to be untouchable because they are too filthy and to be left on the sidewalks.

The relevance of castes in the development of Indian society lies in the discrimination and oppression that derives from it. Following the independence from British colonization, starting from the adoption of their newly written constitution in 1950, affirmative action programs and laws against caste discrimination were implemented. Unfortunately the legislation was scarcely successful in its attempt to combat it, as *dalits* continued to live in shame and marginalization to this day. The phenomenon became so widespread that in the past five years, even in the cities of Seattle, USA, Toronto and Ontario, Canada and academic institutions such as Harvard and California State University a framework to address the issue was created.

According to Ghurye (1969), the defining characteristics of caste include societal segmentation into groups defined at birth; systemic hierarchy that often prevents members of different castes from engaging in simple interactions such as eating together; segregation between castes, with lower castes forced to live on the periphery of cities and denied access to many resources, in some cases even to wells; inheritance of occupation from parents; and finally, endogamy, which means that marriage is restricted to people of the same caste, although hypergamy, or marriage to a person of a higher caste, is permitted for women. The implications of these norms make India one of the most peculiar cases among the growing economies.

A study by Bharti (2022) using data from the 2011 IHDS shows that 95% of marriages are within the same caste, with inter-caste marriages accounting for only 5-6%. A trend that remains largely stable, with a slight increase of 1 percentage point in inter-caste

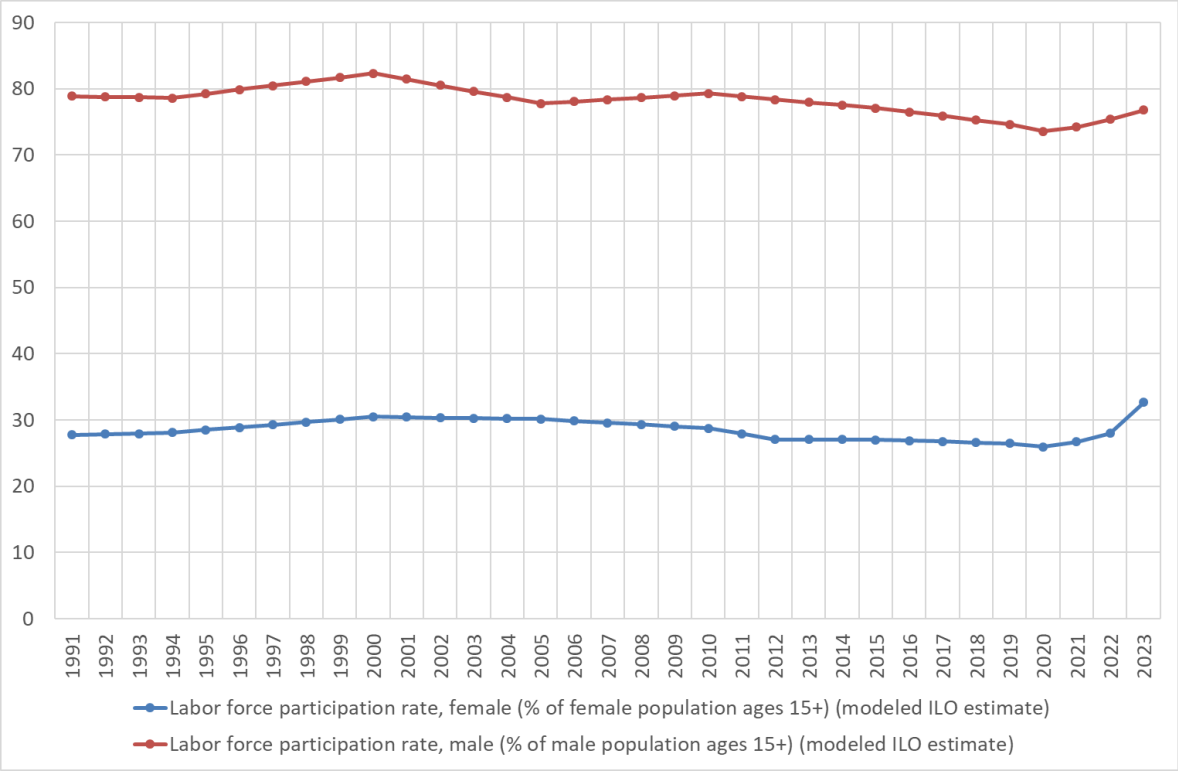
marriages from the pre-1980 to the 2006-12 marriage cohorts. In addition, the correlation between husband's and wife's educational level has increased over time, from 0.35 for pre-1980 couples to 0.6 for 2006-12 couples. This shows that there is an increasing trend of class and educational segregation that reduces the possibility of social mobility, hampering the possibility of lowering inequality.

We have previously looked at the data for absolute poverty and inequality of the bottom 20%, and it is safe to assume that individuals belonging to the *dalit* caste are the primary component of this category, a status persisted for some generations. The discrimination and marginalization of the lowest class makes upward mobility in Indian society much more difficult and condemns generations to a social and economic status.

3.2 Female Labor Force Participation

Discrimination is not unique to lower caste members of society. The paper by Deshpande and Singh (2024), titled “The Demand-Side Story: Structural Change and the Decline in Female Labour Force Participation in India,” presents a critical analysis of the factors contributing to the declining female labor force participation rate in India from 2004 to 2018. The authors challenge the prevailing narrative that attributes this decline primarily to supply-side factors. For instance, some papers suggest that women are voluntarily dropping out of the labour force due to rising household income and education enrollment. These authors argue instead that demand-side factors play a more significant role.

Figure 7: Labor force participation rates



Source: World Bank

The period under review has been characterized by “jobless growth," where economic expansion did not translate into proportional job creation, particularly for women. The authors highlight that while male employment increased by 12 million, female employment decreased by 9 million during the same timeframe.

The analysis indicates that the contribution of supply-side factors to the decline in female labor force participation has diminished over time, accounting for only a minor portion of the decline between 2011-12 and 2017-18. This challenges the assumption that women are voluntarily exiting the labor force due to increased household incomes or conservative social norms. The findings suggest that structural transformation within the economy has not favored female labor engagement, leading to a significant drop in their

labor force participation across various industries. The authors argue that policies need to focus on creating more rural non-farm jobs to enhance female labor participation.

In the most recent years female labor force participation has recovered, but still remains well below that of men.The paper calls for targeted interventions aimed at boosting local labor demand and creating job opportunities specifically for women. It emphasizes the necessity of addressing structural barriers to female employment rather than solely focusing on supply-side issues.

Occupational segregation plays a significant role in the decline of female labor force participation in India by shaping the types of jobs available to women and influencing their overall employment outcomes. There are several ways in which occupational segregation contributes to this decline:

1. Concentration in Low-Value Occupations

Women are often over-represented in occupations perceived as unskilled or low-value, particularly in sectors such as care work and informal employment. This concentration limits their access to higher-paying, more stable jobs, which can discourage participation in the labor force overall.

2. Limited Mobility Between Sectors

Occupational segregation creates barriers that restrict mobility of women into male-dominated sectors. When women are primarily employed in female-dominated industries, they may face challenges when attempting to transition into sectors that offer better pay and advancement opportunities. This lack of mobility can result in lower overall participation rates as women may opt out of the labor market rather than remain in less rewarding roles.

3. Impact on Job Quality and Wages

The segregation of jobs by gender often leads to wage disparities and poorer job quality for women. Occupations dominated by women tend to be undervalued, resulting in lower

wages and fewer benefits compared to male-dominated fields. This economic disadvantage can disincentivize women from participating in the labor force, especially when household incomes rise or when they have alternative sources of support.

4. Reinforcement of Gender Norms

Occupational segregation reinforces traditional gender roles and norms, which can further perpetuate the cycle of low female participation. Societal beliefs about appropriate roles for men and women can discourage women from entering certain fields, limiting their employment options and contributing to a lack of diversity in the workforce.

5. Insufficient Job Opportunities

The overall lack of job opportunities for women, particularly in high-demand sectors, is exacerbated by occupational segregation. As industries evolve and demand for labor shifts, women may find themselves excluded from emerging job markets that are traditionally male-dominated, leading to stagnation or decline in female labor force participation.

In summary, occupational segregation significantly impacts female labor force participation in India by confining women to low-value jobs, limiting their mobility between sectors, perpetuating wage disparities, reinforcing gender norms, and contributing to insufficient job opportunities. Addressing these issues through targeted policies aimed at reducing segregation and promoting gender equality in various occupations is crucial for enhancing women's participation in the labor market.

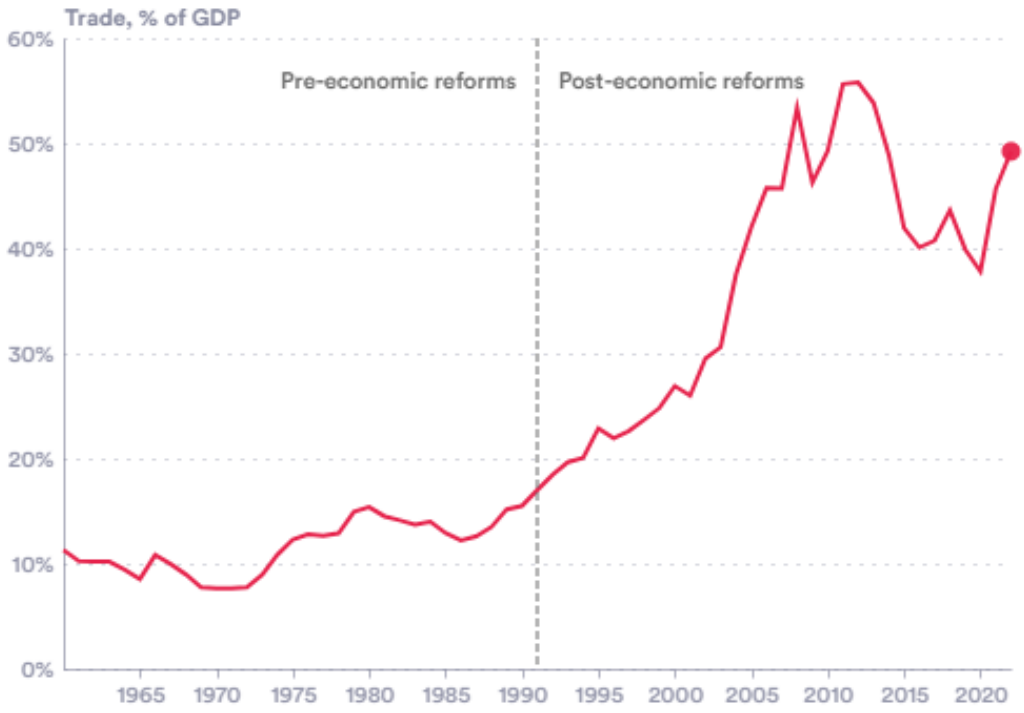
3.3 Foreign Trade Policy and Regional Growth

When colonized countries gain their independence, it is quite common for them to go into a state of extreme protectionism as a response to the previous usurpation of the goods and natural resources they have to offer. Although it may seem like a good idea for a country to focus on its internal production in order to foster self reliance, the economic effects of opening up to international trade are almost certainly positive. This is also India's case. According to Khurana (2024), Since its independence in 1947 India's foreign trade policy has changed drastically. In the period that immediately followed India's independence, the government imposed major import barriers and industrial regulation. Industrial development in the following decades was characterized by a form of government regulation called "license raj", which in short required government permission to operate and production quotas. This was due to the fact that the Indian government had implemented a 5-year plan structure. It was likely modeled after the Soviet Union, which underwent large-scale industrialization and experienced rapid economic development since the implementation of its 5-year plan structure.

Regrettably, the Soviet success wasn't to be matched by India. Between 1948 and 1980, India's GDP grew at an average rate of 3,6%, and its trade deficit went from 0.1 to 6.3 billion dollars. Realizing the limitations of the system, starting from the 1980's, India embarked on a gradual liberalization of the economy, although the reforms of this decade were more pro-business than pro-market. The former type of reform focuses on increasing the profitability of incumbent firms, while the latter tends to focus on removing general barriers in the marketplace in order to encourage new entrants.

The real turning point for India came in 1991, when, faced with large payments imbalances, it abolished the "licence raj" and decided to rely on reforms to create an open market economy. The following graph (Figure 8) demonstrates the results.

Figure 8: Foreign trade



Note: Share of GDP

Source: Economics Observatory

As we can see, a larger share of GDP came from trade after these reforms. It is also worth noting that if we go back to the poverty figures (Figure: 2, 3, 4), the increase in the velocity with which the poverty rate decreased is almost simultaneous with the implementation of these reforms. Nevertheless the inequality data from (Figure: 6, 7) demonstrates that the levels of inequality began to rise around the years 1993-94, raising the possibility that it may be an additional by-product of these reforms.

Recently, India announced a new Foreign Trade Policy (FTP) 2023, which aims to boost the country's exports of goods and services. Unlike previous policies with fixed five-year targets, this FTP is dynamic and open-ended to adapt to emerging trade needs. Key focuses of the policy include streamlining processes, enhancing ease of doing business, and prioritizing sectors like e-commerce and high-end technologies.

The FTP also emphasizes district-level exports to build a more decentralized and robust local trade ecosystem. This approach aims to harness the unique economic strengths of India's diverse regions and enhance the country's overall export capacity. By focusing on district-specific products and services, the policy seeks to boost exports from less-developed areas and address regional disparities in economic growth. This district-level push complements India's broader economic strategies, where each state's unique characteristics influence its GDP growth trajectory, driven by sectoral advantages and local infrastructure.

An exceptionally large and diverse nation, India is home to a multitude of regions divided into states and districts, each with its own unique natural resources and administrative framework. Because of this vastness and regional differentiation, the country's growth and progress have not been evenly distributed. Instead, disparities in economic development have emerged, with some regions experiencing rapid industrialization and prosperity while others face significant challenges in achieving similar levels of growth. Specifically, India is divided into 28 states and 8 union territories, which are further subdivided into districts.

India's districts exhibit a wide range of economic profiles based on resources, industrial base, and development priorities. For example, states such as Maharashtra and Tamil Nadu are industrial powerhouses with advanced infrastructure and high GDP contributions, largely due to sectors such as manufacturing, engineering, and IT. Mumbai, the capital of Maharashtra, is the financial hub of India, contributing significantly to both GDP and exports (Government of India 2020-21). Tamil Nadu is a key player in sectors such as textiles and automobile manufacturing, particularly around cities such as Chennai, which houses major global automotive manufacturers such as Ford, Hyundai, BMW, and domestic giants like Ashok Leyland (Rao 2025).

In contrast, less industrialized states such as Bihar and Uttar Pradesh remain heavily dependent on agriculture. Despite significant agricultural production, these states lag behind in industrial growth, contributing to their relatively lower GDP per capita and

slower economic growth. However, district-level initiatives within these states, such as promoting regional products (e.g. handicrafts, textiles, and organic agriculture), can drive localized export growth. For example, Varanasi (Uttar Pradesh) is known for its silk weaving industry, which can be better promoted through export-oriented policies that focus on local strengths.

The Foreign Trade Policy supports this district-specific approach by creating District Export Promotion Committees (DEPCs) to identify and promote export opportunities at the grassroots level. These committees will facilitate outreach through buyer-seller meetings, trade fairs and workshops, focusing on sectors specific to each district (Government of India 2023). By encouraging such localized initiatives, the FTP aims to create a more balanced growth model across states, promote industrial diversification, and increase export output across the country.

In addition, India's GDP growth is significantly influenced by state-specific industrial characteristics. For example, Gujarat has a robust petrochemical and manufacturing sector, which has contributed to its higher GDP growth compared to agricultural states. Similarly, Karnataka's strong IT and technology sector, particularly in Bengaluru, contributes significantly to its economic growth. These states not only generate high export volumes, but also contribute to national growth by providing valuable foreign exchange earnings (Reserve Bank of India 2022).

Research suggests that regional disparities in income and development persist across Indian states, but there is no systematic relationship between poverty and inequality. Bandyopadhyay (2021) highlights persistent regional inequality and slow convergence in GDP across sub-national regions in India.

Chandrasekhar et al. (2021) examine the issue of spatial disparities in living standards across India using monthly per capita household earnings. While rural inequality is lower than urban inequality in almost all states, it does not appear that all poor states are characterised by lower inequality. Within the eight poorest states, inequality as measured by the Gini coefficient can be either higher or lower than the Indian average.

4. Discussion and a policy experiment

This section examines the relationship between inequality and national growth, exploring how disparities in wealth and opportunity affect a country's economic trajectory. It begins by analyzing the main theoretical frameworks and empirical evidence that highlight the influence of inequality on economic performance. While some argue that inequality can spur growth by stimulating investment and innovation, others suggest that excessive inequality stifles social mobility, undermines stability, and leads to inefficient resource allocation, ultimately hampering overall economic progress. To put these theoretical discussions into a practical context, this chapter concludes with a policy experiment using a World Bank tool. Through this experiment, we will examine how targeted policies can affect inequality and, consequently, growth in developing countries.

4.1 Discussion

The link between inequality and economic growth has been the basis of extensive debate in economic literature. The shared belief among a slight majority of economists is that wealth redistribution serves as a positive catalyst for a nation's economic growth. However, this view is not universally accepted among economists, as many others hold opposing opinions. A glaring example is that of Robert E. Lucas, a Nobel Prize winning economist, who wrote the following in the 2003 Annual Report of the Federal Reserve Bank of Minneapolis: “In this very minute, a child is being born to an American family and another child, equally valued by God, is being born to a family in India. The resources of all kinds that will be at the disposal of this new American will be on the order of 15 times the resources available to his Indian brother. This seems to us a terrible wrong, justifying direct corrective action, and perhaps some actions of this kind can and should be taken. But of the vast increase in the well-being of hundreds of millions of people that has occurred in the 200-year course of the industrial revolution to date, virtually none of it can be attributed to the direct redistribution of resources from rich to poor”(Taylor 2023).

Whilst incidentally citing the country I am taking an interest in for this work, Lucas claims that inequality should not be a concern for developing countries. As he elaborates further, according to him, the potential of improvement of economic conditions generated by redistribution of wealth is not comparable to that which might derive from an increment in production. The reason why this particular viewpoint is opinable, is because it is important to make a distinction between relative and absolute poverty.

When Lucas describes the improvement of the well-being of hundreds of millions of people, he is primarily concerned with its value in absolute terms. Without doubt, an increase in production will lead to better conditions for people who find themself in a state of poverty, but whether wealth gained solely through increased production is the primary way to benefit the poor is an open question. To ensure that wealth is distributed to the working class, public spending policies are essential; without the will to implement these policies, poverty levels may remain unchanged.

Economists on the other side of the argument tend to believe that the failure to address a developing country's inequality can not only stagger the growth of the poorest class in relative terms, but harm the country's growth as a whole. Amartya Sen, also a Nobel Prize-winning economist, argues that economic growth is important for reducing poverty, but it is not enough on its own. He shares the belief that growth must be combined with policies that make sure that resources and opportunities are shared fairly (Drèze, Jean, and Amartya Sen 1989) . He thinks that the benefits of economic growth should reach all parts of society, especially the marginalized and poor. This way of thinking, based on Sen's capability approach (Sen, 1999), posits that development should focus on helping people to be the best they can be, rather than just on increasing income levels.

In Sen's approach, the focus shifts from traditional economic metrics to the actual freedoms and opportunities individuals have to achieve well-being. He argues that poverty should be understood in terms of capabilities rather than their income or consumption levels. While poverty is an important limitation in that sense, health, education and other kinds of support are necessary. Sen claims that inequality impedes inclusive economic

growth. He argues that addressing inequality directly is crucial for fostering inclusive growth, as when the resources are concentrated in the hands of a few, the progression of society as a whole is stunned. Sen therefore advocates for policies that promote social justice and equitable resource distribution as fundamental to achieving sustainable development. By prioritizing human capabilities and addressing systemic inequalities, societies can create conditions conducive to both economic growth and meaningful poverty alleviation.

Joseph Stiglitz, another Nobel laureate in economics, in a Notre Dame University lecture (Stowe 2024), contends that inequality is largely shaped by institutional frameworks and policy choices rather than exogenous factors such as globalization or technological advancement. He critiques the policy trajectory of recent decades, particularly in the United States, which has favored deregulation, weakened labor protections, and tax structures that disproportionately benefit the wealthy. Such policies, he argues, have exacerbated income and wealth disparities while undermining the middle class.

Drawing on historical examples, Stiglitz contrasts the current era of rising inequality with the post-World War II period, often referred to as the "Golden Age of Capitalism"(Jacobs, Mazzucato 2016). During this time, economic growth was broadly shared across income groups, particularly benefiting those at the lower end of the income distribution. He asserts that this period demonstrates the feasibility of achieving equitable growth through appropriate policy interventions.

Stiglitz also highlights the adverse economic consequences of inequality. He argues that extreme inequality undermines aggregate demand, as lower-income households—who tend to spend a larger proportion of their income—are left with insufficient purchasing power. Furthermore, he argues that inequality erodes social cohesion and trust in institutions while concentrating political power in the hands of elites, thereby perpetuating an "inequality trap" that stifles both economic dynamism and social mobility.

Stiglitz's analysis underscores that inequality is not only a moral concern but also an economic one. He challenges the conventional wisdom that prioritizes efficiency over

equity, arguing instead that reducing inequality is essential for fostering robust and sustainable economic growth. By advocating for structural reforms, Stiglitz envisions an economy where prosperity is more equitably distributed, thereby enhancing both economic performance and social well-being.

On the basis of behavioural studies conducted by various researchers between the 1990s and the 2000s, former World Bank's Francisco Ferreira (2023) claims that one of the consequences of inequality regards the perception of a population on fairness, which is often connected with the creation of an internal divide. Secondly, he suggests that there is enough evidence to claim that the various market imperfections, while coexisting with high inequality, lead to allocative inefficiencies. In particular, he argues that investment projects designed to improve the possibilities of economic growth by providing the people with the resources to invest in education and business ventures, may be done incorrectly due to the combination of those conditions. Finally, he states that there is a growing acceptance that inequality hurts political institutions, as he cites recurring instances of the wealthy elite capturing the institutions in order to serve their own personal interests rather than those of the broader public.

Dani Rodrik argues that inequality can hinder economic growth by limiting opportunities for low and middle-income groups (Blanchard, Rodrik 2021). He suggests that the prevailing view among economists has shifted towards recognizing inequality as a critical issue that directly affects economic performance. At a conference on tackling inequality, he was among those who conjectured that reducing inequality is essential for enhancing economic opportunities and fostering inclusive growth: rather than deregulating markets or cutting social programs, governments should play a proactive role in addressing income disparities through targeted policies.

In his analysis of globalization, Rodrik (2024) points out that while trade can stimulate growth, it often exacerbates inequality within advanced economies. As we had seen in the poverty and inequality data, India's absolute poverty levels began to fall at a faster rate after the liberalization reforms of 1991, but at the same time inequality levels

began to rise, confirming in this case Rodrik's hypothesis. He highlights the need for redistributive policies as a counterbalance to the gains from trade, suggesting that without such measures, the benefits of globalization may not reach all segments of society. This perspective is consistent with the view that economic policies should focus on equitable growth rather than on aggregate economic performance alone.

4.2 Policy Experiment

Drawing on the previous discussion, policies to address poverty and inequality are a necessary component to a continuous and egalitarian economic development. However, as Dani Rodrik (2000) stated in an interview for IMF Finance & Development Magazine , we do not know nearly enough about policy impacts. He claims that while there is evidence that land reforms, appropriately targeted price reforms, and certain types of health and education expenditures benefit the poor, there is also uncertainty about the relevance and the circumstances under which these poverty-oriented programs should be implemented. Likewise, Rodrik argues that there is a lack of understanding of what policies are actually conducive to growth. Apart from the well-being of the institutions and the resolution of fiscal and macroeconomic imbalances, there is little knowledge as to what trade policies are the most effective to foster economic growth. He concludes by stating that the debate between growth-oriented and poverty-oriented policies is pointless and that the real focus should be on designing effective policies according to the circumstances.

In order to differentiate which of these policies are the most effective for the development of a country's economy, in 2022 Norman Loayza and Steven Pennings of The World Bank developed a new tool called the standard Long Term Growth Model (LTGM). The LTGM (available at https://www.worldbank.org/en/research/brief/LTGM) is a spreadsheet- based framework based on the neoclassical Solow-Swan growth model (1956). It extends this classical model to address the specific needs of policymakers in developing countries. While investment/savings, total factor productivity (TFP), and

population growth remain the primary drivers of growth – as in the Solow-Swan model– the LTGM incorporates additional factors that are critical for developing countries. These include human capital, population aging, and labor force participation, especially among women.

A key feature of the LTGM for this analysis is its integrated poverty module, which assesses the impact of economic growth (and income inequality) on poverty levels. This module uses a log-normal approximation of the income distribution to estimate poverty outcomes. Similar to conventional growth accounting exercises, the LTGM helps identify the immediate sources of growth under current trends and assess how adjustments in growth fundamentals may affect long-term growth trajectories. In practice, applying the LTGM involves calibrating a few parameters and making assumptions about the evolution of growth fundamentals or targets over the simulation period. These parameters are typically derived from international datasets such as the Penn World Tables and the World Bank Development Indicators, while demographic variables such as population growth are derived from United Nations projections. Detailed documentation of the LTGM methodology can be found in Loayza and Pennings (2022).

The poverty module is an essential feature of the LTGM because it facilitates the estimation of the contribution of economic growth to poverty reduction. Economic growth is a primary mechanism for poverty reduction because it shifts the income distribution to the right by raising average per capita income, assuming that income inequality remains unchanged. The LTGM models this by assuming that the natural logarithm of per capita income follows a normal distribution. A notable variable in the LTGM poverty module is the average income of the bottom 40% of the population. The Shared Prosperity Premium (SPP) measures the difference in income growth between this bottom segment and the average per capita income growth rate of the economy as a whole. The SPP is directly related to changes in income inequality, as measured by the Gini coefficient. When the SPP is zero, there is no change in inequality and the income growth of the bottom 40% is the same as the overall growth rate. However, a positive SPP means that inequality is decreasing, as the income of the bottom 40% is growing faster than the economy's average.

In the subsequent segment, an experiment will be conducted with the objective of ascertaining how two potentially impactful policies would affect India's GDP per capita growth and inequality. The experiment will involve the simulation of positive "shocks" to female participation in the Indian workforce and the income growth of the bottom 40% through the alteration of specific inputs. This will enable the projection of the potential difference in GDP per capita, the absolute poverty headcount rate, the Gini coefficient and the share of income held by the bottom 40% from the current year to 2060.

India’s current female participation in the workforce is only about 30% which, as we have seen before, can easily be traced to its stringent patriarchal social norms. Despite the evident parallels between India and China with respect to economic development, China has consistently outperformed India in this regard. This could very well be a factor contributing to China’s comparatively faster economic growth during the same period. As Mahajan (2024) posits, projections suggest that a 10% increase of the female workforce could result in a 16% increase in India’s GDP and an additional $12 trillion to the global GDP.

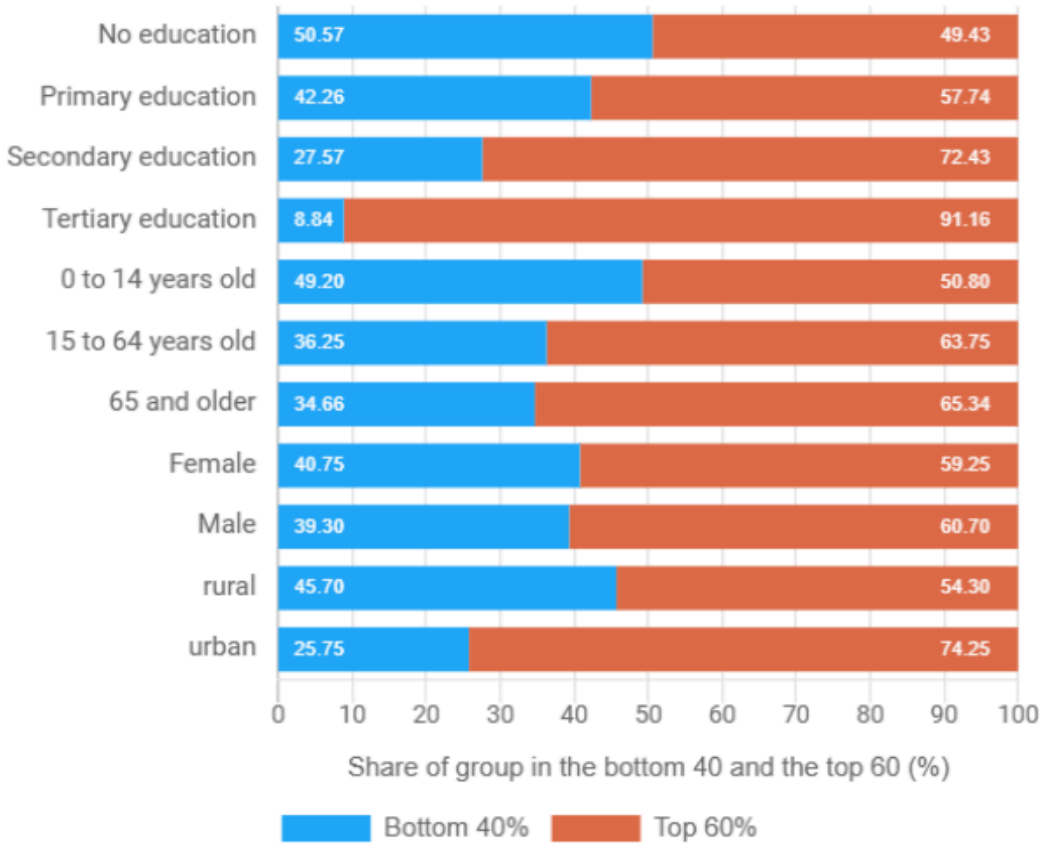
A range of policy measures must be implemented to promote increased female participation in the workforce. As discussed in Chapter 3.2, this phenomenon is often wrongly associated with the supply-side of the job market. Instead, social norms play a significant role in influencing women's decisions regarding their participation in the workforce. Among the potential policies to consider are those aimed at enhancing childcare and eldercare options, with the aim of reducing the domestic labor responsibilities that are disproportionately assigned to women. Another policy option involves the provision of government subsidies to women pursuing university degrees or similar academic credentials. Furthermore, well-intentioned regulations such as the Maternity Benefit Act and the POSH Act, which were intended to increase the female workforce, as Mahajan claims, had the unintended consequence of making the hiring of women more costly. The effect of these policies needs to be reversed.

Looking at the World Bank data for China, we see that female labor force participation started at around 70% in 1990, and although it has fallen to almost 60% today, it has been accompanied by an almost identical and even slightly larger decline in the labor force participation of male citizens. I therefore made it so that within a decade, India's female labor force participation would equal China's 70% and remain at this level thereafter. While this is somewhat unrealistic given the size of the increase, it is meant to show what the immediate consequences of such a change would be.

By construction of the model, this type of shock resulted in the inequality projections being completely unchanged, as the LTGM is set up to distribute the new women entering the workforce evenly across the income spectrum. This is possibly even less realistic.

If we look at the data from World Bank (figure 9) we can in fact see that of the bottom 40% of the population, there are more female citizens than male. Within that group, we can also see that there is a larger share of individuals with lower degrees of education. The same goes for those who live in the rural areas, which, as we have seen in previous chapters, is often due to their state of residence.

Figure 9: Groups in the bottom 40 and top 60 (2011)



Source: World Bank

I therefore applied a further shock to emulate a policy structure that favors the growth of the bottom 40%. In order to do that, I increased the SPP by 0.5% on impact, declining towards the baseline of 0 by the year 2050. This is a feasible objective, and it could be reached with well documented policies such as Progressive taxation. Tax policies that increase taxes on high-income earners and large corporations have the potential to generate additional funding for social programs that benefit lower-income households or to enact tax breaks for low-income workers.

Another policy that could be implemented to favor the growth of the bottom 40% is an increase in the federal or state minimum wage. A higher minimum wage ensures that workers earn a living wage, thereby helping to lift people out of poverty. Alternatively,

enhancing the affordability of education could be a less direct approach, but it is arguably more effective in the long run. These are merely a few of the numerous possibilities in conjunction with social safety nets for those lacking employment or a stable income.

Figure 10: Female participation rate

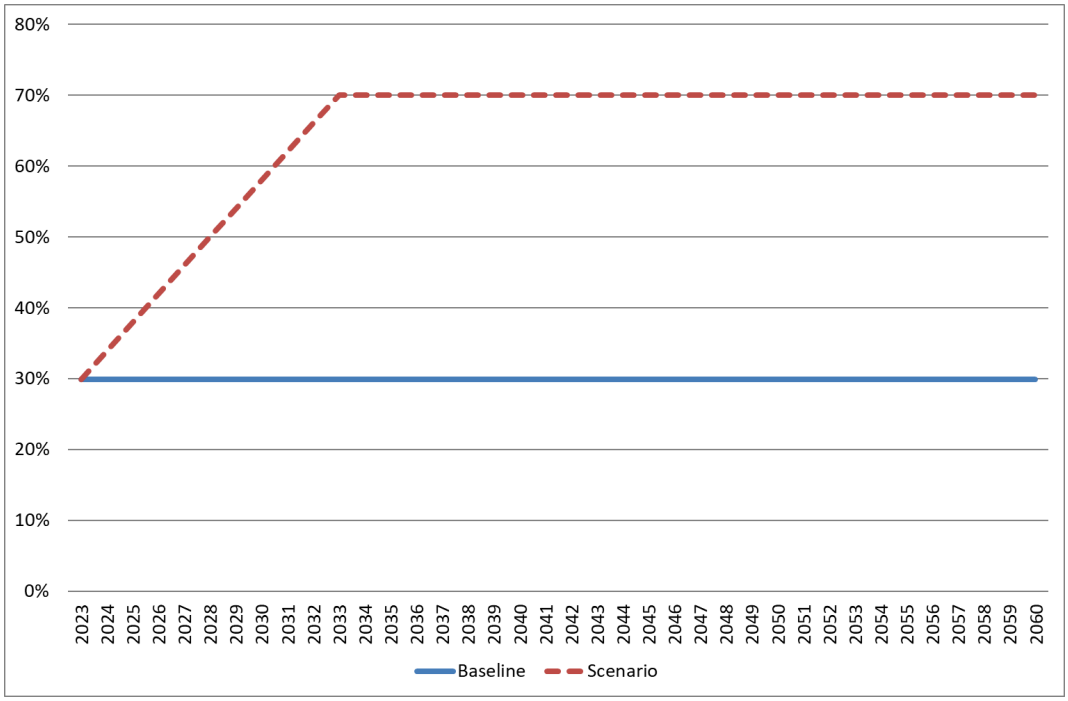
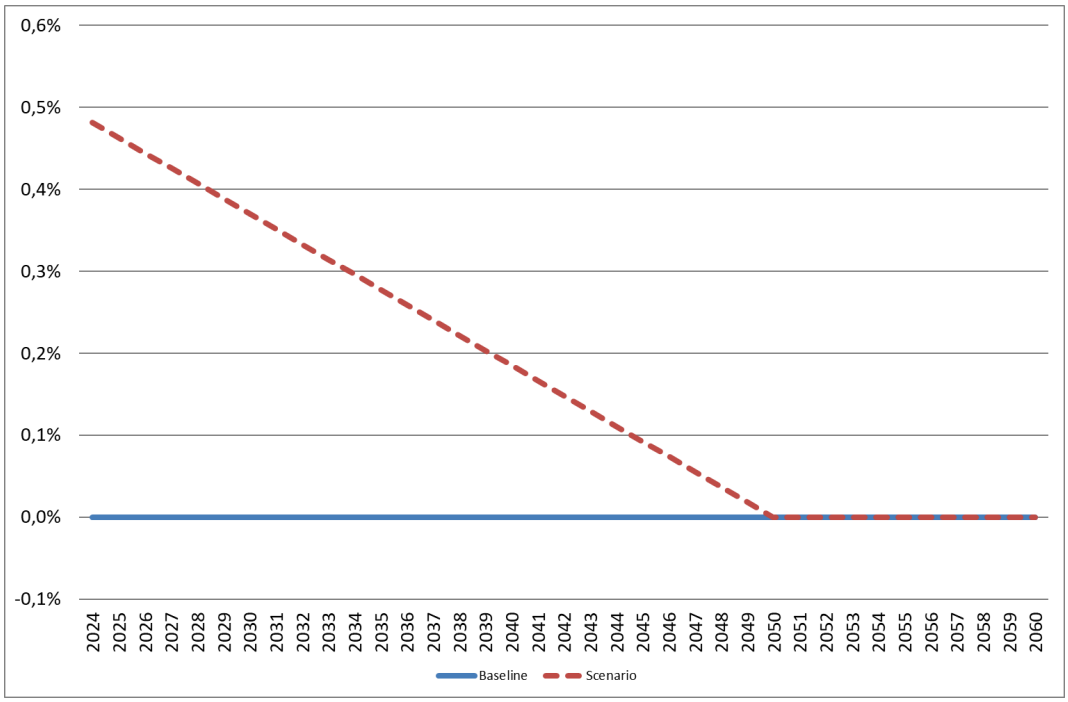


Figure 11: Shared prosperity premium



Note: Income growth of the bottom 40% (relative to the mean)

Figure 10 and 11 represent the effect of the shocks applied to the female participation in the workforce and the Shared Prosperity premium, respectively. The subsequent graphical representations will illustrate the outcomes on the GDP per capita growth rate, the income Gini coefficient, the income share of the bottom 40%, and the absolute poverty levels.

Figure 12: GDP per capita growth rate

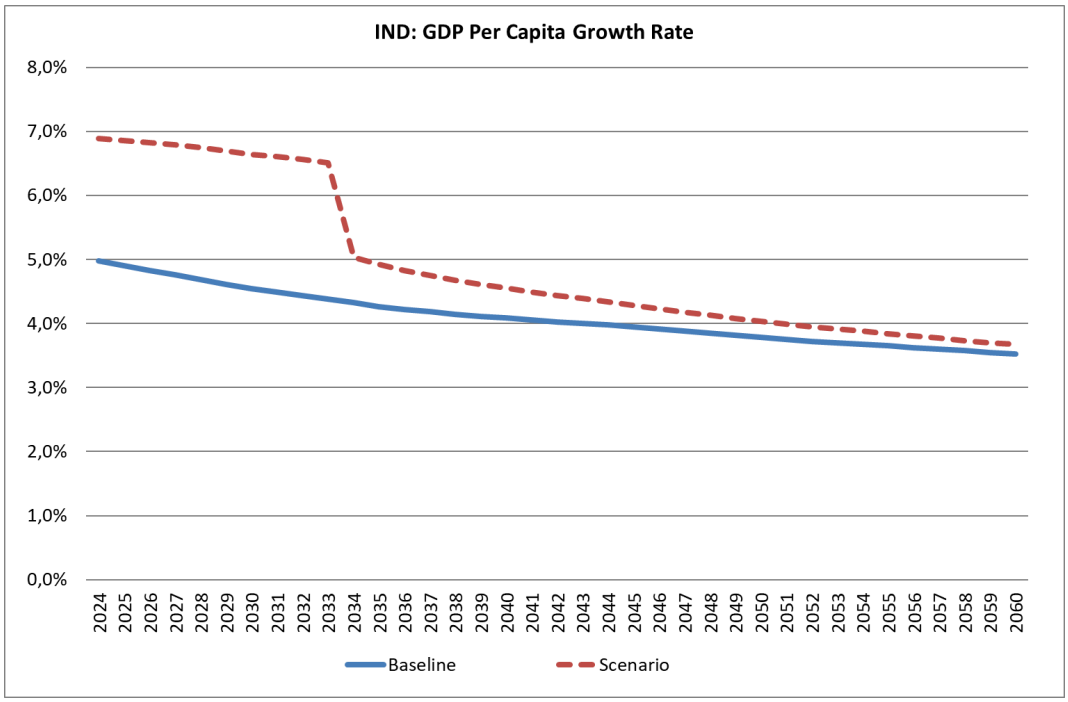


Figure 13: Gini coefficient of income

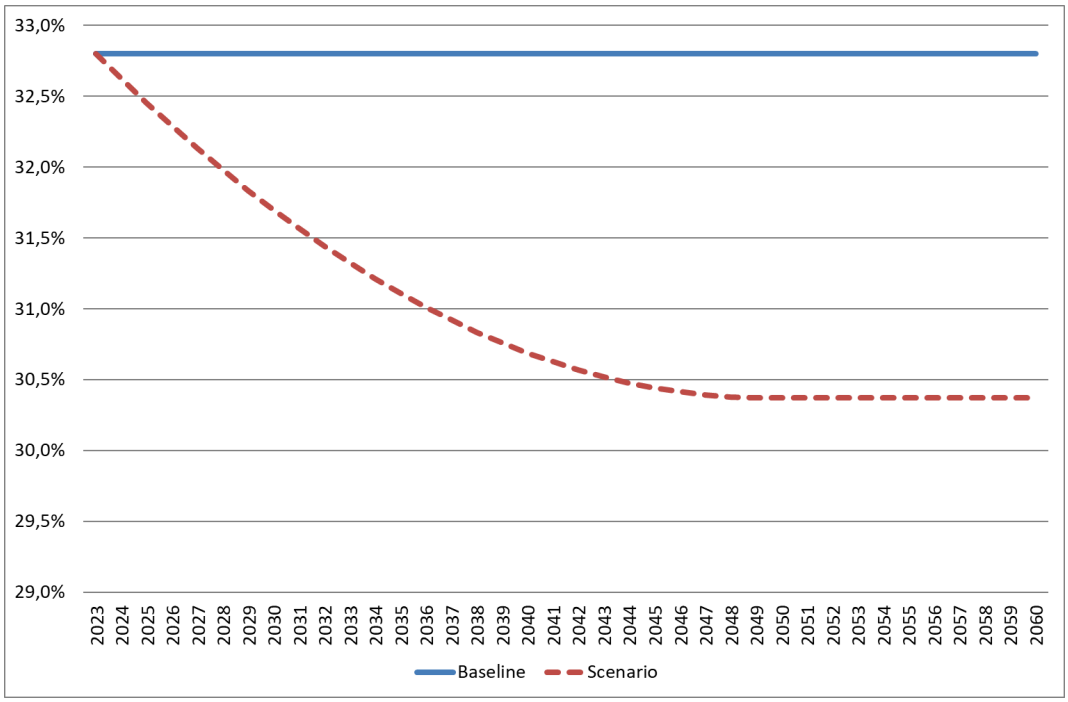


Figure 14: Income Share of bottom 40% of population

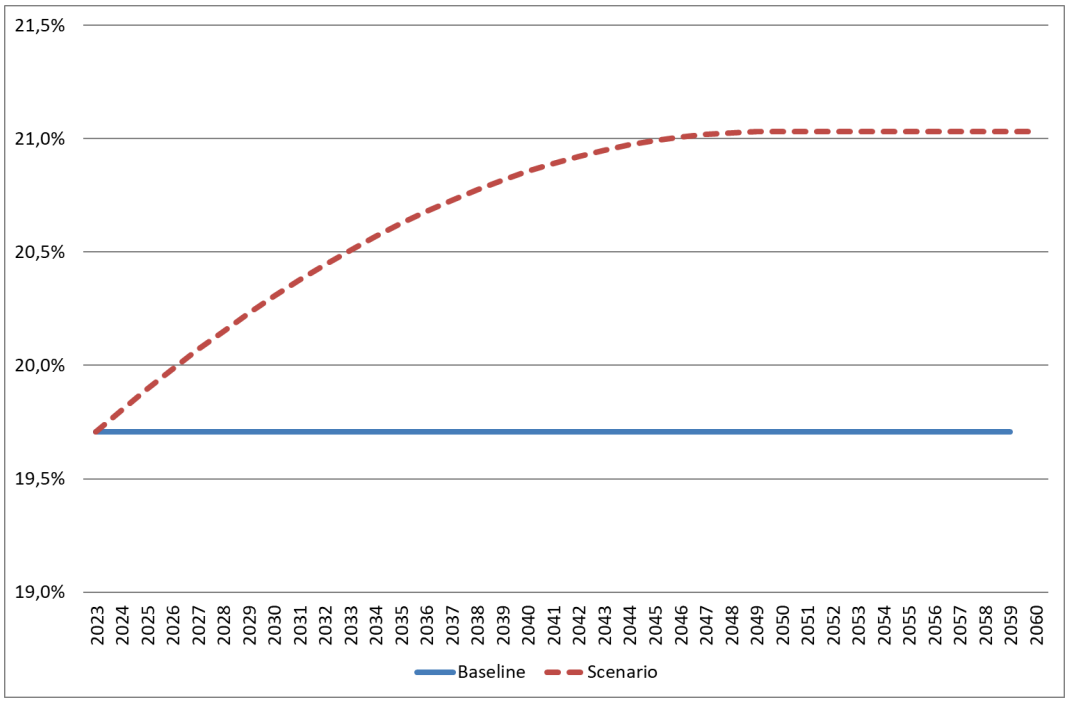
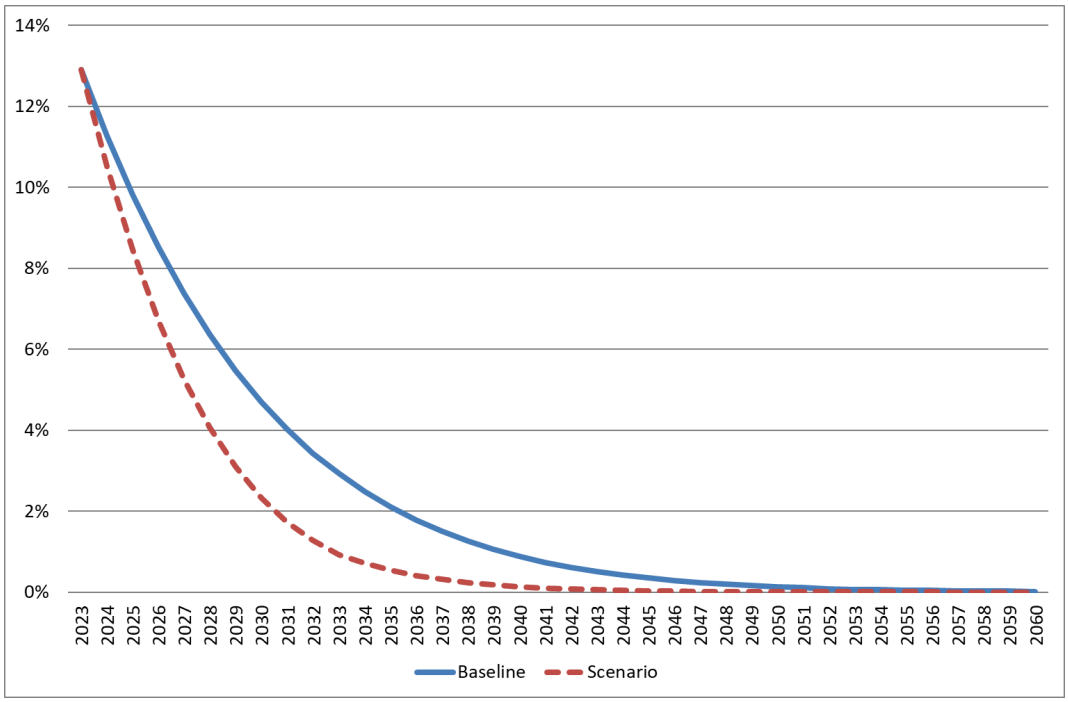


Figure 15: Poverty headcount rate



The results show that for the first 10 years of the simulation, the combination of the two shocks applied to the model yielded a higher GDP per capita growth rate by 2 percentage points above the baseline (Figure 12). This primarily is due to the very large increase of the workforce with immediate effects. In fact, the labor force grows for the first 10 years by about 3 percentage points above the baseline. In the subsequent years, once the labor force stops growing beyond the baseline due to the stabilization of the female participation levels at the target of 70%, GDP per capita growth slows down. The scenario levels of growth draw nearer to the baseline levels, but remain marginally higher for the duration of the simulation.

On the other hand the shock applied to the SPP affects the income distribution resulting in a gradual decrease of more than two percentage points by the year 2050, after which the Gini ceases to diminish (Figure 13). Correspondingly, the income share of the bottom 40% gradually increases from 19.7% to 21% within that same time frame (Figure 14).

Finally, the results of the combination of the applied shocks to the absolute poverty headcount, is a steeper decline with respect to the baseline. Interestingly, the simulated policy experiment allows to eradicate absolute poverty by the year 2040, which is 10 years prior to the baseline projection.

5. Concluding remarks

In this work I focused on the relationship among economic growth, poverty, and inequality in India to understand whether “a rising tide lifts all boats”. In attempting to examine the impact of India's economic development on poverty and inequality, it is clear that the country's rapid economic growth has led to significant progress in several areas, particularly in absolute poverty levels. However, this growth has not been evenly distributed, and the benefits have often not reached marginalized and rural populations.

While overall poverty levels have declined, inequality has increased, with a widening gap between rural and urban populations, as well as social classes such as caste and gender.

I conducted a policy experiment using the World Bank's application of the Long Term Growth Model to evaluate India's economic policies and found that increasing female labor force participation, along with a focus on raising the incomes of the bottom 40% of income earners, is critical to promoting more inclusive growth. The Solow growth model, traditionally used to examine how capital accumulation, labor, and technological progress contribute to long-run economic performance, was adapted to include gender dynamics and income distribution.

The experiment showed that expanding women's participation in the labor force would increase the overall supply of labor, thereby boosting economic activity. As more women enter the labor force, it would lead to a more efficient use of human capital and contribute to a larger and more diverse economic base. In addition, the model showed that improving the income levels of the bottom 40% of earners would not only raise the living standards of the most vulnerable groups, but also reduce income inequality, creating a more equitable economy. Together, these changes would support more inclusive economic growth, helping to ensure that the benefits of growth are shared across income groups, especially the poorest.

However, while the Solow long-run growth model has provided valuable insights into the potential long-term benefits of these policy changes, it has several limitations when applied to making projections about a nation's economy. For example, the LGTM relies on aggregate data that may not fully reflect the complexities of the labor market. In countries like India, where a significant proportion of the workforce is employed informally or in low-wage sectors, the model may not capture the full impact of increased female participation on overall economic growth. Data on informal work, which is often underreported, is critical to understanding the true extent of female labor force participation. At the same time, an aggregate model as the LGTM is not designed to capture all the aspects of a large federal country composed of different states with their own

economic specialization and level of development, characterized by geographical concentration of poverty and lack of convergence across regions.

Furthermore, per capita GDP statistics may not capture the whole complexity of economic well being. As Stiglitz and Sen clearly state, people care about health, fairness, economic security, which are not fully captured into GDP. Policies such as those I tried to implement in the simulated experiment go in the direction of lowering gender segregation and achieving a more equitable distribution of income, and thereby a stronger economy.

Overall it can be concluded that in India, as in other large developing countries, fast economic growth has contributed to a progressive reduction in absolute poverty levels. At the same time, though, the number of people living on less than $6.85 a day – the poverty threshold for middle-income economies – has increased. This is in part due to people exiting from harsher poverty levels, in part to rapid population growth. Therefore, in other words, the fight against poverty is far from over. Furthermore, according to some estimates, after the period between 1951 and 1980, which saw a narrowing of the income gap between the lowest and highest earners, the trend has subsequently reversed. Since the 1980s, the income share of the top 1% has risen to 22%, while the income share of the bottom 50% has fallen to 14.7% (John 2020). The purpose of the experiment presented in this work was to show that policies can be implemented to achieve simultaneous reduction in absolute and relative poverty.

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