An Empirical Investigation of Socio-economic Inequality and Intergenerational Mobility in India

THESIS

Submitted in partial fulfilment
of the requirements for the degree of
DOCTOR OF PHILOSOPHY

by

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CERTIFICATE

This is to certify that the thesis entitled **An Empirical Investigation of Socio-economic Inequality and Intergenerational Mobility in India** submitted by **Anuradha Singh** ID No **2016PHXF0408P** for the award of PhD of the Institute embodies original work done by her under my supervision.

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Acknowledgments

I would like to express my sincere gratitude to my supervisor Dr. Krishna Muniyoor for his valuable guidance and support in my research work, without whom it would not have been possible to complete the thesis. He was always available whenever I needed his advice, and I am grateful for his patience, positivity, and encouragement.

I want to extend my gratitude to Prof. Souvik Bhattacharyya, Vice Chancellor, BITS Pilani, Prof. Sudhirkumar Barai, Director, BITS Pilani, Prof. Sanjay Kumar Verma, Dean and Prof Jitendra Panwar, Associate Dean, Prof. Arun Kumar Giri, HoD, and Dr. Geetilaxmi Mohapatra, DRC convenor, Department of Economics and Finance.

I would like to thank Prof. Antonio Forcina, Department of Economics, Perugia, Italy for his valuable feedback, suggestion and support. I am grateful to Dr. Neha Prasad, Research Associate, Dr. Ram Dayal Munda Tribal Welfare Research Institute and Dr. Rajan Pandey and Dr. Byomakesh Debata, Assistant Professor, BITS Pilani. I am extremely grateful to my DAC members: Dr. Geetilaxmi Mohapatra and Dr. Rahul Arora, for their valuable comments and suggestions.

I want to extend my sincere gratitude to all the faculty members of the Department of Economics and Finance for their help and interest in my work. I also thank all its supporting staff for their cooperation and help.

Finally, I would like to express my deepest gratitude for the love, affection and constant support and inspiration throughout my academic life to my late grandmother Shri Dhanwanti Devi and my parents- Mr. Jang Bahadur Singh and Mrs. Usha Singh, and my brother Mr. Ashish Singh and sister-in-law Mrs. Sarita Singh.

I would again like to thank all those who directly or indirectly helped in writing this thesis.

Anuradha Singh

Abstract

In a globalized and market-oriented economy, economic growth is the most commonly used yardstick to assess the overall performance of the economy. A steady rise in economic growth is essential and plays a vital role in the overall socio-economic well-being, particularly in the context of developing countries. From a policy perspective, high economic growth is justified only when the benefits of economic growth are spread over among all sections of society equally. If an increase in economic growth is coupled with a concomitant increase in inequality, it becomes a matter of grave concern.

Among developing economies, the case of India is intriguing. Despite India's average annual growth rate of 7 per cent during the last two decades, there has been a steady increase in economic inequality in the country. In other words, the Indian economy has witnessed 'an impressive economic growth' coupled with 'an extraordinary failure' to deal with the millions of people who are suffering from poverty, hunger, malnutrition, and undernutrition. This is not a unique phenomenon. It is common to observe that a simultaneous increase in economic growth and inequality across several developing economies. There are two sources of inequality. First, workers in a market-oriented economy are paid according to their marginal productivity. An economy with efficient incentive system will always reward hard-working persons in the labour market. Therefore, inequality is a system-generated outcome. Second, inequality is an outcome of inequality of opportunities, which, in turn, result from the disparity in educational access, health facilities, technology and so on. Some of these dimensions of inequality motivated to carry out an empirical investigation in the field, particularly in the context of India.

The rise in income inequality coupled with an increase in GDP per capita is attributed to the degree of intergenerational mobility (IGM). Intergenerational mobility is one of the dimensions of social mobility that measures the extent to which a child's income is dependent on the parent's income while social mobility is an overall indicator for equality of opportunity in a society. The main purpose of this thesis is to examine not only IGM but also the relationship between income inequality and IGM in India. In addition, it examines the association of different kinds of mobility. The association between education and occupation mobility measures the role of social background and education attainment in generating occupation mobility in the country. Subsequently, it also ranks different regions of the country

according to their overall mobility score through the creation of Social Mobility Index (SMI). It is an important tool that focuses on bringing long-term equality by identifying priority policy areas in the country.

Using the unit-level records of NSS data, the present study attempts to examine relative and absolute mobility by way of segregating generations into social groups and income classes. The originality of the thesis lies in assessing the IGM using different approaches, which will contribute to the existing literature. We conclude that the country has low levels of socio-economic mobility and high-income inequality which is no longer associated with a particular social group in India. Moreover, the relationship between income inequality and intergenerational mobility is both negative and positive. By applying an extended version of the RC association model to 68th round (2011-12) of the Employment and Unemployment Survey by the NSS, we found that the role of education is not important in generating occupation mobility in India, while social background plays a critical role in determining one's occupation.

This study successfully highlights the strong intergenerational occupation immobility in the country and also the need to focus on quality of education. In this regard, further studies are needed to uncover other crucial factors limiting the growth of individuals in the country. Next, we used a multivariate statistical approach to construct a social mobility index at the regional level by considering several social and economic variables. Our findings show that while the Union Territory of Delhi ranks first in the social mobility index, Chhattisgarh has the least social mobility. From a policy perspective, a comprehensive examination of the determinants of the social mobility index shows that health, education access, and quality and equity of education are of great importance in improving social mobility in the country. Considering India's potential economic growth resulting from its 'demographic dividend' and improved access to global markets and technology, increasing social mobility through facilitating equal opportunities in the society is key to achieve inclusive growth.

Keywords

Income inequality, Intergenerational income mobility, Social groups, Inclusive growth, Social mobility, Equality of opportunity, Social Background, RC association models, Economic Inequality, Economic Growth.

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List of Abbreviations

CSO	Central Statistical Organization
EUS	Employment and Unemployment Surveys
GC	Gini Coefficient
GDP	Gross Domestic Product
GGC	Great Gatsby Curve
GSMI	Global Social Mobility Index
HDI	Human Development Index
IGE	Intergenerational Elasticity
IGEE	Intergenerational Earning Elasticity
IGIE	Intergenerational Income Elasticity
IGIM	Intergenerational Income Mobility
IGM	Intergenerational Mobility
IHDS	Indian Human Development Survey
LFPR	Labour force Participation Rate
MDM	Mid-day Meal
MPCE	Monthly Per Capita Expenditure
NES	National Election Study
NITI	National Institution for Transforming India
NSS	National Sample Survey
PCA	Principal Component Analysis
PSID	Panel Study of Income Dynamics
SC	Scheduled Caste
SEQI	School Education Quality Index
SMI	Social Mobility Index
SPI	Social Progress Index
SSA	Sarva Shiksha Abhiyan
ST	Scheduled Tribe
UK	United Kingdom
UR	Unemployment Rate
USA	Unites States of America
WPR	Worker Population Ratio

CHAPTER 1

Introduction

"*If I were giving a young man advice as to how he might succeed in life, I would say to him, pick a good father and mother, and begin life in Ohio."* [Wilbur Wright, 1910]

1.1 Background

In a globalized and market-oriented economy, economic growth is the most commonly used yardstick to assess the overall performance of the economy. A steady rise in economic growth is crucial and plays a vital role in the overall socio-economic well-being, particularly in the context of developing countries. From a policy perspective, high economic growth is justified only when the benefits of economic growth are spread over among all sections of society equally (Dreze & Sen, 2012; Chancel & Piketty, 2019). If an increase in economic growth is coupled with a concomitant increase in inequality, it becomes a matter of grave concern.

Among developing economies, the case of India is intriguing. As shown by Dreze and Sen (2012), Chancel and Piketty (2019), despite India's average annual growth rate of 7 per cent during the last two decades, there has been a steady increase in economic inequality in the country. In other words, the Indian economy has witnessed 'an impressive economic growth' coupled with 'an extraordinary failure' to deal with the millions of people who are suffering from poverty, hunger, malnutrition, and undernutrition. This is not a unique phenomenon. It is common to observe that a simultaneous increase in economic growth and inequality across several developing economies. Taking insights from Emran and Shilpi (2015), there are two sources of inequality. First, workers in a market-oriented economy are paid according to their marginal productivity. An efficient incentive system rewards hard-working persons in the labour market. Therefore, inequality is a system-generated outcome. Second, inequality is an outcome of inequality of opportunities, which, in turn, result from the disparity in educational access, health facilities, technology and so on. Some of these dimensions of inequality motivated us to conduct an empirical investigation in the field, particularly in the context of India.

Given the broad context, it is important to highlight the stylized facts of inequality. As hypothesized by Kuznets (1955), inequality tends to increase initially with an increase in economic growth and declines subsequently beyond a turning point. This relationship between inequality and per capita income is popularly termed 'The Kuznets Curve'. Since the publication of Kuznet's paper, many studies have attempted to test the nexus between economic growth and inequality in the context of developing countries. Interestingly, the results are largely inconclusive (Lindert & Williamson, 1985; Anand & Kanbur, 1993; Deininger & Squire, 1996). On the one hand, the inconclusive findings, and, on the other hand, the paradox between the poor standard of living and a steady increase in economic growth receive wide scholarly attention on the different aspects of inequality.

Economists and sociologists attempt to provide several dimensions for the coexistence between high-income inequality and rapid economic growth, measured in terms of GDP per capita. Let us now consider the second source of inequality, i.e., the inequality of opportunities. Conceptually, it is important to distinguish between inequality of opportunities and inequality of outcomes. It stands to reason that the inequality of outcomes is a consequence of two sources. First, certain features are beyond the control of individuals. For instance, the features such as the fathers' social and economic background are not under the control of the individuals. Second, certain factors are under the control of the individuals such as effort and commitment to complete the task. Hence, instead of focusing on the equality of outcome, it is important to zero in on the equality of opportunity. Even scholars agree that equalizing 'opportunities' instead of outcomes have far-reaching implications for economic growth and social welfare.

As suggested by Aiyar and Ebeke (2020), the level of intergenerational persistency could be one of the reasons why high economic growth coexists with rising income inequality. When economists talk about intergenerational mobility, they imply that whether there is any persistence between parents' and children's outcomes. Put simply, children of rich parents are more likely to be successful in their life than children of poor parents. The children of poor parents tend to become poor due to several reasons. One of the most cited reasons is that parents' earnings influence the earnings of their children. As noted by Solon (1999), and Black and Devereux (2010), the studies on intergenerational earnings mobility traces the earnings inherited from one generation to the next. As long as the social and economic status transfer

from one generation to the next generation, it is reasonable to argue that economic inequality might continue to exist.

The notion of intergenerational mobility (IGM) is related to equality of opportunities. By equality of opportunities, all individuals are given the same opportunities, irrespective of their social background, while attaining higher social positions. When we say that irrespective of their social background, we don't consider the social status of previous generations, their earnings and wealth and so on. A careful examination of the extant literature suggests that it has three inherent dimensions. First, by way of paving the way for efficient utilization of available resources, it leads to increase overall efficiency and labour productivity in the economy; second, there is a consensus among the policymakers that the equality of opportunity is considered to be more pragmatic than equality of outcomes among citizens, which is an appropriate outcome under the conventional wisdom (Corak, 2020). Third, it brings about fostering the role of human capital investment in society that can be made accessible to all sections of society through public-funded institutions and appropriate educational policies such as the Right of Children to Free and Compulsory Education Act, 2009.

In the economics literature, IGM has widely been used as an indicator of assessing the gap between parents and children's achievements. In other words, it measures the ability of two generations of a family to improve their socio-economic outcomes. Strictly speaking, economists and social scientists have measured the different types of mobility in terms of income, occupation and education. Intergenerational income mobility (IGIM) analyses the growth of household units in terms of income over generations. Less impressive is that if the source of economic resources is highly concentrated in certain pockets of the society, there will be immobility of income, which is likely to increase the degree of income inequality and thereby lead to more unequal distribution of resources. Therefore, what is interesting is that low mobility is considered a major reason and effect of increasing inequalities. Therefore, it is likely to have an adverse effect on the social structure and the core objective of achieving an inclusive society (Corak, 2013b). What is significant is that the equality of opportunities is thought to facilitate more social mobility, whereas the persistence of income inequality threatens social mobility.

The remaining part of this chapter is structured as follows. Section 2 provides key issues related to intergenerational mobility, with special reference to developing economies. Section 3 lays out the rationale for undertaking this study. Section 4 presents the objectives of the study, followed by the significance of the study in section 5. The last section gives the outline of the remaining chapters of the thesis.

1.2 Intergenerational mobility: Exploring the relationship

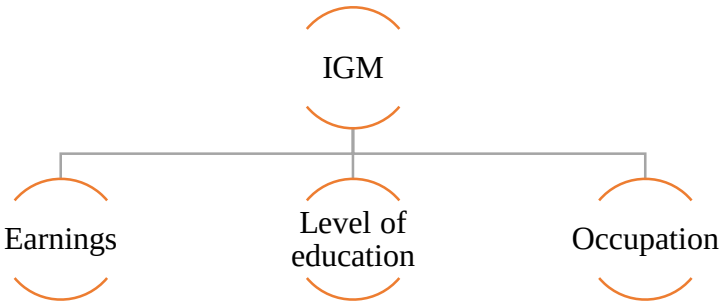
It is generally agreed by economists and sociologists that the basic fabric of an ideal society should be based on the principle of equality of opportunity. It states that the socio-economic outcomes in society is mainly determined by opportunities available in the market and not by the socio-economic status of previous generations. The deviation from the equality of opportunity gives rise to widening income inequality. The measurement of intergenerational mobility provides vital insights into how parents' socio-economic status help their children's achievements. While economists are more concerned about the magnitude of income transfer from one generation to another, that is to say, the intergenerational earning mobility, sociologists attempt to investigate the status of intergenerational mobility in terms of educational attainment and occupational structure of both fathers and children. As mentioned earlier, a high degree of association between fathers and their children's earnings shows a low degree of social mobility in society. In other words, because of the vicious cycle of social mobility, children with poor family background tends to become poor only.

Like investment in capital goods, educational attainment is key to economic development. As a major source of human capital formation, the attainment of education is likely to improve social mobility. A strong relationship between investment in education and earnings is thought to be the primary factor driving the investment in human capital. Higher the level of education, the higher the returns on education. Unfortunately, the investment in education varies significantly depending on the socio-economic status of the population. In reality, we see that children of different economic positions attend different schools, which offer different qualities of education to their students. While the majority of rich students attend international and private schools, poor children usually go to publicly funded schools and universities.

When parents are not able to offer high-quality education to their children, the children continue to deprive of low-quality education. Education instead of acting as bridging the gap between poor and rich acts as a source of inequality. As a result of this, there exists a persistent form of inequality in the society, passing from one generation to the next generation, more precisely, from parents to their children. What is important for this research is to highlight the effects of education on intergenerational mobility. The impact of educational systems on intergenerational mobility has been explored much in the Indian context, highlighting that high returns to education limit the scope of social mobility. As illustrated in Figure 1.1, researchers have examined intergenerational mobility in three different angles: earnings, education, and occupation.

Figure 1.1

Three dimensions of intergenerational mobility: earnings, education, and occupation



Source: Author's own elaboration

1.2.1 Relationship between inequality and intergenerational mobility

The degree of intergenerational mobility depends on several macro and microeconomic factors. Among the macroeconomic factors, one of the most notable factors influencing intergenerational mobility is income inequality. More recently, it has been observed that income inequality in developing economies has been rising significantly in line with the expansion of economic activities. One of the potential impacts of rising inequality is that it is likely to reduce opportunities available for future generations. In other words, as mentioned, it is viewed that a rise in income inequality tends to reduce the scope of intergenerational mobility. It is of great concern that the existence of widespread inequality may hamper the potential growth and accelerate further inequality.

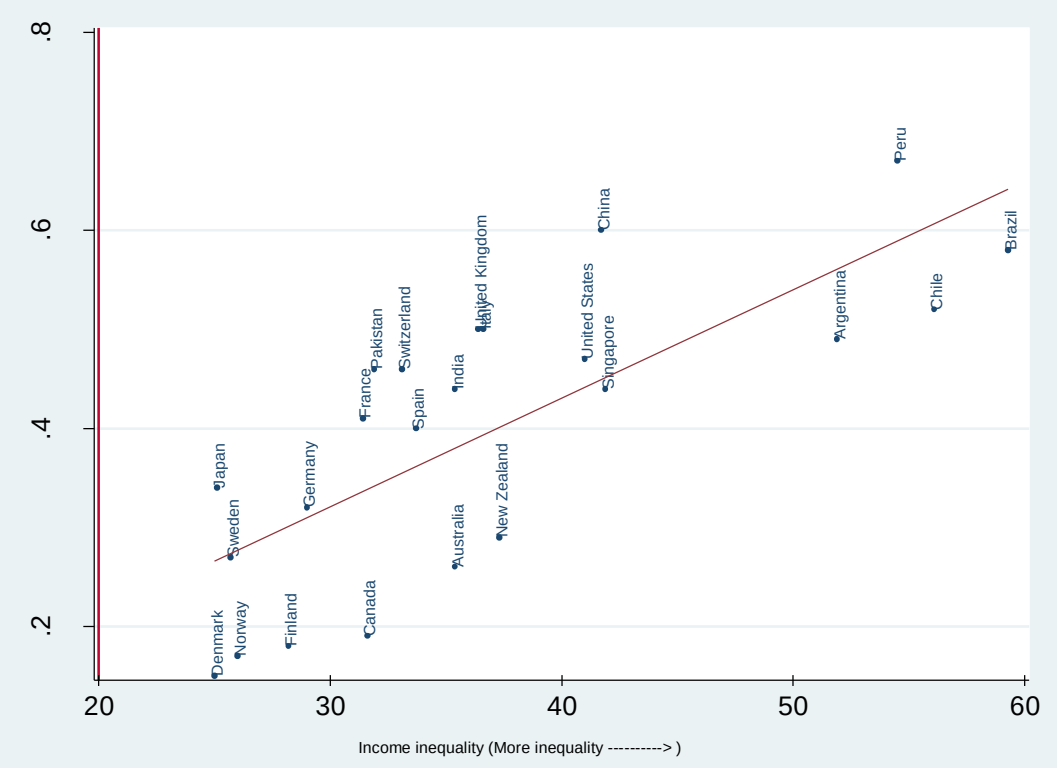
Interestingly, the relationship between inequality and intergenerational mobility has extensively been debated in the economics literature (Krueger, 2012; Corak, 2013a). A country with persistent economic inequality is likely to have low levels of intergenerational mobility. The trade-off between inequality and social mobility is commonly illustrated in the Great Gatsby Curve (GGC). The GGC plots income inequality, which is represented by the Gini Coefficient[1] (GC), on the one hand, and intergenerational income elasticity (IGIE), which is, as mentioned in the introductory section, widely used as a measure of social mobility. It is important to note that Intergenerational income elasticity measures the elasticity between paternal income and a son's adult income (Corak, 2013a).

Put it in a slightly simplified way, the intergenerational earning elasticity represents the ability of a generation to move up the ladder as compared to his/her previous generation. While income inequality is measured on the horizontal axis, and intergenerational income or earning elasticity is on the vertical axis. Usually, the GGC curve is an upward-sloping line, indicating that greater the inequality lesser social mobility. As illustrated in Figure 1.2, the countries such as Finland, Denmark, and Norway report less than 20 per cent of parental advantages are passed on to an adult son. The most advanced economies such as the United Kingdom (UK), Unites States of America (USA), and Italy report that about 50 per cent of the fathers' economic status is transmitted to the son's generation. The economic outcome is that success breeds success and there exists persistent inequality in the society.

[1] The Gini coefficient ranges between 0 and 1, indicating that inequality widens when Gini coefficient moving from 0 to 1. If Gini coefficient is 0, it implies that there is a completely equal distribution of income. If the value of Gini coefficient is 1, it refers that there is an extreme case of inequality. In other words, one household holds all the income of the country's population, and all the remaining households don't have income at all.

Figure 1.2

Relationship between income inequality and intergenerational income elasticity



Source: Compiled by author from Corak 2013

The approach to measure intergenerational mobility is a challenging and formidable exercise in the context of developing economies, particularly India. Keeping this aspect in mind, this section examines the estimation procedure and major issues in the estimation of intergenerational income elasticity. In the economics literature, we found that regression-to-mean model, transition matrix, and a logistic regression model are commonly used to measure the intergenerational income elasticity (Lillard & Kilburn, 1995; Sato & Yoshida, 2008; Moonen & Brakel, 2011; Dang, 2015; Chu & Lin, 2020). In the field of economics, income elasticity is used to measure intergenerational mobility. Intergenerational elasticity (IGE) is derived by regressing[2] sons' incomes on fathers' incomes.

[2] 'Regression towards Mediocrity in Hereditary Stature' is one of the classic papers written by Francis Galton. Galton attempts to trace the relationship between the heights of children and heights of their parents. From the empirical experiments, it is found that short parents tend to have shorter children and tall parents tend to have taller children. Interestingly, the transmission of height across generations does not follow a definite pattern. If heights of parents increased by an inch from average, the children gain only two-thirds of the parents increase.

From an empirical point of view, the economic status is positively associated with their fathers' economic status. In other words, the economic status of parents positively influences the earning capacity of children. The logistic regression model is the dependent variable model, comprising two or more categories of the dependent variable and explanatory variables. The typical categories of dependent variables are a person who is born poor and a person who is born rich. The explanatory variables account for whether a person who is born poor is likely to be poor or not as compared to a rich person.

There are several factors such as labour market reforms, cross-border trade, institutional quality, and advancement in technology that influence the change in average earnings across generations. And ε is the error term, encompassing all other factors, except father earnings, associated with the son's earnings. Going by empirical evidence, the value of β ranges between 0and 1. A value close to zero indicates a very mobile society in which the economic status of children is influenced by their parental background. A high-value β indicates the high persistence of the economic status is being transferred to the children's generation. In other words, the economic position of a child is largely a reflection of his or her parent's economic status. More aptly, a value of 1 suggests that 100 per cent of the father's economic position is transmitted to the son's generation. While the former is the case of perfect mobility, the latter is the case of perfect immobility (Table 1.1 and Table 1.2).

Finally, it is concluded that 'regression towards mediocrity' in height. Eventually, the heights would come closer to equality.

Table 1.1

Estimates of intergenerational income elasticity for developed countries

Country	IGIE
United Kingdom	0.5
United States	0.47
Italy	0.5
Switzerland	0.46
Singapore	0.44
France	0.41
Spain	0.4
Japan	0.34
Germany	0.32
New Zealand	0.29
Sweden	0.27
Australia	0.26
Canada	0.19
Finland	0.18
Norway	0.17
Denmark	0.15

Source: *compiled by the author from Corak (2013a) and other studies*

Table 1.2

Estimates of intergenerational income elasticity for developing countries

Country	IGIE
Brazil	0.58
Peru	0.67
Chile	0.52
China	0.6
Argentina	0.49
Pakistan	0.46
India	0.44
Bangladesh	0.77
Malaysia	0.26

Source: *compiled by the author from Corak (2013a) and other studies*

From the above description, it is clear that the estimation of IGIE, though simple, is not an easy task. It is fraught with several measurement issues. It is quite clear that there are several measurement errors in the estimation of IGIE. We highlight three important issues in this chapter. First, the precise measurement of intergenerational earning elasticity (IGEE) requires

data on the lifetime earnings of both fathers and their sons. Typically, the earnings of both fathers and sons vary significantly over their life cycle. Therefore, data on earnings ranging from 10 to 15 years would be quite appropriate and suitable for modelling the IGEE. If we have several years of earnings for both fathers and sons, the average earnings over the years would be quite appropriate to permanent income.

On the empirical front, it was found that IGEE ranges substantially depending on the years of earnings we consider. For instance, the estimate of IGEE ranges from .25 to 0.6, when we take average earnings of fathers two years earnings and average earnings of 16 years, respectively (Mazumder, 2015). It indicates that age-earnings distribution is the key factor influencing the IGIE (Jenkins 1987, Mazumder 2015; Black and Devereux 2010). Economists have suggested that the life-cycle difference can be resolved by adding fathers and sons' squared age in the model.

Second, it is found that negative or zero incomes are generally excluded from the analysis. In other words, the cases of zero mobility or downward mobility are not taken into consideration. Third, the equation for estimating IGIE generally specify the father-son earnings, excluding mother and daughter from the analysis. Therefore, there is an important question here, why father-son earnings are considered for analysis. In India, it is the case that daughters generally shift to souse's house after marriage.

Moreover, the work participation rate of Indian women is the lowest in the world. Fourth, as noted by Mohammed (2019), a significant proportion of the workforce in developing countries are engaged in the category of self-employment, primarily in the field of the farm sector. Essentially, because of the nature of work carried out by the self-employed, it is difficult to distinguish between wages and salaries from profit for the self-employed. This is a common problem observed in many developing countries.

1.2.2 Intergenerational Educational Mobility

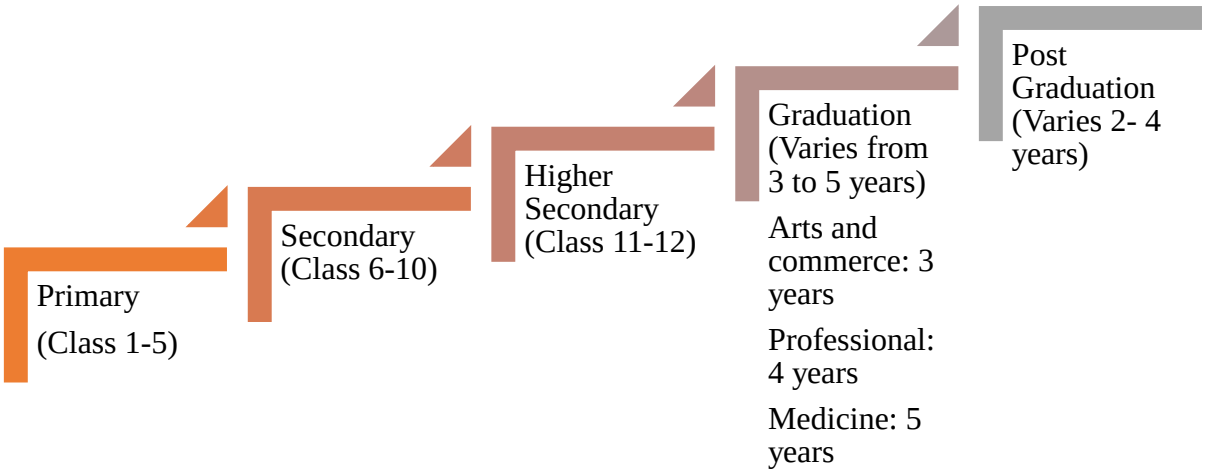
1.2.2.1 The present system of education in India

To begin with, it is appropriate to present India's education system at present. It consists of several levels of education, starting from primary education to post-graduation. In each level

of education, the years of schooling vary. After completing post-graduation, a student opts for doctoral research in the designated higher institutions. At present, the PhD degree, the highest degree in India, is mandatory for entry-level teaching jobs in many higher institutions in the country. It should be noted that the higher the levels of education, the higher the cost of education. In other words, the cost of education varies proportionally to the level of education (Figure 1.3).

Figure 1.3

India's present education system



***Source**: Compiled by author from various literature*

1.2.2.2 Theory of human capital

Harrod (1939) and Domar (1946) set out the debate on economic growth theory during the 1940s. According to them, the economic growth of a country is composed of three macroeconomic components: saving rate, capital productivity, and capital depreciation. Saving is important for investment. Capital productivity and capital depreciation are part of the investment in capital goods. Thus, by taking insights from Keynes' thought of economic growth, the models emphasise heavy investment in capital goods. These models give vital insights into the long run problems with the short-run tools.

One of the important assumptions about the growth model proposed by Harrod & Domar is that there are constant returns to scale. In addition, it is also based on a fixed input-

output rate. The assumption of the fixed coefficient of capital and labour in the production function does not take into account the role of technical progress. One of the salient features of Solow's model (1956, 1957) is that the assumption of a fixed input ratio is relaxed. In other words, the fixed input-output ratio is no longer assumed in the production process. Solow's model (1956), which laid the foundation for the neo-classical school of thought, assumed that the capital-labour ratio is endogenous. In economics parlance, the production function proposed by Solow is smooth isoquant, whereas the growth model of Harrod & Domar shows 90^0 isoquant. Solow's (1957) estimation of national output based on capital and labour shows that the changes in output are not fully explained by the changes in capital and labour. It is found that the residual accounts for a share in the output, which is popularly termed as 'Solow residual'.

Later, the unexplained portion in the national output has attracted much attention among economists. An extension of the neo-classical was imminent to fathom out the technological change. According to Romer (1990), technological change is an endogenous factor. Romer argues that knowledge could be one of the factors of production. The fact is that endogenous growth theorists popularized the role of human capital in economic growth. The basic crux of the human capital theory is that, like in investment in physical capital, investment in education, health, and training is equally important. The term human capital is a multi-dimensional concept, consisting of variables such as education, earnings from work, work experience, health and so on.

1.2.2.3 Sources of human capital

According to Schultz (1961), there are five sources of human capital: Include health facilities and services, on the job training, education level, study program for adults, and migration. According to Becker (1962), there are four sources of human capital: on-the-job training, schooling, medical care, searching for information, and migration. An investment in these sources of human capital not only enhances the skills and knowledge of workers, but also the overall well-being of the workers. Further, Schultz's (1961) pointed out that the sources of human capital, except education, are quite relevant to account for human capital. In sum, the basic assumption of the human capital theory is that the higher the level of schooling, the higher the returns on education. An interesting insight that can be taken from the above discussion is

that inequality in educational attainment results in inequality in the distribution of earnings and distribution.

1.2.2.4 Significance of human capital investment

In this section, we present the significance of human capital investment and its role in economic development, particularly social mobility. Investment in education is widely considered a major factor for human development. Like physical capital formation, education is a source of human capital formation. The investment in education foster better earnings in the labour market and thereby facilitates social mobility. The major rationale for investment in education is the expectation of high future returns. Several studies have pointed out that there is a close relationship between investment in education and earnings (Psacharopoulos, 1972; Vila, 2005; Hanushek, 1996). It is agreed that the relationship between the level of educational attainment and the returns on education is positive. However, from a pragmatic point of view, the difference in the quality of education and dual labour market structure is likely to disrupt the wage earnings. Let us consider a simple example. Assume that s society consists of two groups: high-income groups and low-income groups. A child of a high-income group will be educated well in good quality educational institutions, whereas a child of a low-income group will be limited by resources. Therefore, the child of the low-income group will get education from public-funded or free education and will not be able to afford more things that may be associated with the quality of education.

It is argued that the quality of education is directly connected to the cost of education. Because of the persistent economic inequality in society, everyone can't afford high-quality education as it is directly associated with high investment. Therefore, it is reasonable to argue that an increase in the cost of education is likely to lead to a low level of human capital investment in the country. Similarly, the existence of high returns to education may incentivise people to invest more in education. It indicates that the inequality in demographics and labour markets outcomes will have a significant impact on the degree of the next generation's earnings. Taking insights from Solon (2004), a return to education may lead to a great deal of inequality in the society as the rich can afford high-quality education. Moreover, the support of well-educated parents to their children directly helps by facilitating contacts in the labour markets.

Similar to earnings mobility, the analysis of educational mobility focuses on educational outcomes by individuals. More aptly, the term educational mobility refers to the difference in educational outcomes between fathers' and sons. Because of the differences in the affordability, demographic and quality of education, the IGE likely differs across countries and income groups. Instead of applying the regression coefficient, it is quite appropriate to use the correlation coefficient to find the association between parents and children's educational outcomes. As mentioned, while reviewing the literature related to intergenerational mobility, we found that the linear estimator has certain serious shortcomings. One of the serious shortcomings is that it is not quite appropriate to draw subgroup analysis. As suggested by Hertz (2005), the key aspect of intergenerational education mobility is that it assesses an individual's achievements against other members of their group. For a detailed review of intergenerational educational mobility, the study by Black and Devereux (2010) is useful.

1.2.2.5 Scope of educational mobility in India

It can be seen from Table 1.2 that the literacy level in India varies significantly, from 61.8 per cent in Bihar to 94 per cent in Kerala in 2011. The literacy rate, which is generally estimated for the population of seven years and above, except for 1951, 1961 and 1971 Census, had increased from 18 per cent in 1951 to 73 per cent in 2011 in India. It should be noted that in 1951, 1961 and 1971 Census, we used the definition of population of five years and above. Even today, about one-fourth of the population in the country are not able to read and write. It is argued that the remarkable improvement in the national literacy rate has significant implications for social mobility in the country. Considering the state-wise literacy rates, though improvements, it is found that there is a glaring difference. This is primarily due to the difference in regional development and demographic characteristics. Similarly, a gender-wise analysis of literacy rates shows that the female literacy rates in many Indian states are much lower than male literacy rates (not shown in Table 1.3). As discussed above, the incidence of low levels of literacy and schooling, and more importantly, gender disparity in enrolments are likely to limit the scope of social mobility in the country.

Table 1.3

State-wise literacy rates from 1951 to 2011 (in per cent)

States/UTs	1951	1961	1971	1981	1991	2001	2011
Andhra Pradesh	na	21.2	24.6	35.7	44.1	60.5	67.0
Arunachal Pradesh	na	7.1	11.3	25.6	41.6	54.3	65.4
Assam	18.5	33.0	33.9	na	52.9	63.3	72.2
Bihar	13.5	22.0	23.2	32.3	37.5	47.0	61.8
Chhattisgarh	9.4	18.1	24.1	32.6	42.9	64.7	70.3
Gujarat	21.8	31.5	37.0	44.9	61.3	69.1	78.0
Haryana	na	na	25.7	37.1	55.9	67.9	75.6
Himachal Pradesh	na	na	na	na	63.9	76.5	82.8
Jammu & Kashmir	na	13.0	21.7	30.6	na	55.5	67.2
Jharkhand	12.9	21.1	23.9	35.0	41.4	53.6	66.4
Karnataka	na	29.8	36.8	46.2	56.0	66.6	75.4
Kerala	47.2	55.1	69.8	78.9	89.8	90.9	94.0
Madhya Pradesh	13.2	21.4	27.3	38.6	44.7	63.7	69.3
Maharashtra	27.9	35.1	45.8	57.2	64.9	76.9	82.3
Manipur[a]	12.6	36.0	38.5	49.7	59.9	70.5	76.9
Meghalaya	na	26.9	29.5	42.1	49.1	62.6	74.4
Mizoram	31.1	44.0	53.8	59.9	82.3	88.8	91.3
Nagaland	10.5	22.0	33.8	50.3	61.7	66.6	79.6
Odisha	15.8	21.7	26.2	33.6	49.1	63.1	72.9
Punjab	na	na	34.1	43.4	58.5	69.7	75.8
Rajasthan	8.5	18.1	22.6	30.1	38.6	60.4	66.1
Sikkim	na	na	17.7	34.1	56.9	68.8	81.4
Tamil Nadu	na	36.4	45.4	54.4	62.7	73.5	80.1
Tripura	na	20.2	31.0	50.1	60.4	73.2	87.2
Uttar Pradesh	12.0	20.9	24.0	32.7	40.7	56.3	67.7
Uttarakhand	18.9	18.1	33.3	46.1	57.8	71.6	78.8
West Bengal	24.6	34.5	38.9	48.7	57.7	68.6	76.3
A & N Islands	30.3	40.1	51.2	63.2	73.0	81.3	86.6

Chandigarh	na	na	70.4	74.8	77.8	81.9	86.0
D & N Haveli	na	na	18.1	32.9	40.7	57.6	76.2
Daman & Diu	na	na	na	na	71.2	78.2	87.1
Delhi	na	62.0	65.1	71.9	75.3	81.7	86.2
Goa	23.5	35.4	52.0	65.7	75.5	82.0	88.7
Lakshadweep	15.2	27.2	51.8	68.4	81.8	86.7	91.8
Puducherry	na	43.7	53.4	65.1	74.7	81.2	85.8
All India	**18.3**	**28.3**	**34.5**	**43.6**	**52.2**	**64.8**	**73.0**

Source: *Office of the Registrar General of India, Ministry of Home Affairs*

Over the past five decades, India's has made significant achievements in the educational sector. For instance, the number of educational institutions, both in the public and private sectors, has increased considerably. In the higher education sector, the increase in the number of institutions is phenomenal, with 20 universities in 1950 to 799 universities/university-level institutions in 2015-16 (Table 1.4). It consists of 45 central universities, 318 state universities, 185 private state universities, 129 universities which are classified as Deemed-to-be, 51 institutions of national importance, which comprise 16 IITs, 30 NITs, and 5 IISERs, and four institutions under the state legislature. Depending upon the size of the population, particularly young people in the country, the number of institutions appears to be inadequate.

Table 1.4.

Number of recognised educational institutions in India (2015-16)

States/UTs	Universities / University level Institutes	Colleges	Technical Education (Polytechnics)	PGDM	Nursing	Teacher Training	Institutes under Ministries
(1)							
Andhra Pradesh	28	2532	156	11	297	351	na
Arunachal Pradesh	9	28	3	na	2	7	na
Assam	21	539	16	1	45	22	2
Bihar	22	744	29	4	80	44	3
Chhattisgarh	22	706	1	10	38	32	3
Gujarat	57	2019	1	18	126	149	7
Haryana	39	1113	204	21	42	37	5
Himachal Pradesh	25	348	41	1	31	18	2

Jammu & Kashmir	11	329	36	na	12	25	na
Jharkhand	14	328	32	8	33	7	10
Karnataka	52	3555	314	26	572	757	8
Kerala	20	1302	79	8	233	273	7
Madhya Pradesh	43	2260	103	19	128	204	7
Maharashtra	45	4569	1091	75	167	1147	21
Manipur	4	87	1	na	6	8	1
Meghalaya	10	63	3	na	7	11	1
Mizoram	3	29	2	na	4	9	na
Nagaland	4	65	4	na	3	4	na
Odisha	21	1076	143	11	179	65	2
Punjab	26	1050	173	2	209	31	4
Rajasthan	70	3050	199	19	160	202	5
Sikkim	7	16	2	na	1	2	na
Tamil Nadu	58	2368	476	10	115	399	13
Telangana	21	2454	107	25	234	207	11
Tripura	3	51	3	na	5	4	na
Uttar Pradesh	67	6491	370	128	245	182	12
Uttarakhand	28	439	103	3	9	17	2
West Bengal	34	1082	118	12	54	100	11
A & N Islands	na	7	1	na	2	1	na
Chandigarh	3	25	3	1	na	3	na
D & N Haveli	na	8	na	na	1	na	1
Daman & Diu	na	8	na	na	na	2	na
Delhi	26	191	35	21	17	36	20
Goa	2	55	8	1	2	1	na
Lakshadweep	na	0	na	na	na	na	na
Puducherry	4	84	10	na	1	46	na
All India	**799**	**39071**	**3867**	**435**	**3060**	**4403**	**158**

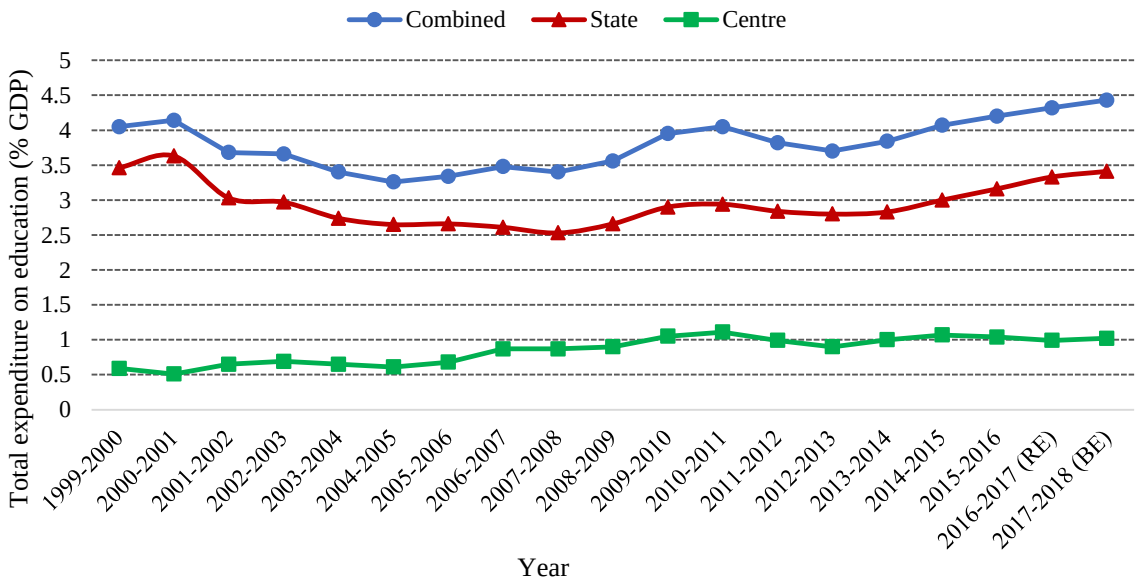
Source: *School Education in India, U-DISE 2015-16 & AISHE 2015-16, Ministry of Human Resource Development*

In India, the expenditure on education is incurred by both state and central governments. The state governments have a larger role to play in providing education to all. According to the Data released by the Ministry of Human Resource Development, the Government of India, both central and state governments spend about 4.43 per cent of the GDP on education. It can be seen from Figure 1.2, which presents India's total expenditure on education by education and other departments as a percentage of GDP from 1999 to 2017-18, that the country's total expenditure on education remains more or less the same. However, what is interesting to see is that the country's investment in physical capital accounts for approximately one-third of its

GDP in 2017-18. At present, the country's investment in non-human capital is much higher than human capital. It should be noted that the GDP estimates for reporting the percentage of total expenditure on education as GDP in Figures are based using two different base year series.

Figure 1.4

Total expenditure on education by education and other departments (% of GDP)



Source: *Ministry of Human Resource Development, Government of India*

Considering the employment structure by educational level, it is established that quality of education and educational policies affect employment. Typically, the growth of employment is in line with the economic growth, barring a few exceptional cases. Sometimes, despite the increase in economic growth, employment growth will remain the same. This phenomenon is commonly termed as 'jobless growth. Since 1991, after the introduction of new liberal policies, the education sector has expanded significantly, with special emphasis on the private sector. At the same time, opening up the education sector to the private sector poses several challenges, such as fairness in opportunity, inclusiveness, quality of education, and affordability.

In terms of the structure of organized employment, the country has undergone a radical change, shifting the focus from the public sector to the private sector. It can be seen from Table 1.5 while the organized sector employment in the public sector has declined, the employment

in the private sector reported a significant increase. This would not have been possible without the infrastructure improvement, and private sector investment. Moreover, the educational institutions such as IITs, IIMs, and Central universities. The establishment of universities in the private sector has created a platform of quality education for millions of people. By providing compulsory and free education, the government adopted a level playing field, creating a balanced ecosystem for employment opportunities to all, rather than reserving for a few sections of the society. In the absence of government intervention, access to education would restrict to only those who can afford the cost of higher education. In this regard, the government initiatives such as the implementation of the Sarva Shikksha Abhiyan, which was implemented in 2002.

Table 1.5

Employment in Organised Sectors—Public and Private (as of March 31, 2012)

Public Sector							
	2006	2007	2008	2009	2010	2011	2012
Male	151.9	149.8	146.3	147.0	146.7	143.8	144.6
Female	30.0	30.2	30.4	30.9	32.0	31.7	31.5
Total	**181.9**	**180.0**	**176.7**	**178.0**	**178.6**	**175.5**	**176.1**
Private Sector							
Male	66.9	69.8	74.0	78.9	81.8	86.7	90.7
Female	21.2	22.9	24.7	25.0	26.6	27.8	29.0
Total	**88.1**	**92.7**	**98.8**	**103.8**	**108.5**	**114.5**	**119.7**
Public and Private Sector							
Male	218.7	219.6	220.4	225.9	228.5	230.5	235.3
Female	51.2	53.1	55.1	55.8	58.6	59.5	60.5
Total	**269.9**	**272.8**	**275.5**	**281.7**	**287.1**	**290.0**	**295.8**

Source: *Directorate General of Employment, Ministry of Labour & Employment*

In this study, one of the main objectives is to examine the linkage between social mobility and educational attainment with special reference to India. Taking insights from the extant literature, we argue that educational attainment is essential and an integral part of explaining the degree of social mobility among different social groups in India. An interesting offshoot of this research is that it gives a glimpse of both theoretical perspectives on the relationship

between educational level and social mobility. This study is undertaken with the assumption that schooling is one of the determinants of social mobility and thereby leads to achieving fairness in opportunities. Moreover, the study attempts to empirically explore the level of intergenerational persistency in educational attainment, illustrating the educational level of two different generations of a family.

1.2.3 Intergenerational occupational mobility

1.2.3.1 Significance of occupational mobility

As mentioned earlier, economists mainly zero in on earnings as a basic parameter to assess intergenerational mobility, sociologists consider occupational mobility as a standard way of assessing intergenerational mobility. Put simply, by focusing on the occupations held by children and their parents, it can be assessed that whether there are any changes in the title of occupations. A critical issue for assessing intergenerational mobility using occupation is that both parents and children are likely to change occupation in their lifetime. In other words, occupations may change in the life-cycle of both parents and children.

The empirical evidence provides many insights into the link between mobility and occupation. According to Ray (2014), one of the main reasons for low social mobility in India is that children benefit substantially from their parents. Unlike India, as noted by Corak (2013a), although children in Scandinavia countries benefit from their parents' earnings, what is important is that the economic or social position of parents does not decide the earnings or labour market position of their children. Perhaps, this observation is quite contrary to the conventional view observed in the Indian context. For instance, a recent research study has indicated that there exists occupational immobility in India, suggesting that the occupation of the parents, to a great extent, determines the occupation of the children (Reddy, 2015). Further, a few studies attempt to explain the inter-group differences in the Indian context.

We highlight the results from two significant studies carried out in the Indian context in the recent period. While the first study was carried out by Hnatkovska et al. (2013), the second study was by Li et al. (2019). Hnatkovska et al. (2013), despite reporting relatively low economic mobility in India, observed that, while providing a comparative analysis between

disadvantaged social groups (ST/SCs) and general groups (non-ST/SCs), the difference between them has narrowed down. Evidence shows that the elasticity of wages for children as compared to the wages of their parents has decreased from 88 per cent to 45 per cent and from 76 to 58 per cent for ST/SCs and non-ST/SCs, respectively. Therefore, the likelihood of ST/SC children improving their economic position as compared to children belonging to non-ST/SC children is higher. However, as indicated by Li et al. (2019), ST/SCs are less likely to come out of the poverty trap and have the highest probability of entering poverty.

1.2.3.2 Measuring occupational mobility

One of the earliest attempts to prepare the system of occupational classification was carried out in 1946 by the Directorate General of Resettlement and Employment, which was subsequently renamed Directorate General of Employment and Training (DGE&T). Following India's occupational classification, the International Labour Organisation released the International Standard Classification of Occupation (ISCO) in 1958. ISCO covers, in addition to adopting a new structure of occupation, various occupations. As a standard procedure, the DGE&T released its first occupational classification in 1958. The first occupational classification is popularly termed as *National Classification of Occupation 1958*. A quick look at the classification shows that all occupations are classified in a hierarchical order. The order ranges from 1 to 5 digits. Whilst one digit classification indicates occupations at a very broad level, five-digit classification presents a disaggregated level of occupations. One of the main advantages of using the standard classification is that it identifies each occupation along with the activities carried out under this occupation title. After the first publication of occupational classification, ILO and DGE&T have continuously made several improvements in the system. We understand that ISCO will be more useful for cross-country analysis, whereas NCO is specifically for the Indian context. Therefore, the NCO classification is adopted for examining intergenerational occupational mobility.

The stratification of occupations is based on the nature of work undertaken, no matter in which sectors they belong to. Let us take a simple example. All doctors are considered in one occupational group, although they may be working in different sectors. In line with ISCO 88 guidelines, NCO was subsequently revised by taking into account skill content. The skill content may be possessed from either formal or informal sources. It can be seen from Table

1.6 that 10 years of formal schooling is required for skill level 1, and 11-13 years of schooling for skill level II.

Table 1.6

The level skills in various occupations

Division	*Title of the occupation*	*Skill level*	*Schooling*
1	Legislators, senior officials, and Managers	Not defined	
2	Professionals	1V	Above 15 years
3	Associate professionals	11I	14-15
4	Clerks	II	11-12
5	Service workers and Shop & Market sales workers	II	11-12
6	Skilled agricultural and Fishery workers	II	11-12
7	Craft and Related Trade Workers	II	11-12
8	Plant and Machine and Operators and Assemblers	II	11-12
9	Elementary occupations	I	10

Source: *Introduction to National Classification of occupation 2004,*

It is evident in Appendix 1 that the NCO 2004 has different layers of occupational structure. For instance, 1-digit classification is broad, called division. 2-digit classification occupation is called sub-division. Group and family are for 3-digit and 4-digit occupational structures. There are ten occupational divisions, 30 sub-divisions, 116 groups, 439 families. It is interesting to note that moving from 1 digit classification to 5 digit classification, the title of the occupation will be unique, involving only a unique nature of work.

1.3 Rationale for the study

Since independence, India has transformed significantly by reporting rapid economic growth, and poverty reduction. For more than thirty years, spanning from 1950 to 1980, India's economic growth hovered around just 3.5 per cent per annum, commonly termed the Hindu rate of growth. Since the economic liberalization, starting at the beginning of the 1990s, the economy has opened up for foreign multi-national companies, including multinational

companies to invest in various sectors, which were hitherto reserved for the public sector. As a result of the economic liberalization, there has been a significant improvement in economic performance, particularly economic growth and employment, which resulted in reducing the poverty level. Meanwhile, the Indian economy has witnessed the emergence of the middle class, occupying a significant position in driving the economic status. There are two important reasons for exploring this topic in the context of India.

First, in line with the progress in the various sectors of the economy, the Indian society has experienced a significant structural transformation over the last forty years. Two significant changes are worth noting: first, poverty reduction; and second, the emergence of the middle class. Both changes result from the impressive economic performance of the country after the new economic reforms in 1991. The impressive economic performance is quite manifest in the GDP per capita. With the improvement in economic performance, less impressive is that the degree of income inequality has widened. A significant share of the workforce is employed in the informal sector, receiving only meagre wages, which are not sufficient for a decent standard of living. It is evident from Appendix 2, Appendix 3, Appendix 4 that there was an increase in the share of the top 10 per cent of income groups in the national income, whereas there was a decline in the share of the middle 40 per cent and bottom 50 per cent of income groups (Chancel & Piketty, 2019). With the changes in economic and labour market conditions, it is interesting to examine the level of intergenerational mobility. Undertaking such an analysis is quite relevant in the Indian context as it throws light on the benefits of rapid economic growth.

Second, among developing countries in the world, India has unique labour market characteristics. The decision to invest in education, skills and even the choice of occupation is determined by the social group of a person. Therefore, it is reasonable to argue that person belonging to the lower strata of the society does not have much freedom to shift from one occupation to another (Deshpande, 2010). In other words, the occupational structure is inextricably bound up with caste. The decision to choose an occupation greatly depends on the caste structure. With the improvement in economic status and social mobility, caste and religion in India continue to play a major role in the occupational structure (Munshi & Rosenzweig, 2006; Ito, 2009; Hnatkovska et al., 2013; Mohammed, 2019).

India is a diverse country, consisting of many religious and social groups. The social groups are also called caste. Appendix 5 presents the state-wise religious population by residence in India based on the Census 2011. Predominantly, India consists of the Hindu religion, followed by Muslims. While the Hindu religion consists of about 80 per cent in India, the Muslims account for about 14 per cent of the total population. It is worth noting that the proportion of religious groups across Indian states varies, although predominantly Hindu religion. The social groups are classified into four categories: Scheduled Tribe (ST), Scheduled Castes (SCs), other backward class (OBC), and forward caste. It is evident from Appendix 6 that the share as the SCs and STs is 17 per cent and 8.2 per cent, respectively. Since the independence of India, the government has initiated several policies and programmes to uplift both STs and SCs, which are classified as disadvantaged communities. The policies and programmes aimed at benefiting the disadvantaged communities by providing reservations in educational and political institutions. As shown by Reddy (2015), despite a strong emphasis on abolishing the caste structure and providing equal opportunities to all, the caste barriers continue to exist in the country's occupational structure. Even the political movements and political parties are said to have been linked with violent anti-Muslim riots in India (Wilkinson, 2006; Berenschot, 2011; Blakeslee, 2018).

In the economics literature, it is found that there has been a significant amount of work on intergenerational mobility, particularly in the US and other developed countries. Interestingly, the relationship between intergenerational mobility and inequality has received remarkably little attention in the Indian context. This study contributes to the extant literature in several ways. First, One of the distinct aspects of intergenerational mobility is that we examine different kinds of intergenerational mobility patterns within and between castes groups in India. Although a few studies touch upon the two issues separately, there is a paucity of studies that examine both together. Further, it would be interesting to carry out a more in-depth study on occupational IGM to get a clear picture of the current scenario in the country. It is argued in the extant literature that education is directly connected to occupation. Therefore, considering education and occupation together, it is possible to ascertain that if the level of education supports occupational mobility. If both factors are detached from each other, we can conclude that the investment in educational attainment does not support the idea of equality of opportunities.

Moreover, to improve the overall social mobility in India, it is imperative to determine the state level mobility to identify and focus on the factors that are generally important to bring about the mobility. From a policy perspective, there is a need to examine the present status of social mobility in each state and focus on the most backward states. This study also differs from the previous research in the sense that it covers a detailed explanation of region-wise factors contributing to upward social mobility. Nonetheless, future research may extend to examine regional disparity within and across regions, which will provide vital insights into this area.

1.4 Research Questions

- How much of a son's income is determined by his parent's income?
- What is the ability of an individual to earn more than his parents at the same age?
- What is the relationship between income inequality and income intergenerational mobility in India?
- What is the strength of the association between the father's occupation level and the son's education/occupation level?
- What is the level of social mobility in India? Is social mobility low or high in India?

1.5 Research Objectives

As discussed earlier, the level of intergenerational mobility is closely related to income inequality. Though it is a formidable and challenging task, measuring intergenerational mobility and exploring the relationship between intergenerational mobility and inequality in the Indian context is vital and relevant. As income and occupation depend on educational attainment and social background, this study also examines the association between occupation and education. In view of identifying the factors that are generally important to bring about more social mobility in the context of technological advancement, it is pertinent to measure the social mobility of Indian states and its associated factors. Keeping all challenges and opportunities in mind, this study is set to address the following objectives:

- To estimate the relationship between income inequality and intergenerational mobility
- To examine the association between the father's occupation level and son's education/occupation level
- To explore the nexus between social mobility and regional disparity, with special reference to Indian states

1.6 A brief overview of data sources and methodology

The ideal way of addressing intergenerational mobility should be the application of panel data sets with reliable data on income or earnings. The empirical evidences drawn from developed countries such as Sweden, the UK, USA and Germany indicate that the use of panel data sets provides the actual magnitude of intergenerational mobility. Unlike developed countries, developing countries have two major limitations concerning the assessment of intergenerational mobility: first, panel data sets are not readily available; and second, the data on income are not very reliable.

As we know that slightly over half of the workforce in India are self-employed in farm or non-farm activities. The estimation of earnings for self-employed is difficult because wages and profits are not distinguishable. Because of these two problems, empirical studies on intergenerational mobility for developing countries use cross-sectional data sets. A detailed review of the existing empirical papers using cross-sectional data is given in chapter two. A systematic review of the extant literature suggests that the cross-sectional studies use two distinct approaches for analysing intergenerational mobility: first, the co-resident approach; and second, identifying the economic status of parents with available information. Similar to many other countries, India and other developing economies don't have any long intergenerational panel dataset, which captures data on the economic status of both parents and children.

For carrying out this research, the successive rounds of Employment and Unemployment Surveys (EUS) of the National Sample Survey are used to assess intergenerational mobility. The cross-sectional data sets encompass a wide range of personal, household and labour market characteristics of both employed and unemployed people. The EUS is one of the largest sample surveys in the country. Though marginally, the sample size differs according to the rounds of EUS. The unit-level data of EUS need to be classified and arranged before drawing the final analysis. As a first step, a separate spreadsheet is generated for each level. Each distinct level is merged using key indicators – first stage unit serial number, hamlet/sub-block number, second stage stratum number, household serial number, level number and personal serial number – aggregate-level data can be generated.

It is agreed that the approach to examining intergenerational mobility based on the EUS has some shortcomings. We discussed the shortcomings in great detail in chapter three, which discusses the data sources and methodology of the thesis. Although the EUS is the largest sample survey, one of the limitations, as discussed earlier, is that it is not guaranteed that the same households will be selected in the subsequent rounds of surveys. Therefore, it is worth noting that observations for every parent-child pair will be collected at a point in time.

The approach to measuring intergenerational mobility based on the EUS rounds of the National Sample Survey (NSS) requires several rounds of refinements. From a methodological perspective, one of the important steps is the documentation of the incidence of co-resident households in the EUS rounds. For analysis, co-residence is defined as those residents comprising multiple adults generations occupying the same space in the same household. For instance, parents living with their adult children are an example of co-residents. Unlike Western countries, children normally reside with their parents in India (Hnatkovska et al., 2013). Not surprisingly, going by the select EUS rounds, it is found that about 62 per cent of sample households were featured by by multiple adult generations co-residing. In addition, we also found that the proportion of co-resident households in select rounds of EUS remains quite stable.

If additional restrictions on sex, education, occupational structure, and full-time employment status, are imposed, the sample dataset cover about one-fourth of the EUS data (Hnatkovska et al., 2013). More importantly, this ratio is stable across the rounds. Presumably, this observation is likely to contradict the conventional understanding that India has become a nation of the nuclear family in tandem with technological advancements. Nonetheless, a comparison of joint households in rural and urban sectors shows that the former accounts for the large share of joint households given the fact that the majority of the population in India live in the rural sector. Therefore, in the absence of a panel dataset, it stands to reason that drawing on insights from the sample that reflect the joint family settings does truly represent the status of intergenerational mobility in the Indian context.

The EUS data is exhaustive in covering the labour and non-labour market characteristics of people residing in the country. It covers all sections of the society, including

various religious groups as well as advantaged and disadvantaged groups. As mentioned, the EUS provides data on educational level, which can be classified into different categories such as illiterate, primary, middle, secondary, graduate, and postgraduate and above. In addition to the educational level, it gives a detailed occupational structure (three-digit occupational code) for each economic activity performed by an individual performed during the last 365 days. The EUS rounds of NSS provides data on wages. Although data on wages are noisy, the information about the personal expenditure at the individual level will facilitate the estimations for income. Since the incomes are reported at two distinct periods, this needs to be converted into real terms. This is done by using regional-level poverty lines in the rural and urban sectors.

As discussed above, the EUS dataset gives details about the co-resident households. The entire analysis of the co-resident households may undermine the actual magnitude of intergenerational mobility by omitting some crucial information. It is observed that children move out of their parental house in search of better employment opportunities and income. If we miss out on those households, it will lead to bias in the results. The bias results from two sources.

First, the exclusion of those households is likely to underestimate the actual intergenerational mobility because it is true that highly educated children will settle down in promising areas. Second, it is also possible that the degree of intergenerational mobility is overestimated because of the inclusion of the less educated and wealthy households in the sample. As we know that less educated and wealthy members are unlikely to move out of their parentals home. Considering these two aspects, it is reasonable to argue that the overestimation and underestimation will be nullified overall. More importantly, the share of co-resident households in all the rounds is more or less stable indicate that the time-series trends hardly observed in the analysis (Hnatkovska et al., 2013).

1.7 Significance of the study

India has experienced impressive economic growth since the initiation of new economic reforms. According to the data released by the World Bank, the gross domestic product (GDP) per capita has increased from the US $82 in 1960 to US $1900 in 2021. Although the GDP per capita increased steadily, a steady increase in inequality has been observed among different

social groups in tandem with an increase in economic performance. As mentioned earlier, wage inequality in the Indian labour market appears to have increased from the 1970s to the 1990s.

The Indian education system has grown substantially over the last three decades. With the investment in human capital, the education system becomes very competitive primarily because of the huge demand for education. The demand for education is also fuelled by government intervention in the form of the provision of free education. Economists generally consider that the investment in human capital is essential in the sense that it acts as a means of achieving a better standard of living and socio-economic condition. In this context, investigating the role of intergenerational mobility has special significance in the Indian context. Against this backdrop, this research attempts to trace whether these changes in the labour markets, which comprise both formal and informal sectors, are related to the degree of intergenerational mobility in India.

Unlike Western economies, it is a fact that India is not a highly industrialized economy. Since independence, the industrial base of the economy, particularly the manufacturing sector, has not grown significantly in India. Instead, despite several policy interventions to boost the industrial base, the share of manufacturing has declined steadily. At present, the manufacturing sector contributes roughly about 12 per cent to India's GDP. At the same time, although the contribution of agriculture to GDP declined very sharply, the shared employment by Indian agriculture declined marginally over the last five decades. The tertiary sector such as banking, telecommunication, information and communication technology, and public administration has grown significantly in India. Without a doubt, these sectors provide a ray of hope for millions of young labour market entrants who are looking for a decent wage and standard of living. Nonetheless, the legislative provision of free and compulsory education has helped millions of children to reach a playing field and to improve the overall economic well-being and standard of living. India's per capita incomes has increased, and the poverty rate declined continuously, the country is still far behind many other developing countries, particularly China. Nonetheless, India's education system continues to improve and educational policies that have emphasized free and compulsory education for all helped millions of people to come out of poverty.

Less impressive about India's recent growth story is that, despite the country's strenuous efforts to provide a wide spectrum of opportunities, inequality continues to increase. To consider a simple example, let us look at the Indian labour market. The glaring difference between formal and informal employment elicits the disparity among different sections of society. Income inequality, which is measured using the Gini Index, is not strictly comparable across countries, but it gives some general observations and patterns. In general, the European countries report a low degree of disparity, quite reflected in the Gini Index. This may be true for other countries such as Australia and Canada, which are two non-European and Western countries. On the other hand, emerging economies such as South Africa and Brazil tend to have a high inequality. Asian countries, in general, tend to have neither high nor low inequality.

However, it is noticed that the income disparity has been growing and widening since the 1980s in many Asian economies. The income inequality observed in the Asian economies is mainly attributed to the recent trends observed in the economic system, moving from the traditional production function to knowledge-based economic development. The situation in India does not quite different from the global scenarios, particularly while making a comparison to the countries such as Brazil and South Africa. It is to be noted that rising inequality along with a persistent intergenerational economic transmission is cause for concern.

The government of India promotes higher education by way of facilitating scholarships to those who are unable to afford the cost of education. Broadly, the GoI gives financial supports under three heads: central schemes, UGC/AICTE schemes, and state schemes. Under the central schemes, the financial supports are mainly given by Ministries, such as the Ministry of minority affairs, the ministry of tribal affairs, the department of higher education, and other departments. The investment in higher education is a welcome step and is expected to bridge the gap between the rich and the poor. Beyond a threshold point, the equality of opportunity will become a reality, and everyone is expected to get a wide spectrum of opportunities, assuming that the market creates sufficient employment opportunities. As long as the gap exists, the low investment in human capital does not necessarily fetch better returns. The developing countries like India, the gap between those who can afford the high cost of education and those who can't afford the high cost of education has widened. Although the government intervention would reduce the gap, it is reported that the quality of education offered by the government needs to be improved substantially. Compared to other developing

economies, India, with a looming inequality problem, strive to achieve balanced growth by redressing the negative effects of income inequality. However, we agree that the improvement in education and labour market does not reflect in the society immediately. It takes time to reflect the outcome of educational investment in the economic system.

From a macroeconomic perspective, there is a growing concern that greater inequality will have significant implications for economic growth. In this context, it is important to analyse the degree of intergenerational mobility to assess the development of inequality in a society. There are a few research papers published at the beginning of the 2000s, discussing the pace of transmission of poverty and inequality across generations (Corcoran, 2001; Moore, 2001). Interestingly, it is found that the transmission of inequality is much faster than the transmission of poverty. Therefore, an attempt has been made in this research to estimate the link between inequality and intergenerational mobility across social groups in India.

In this thesis, the attempt has been made to estimate regional disparity within and between social groups and across generations. Also, a detailed study of contributing factors will have important practical and theoretical implications. It will help us in concluding whether differences in relative mobility in areas are caused by the differences in local policies or not. If policies facilitating relative mobility will certainly enhance the outcome of children belonging to the lower economic class without compromising children from high-class significantly.

1.8 Organization of the study

The main contour of this study is organized into 7 chapters. Chapter 2 presents a broad overview of the theoretical framework and empirical evidence on intergenerational mobility across countries. Chapter 3 describes major data sources and measurement errors in the computation of intergenerational mobility. In addition, this chapter also provides a detailed description of the Employment and Unemployment Surveys published by the National Sample Survey Office, statistical techniques, and issues related to cross-sectional data. Chapter 4 provides empirical evidence of the relationship between income inequality and intergenerational mobility. Chapter 5 presents educational and occupational mobility in India, drawing on insights from India's large-scale sample data sets. Chapter 6 analyses how regional disparity affects social mobility and constructs a social mobility index for each Indian state.

The social mobility index was constructed based on the wide range of indicators drawn from different sectors of the economy. Chapter 7 presents concluding remarks along with the future scope of the work.

CHAPTER 2

Income Inequality, Social Mobility and Its Dimensions: A Literature Survey

2.1 Introduction

The main aim of this chapter is to provide a detailed review of literature on intergenerational mobility, which is used to measure the extent to which earnings or any other labour market characteristics of children are influenced by their parents' economic status. This chapter starts with a brief description of mobility across generations, with an emphasis on the relationship between intergenerational mobility and income inequality. To begin with, the theoretical model proposed by Becker and Tomes's (1979) is illustrated, documenting the transmission of earnings from parents to their children. An examination of social mobility across countries the degree of social mobility shows that low-income economies report lower social mobility than high-income economies. Economists find that the low social mobility in low-income countries is mainly associated with the incidence of greater disparities in income distribution. Evidence suggests that the economic status of parents and their children is strongly correlated in countries with greater disparities in income.

Given the broad context, it is pertinent to answer two critical questions: first, is social mobility high or low in a country? Second, what factors determine the degree of intergenerational mobility? Considering the determinants of social mobility, evidence suggests that educational attainment is one of the critical sources and the differences in educational level are likely to limit social mobility. By narrowing down the gap in skills and knowledge among children, it is plausible to invigorate social mobility. In other words, the knowledge gap starts from childhood and if we can bridge the gap early by providing access to school and quality education, it will reduce inequality in society. At the same time, the labour market is also important, as it determines the consequences of the skills and knowledge gained. It is reasonable to argue that the degree of intergenerational inequalities will reduce if earnings inequalities are reduced by fostering employment opportunities for all who deserve and want to participate in the labour market.

In this chapter, three aspects of intergenerational mobility are explained. First, as mentioned earlier, the chapter begins by explicating one of the fundamental theoretical models to highlight several key concepts related to intergenerational mobility. Following the basic description, it draws on an in-depth review of the empirical studies on the relationship between intergenerational mobility and income inequality. Second, this chapter provides an empirical investigation into the empirical and theoretical obfuscations on educational and occupational mobility. Third, to construct a social mobility index at the regional level, a review of the empirical studies on determinants of social mobility has been given.

The remaining part of this chapter is organized as follows. Section 2 presents a brief introduction about the relationship between income inequalities and intergenerational mobility, followed by a theoretical framework. Section 3 presents the empirical studies related to educational and occupational mobility, both international and national studies. Section 4 gives a brief background of social mobility and its relationship with economic development. The last section concludes this chapter.

2.2 Income inequality and intergenerational mobility

In recent years, there has been a flurry of interest to explore the intergenerational association between parents and their children's socioeconomic status. One of the earliest attempts to theorize intergenerational income mobility was carried out by John Dewey in 1889. In his classic paper titled "Galton's Statistical Methods", Dewey pointed that, while referring to Galton's regression, parents' children, who are deviated from the mean, are likely to move away from the mean only one-third of the deviation of their parents. Since then, there were several attempts by social scientists to capture the extent to which economic status transferred from one generation to the next, more precisely, from parents to their children. This interest is largely driven by the fact that developing countries such as India have initiated a series of affirmative action plans. From a policy perspective, the interests of the social scientists were accelerated further mainly due to the commonly held belief that the transmission of economic status from one generation to the next not only violates the fundamental norms of equal opportunity but also weakens government intervention to uplift the marginalized community.

Empirically, measuring intergenerational earnings mobility for developing economies such as India is a tedious task. As mentioned in the introductory chapter, there are several constraints in carrying out such studies in the context of developing economies. One of the main reasons is that panel data are easily available as compared to advanced countries, where panel data on household income can be easily accessed. Because of this problem, social scientists in developing economies draw insights on intergenerational mobility from one-time cross-sectional data. Therefore, a comparison of the results obtained from both cross-sectional data and panel data is not easy simply because relying on the cross-sectional data has some limitations. As noted by many economists, one of the most observed limitations is that it is likely to generate bias towards the second generation. Presumably, due to this limitation, the comparison of estimates of intergenerational earnings elasticity across countries, be it developed or developing, poses challenges. However, economists agree that the intergenerational earnings elasticities obtained from developing countries may be comparable if the data sets are more or less similar in the sense that the same sampling procedures for collecting data are used. The richer the data, the richer the reliability of the estimates so that they can be broadly compared.

In the economics literature, an examination of extant studies shows that several studies on the degree of intergenerational mobility have been conducted in the context of developed countries. Some studies include Behrman and Taubman (1987), Altonji and Dunn (1991), Lillard (1998), Peters (1992), Solon (1992), Zimmerman (1992), Dunn (2007), Ferreira and Veloso (2006), Grawe, (2006), and Ng (2007). Researchers have been keen to explore the different dimensions of intergenerational mobility as it is considered as one of the outcomes of equitable distribution and the pace of economic progress. In this chapter, the literature review is mainly confined to the relationship between inequality and intergenerational mobility, the association between occupation and education, and the social mobility of regions in India.

2.2.1 Theoretical framework: A brief review

A simplified version of how economic status is transferred from one generation to another and concepts related to intergenerational mobility is illustrated by Becker and Tomes (1979) and Becker et al. (2018). In the economics literature, the model proposed by Becker and Tomes is considered as a foundational work, which facilitated researchers to explore intergenerational mobility empirically. Like any other economic model, Becker and Tomes' model begins with

some fundamental assumptions. As mentioned earlier, these fundamental assumptions are vital to simplify the complexities emanating from the model. One of the important assumptions is that one individual in a family represents each generation. Considering two generations in a family, parents and children are the likely individuals at two generations of the family.

The permanent income *Y* of each individual is derived from two sources: their skills and knowledge as a result of his investment in human capital, denoted by *A.* As assumed by Becker and Tomes (1979), the endowment of human capital by the child is a function of the optimal allocation of permanent income earned by his father. The utility of the child's father, in turn, depends on his consumption and the permanent income earned by his child. The relationship between the child's endowment of human capital and the father's permanent income determines the permanent income earned by the child. This relationship between the permanent income earned by the father and permanent income earned by his child is illustrated in the following equation:

$$Y^{child} = \emptyset Y^{father} + \theta A^{child}$$

The above equation clearly indicates that the permanent income of the father has a positive impact on the permanent income earned by the child. In addition, the equation also shows that it is not only the father's permanent income but also the own endowment of humans that determines the permanent income of the child. In the equation, θ is a parameter, representing the causal effect of the parents' generation on the children's generation, which is assumed to be independent of the investment decisions of parents and budget constraints. Put it in a simplified way, the parameter covers the specific characteristics determining earnings. These characteristics are beyond the purview of money measurement, which includes social bonds, interactions, and social relations.

The theoretical framework proposed by Becker and Tomes (1979) also provides insights into the relationship between inequality and intergenerational mobility. In the theoretical framework, we have seen that the objective of a family in each generation is to maximize the utility function, which in turn, depends on the consumption function of fathers and children's endowment of human capital. The endowment of the children is determined by a set of both human and non-human capital, which comprises social group, skills and knowledge, social connections, the 'goodwill' of the family, family background, and economic

status of the parents. More interestingly, the endowments attached to parents are automatically transferred to their children. Therefore, as shown in the above equation, the permanent income earned by the children is influenced by not only the current market but also the endowments transferred by their parents. Less impressive is that, if parents were able to transfer a greater amount of wealth to children of their next generations, the gap between the rich and the poor would widen as the poor don't have the sufficient resources to invest in their children. In this context, social scientists use intergenerational mobility as a measure of assessing the impact of a family on the economic status of their children. Without a doubt, family plays a crucial role in terms of transferring the economic status from one generation to another.

2.2.2 Empirical evidence

The literature review presented in this chapter mainly divide the empirical studies on intergenerational mobility into two sub-sections. While the first section of the topic deals with the studies undertaken in the international context exclusively, the second section presents a detailed analysis of studies undertaken in India. Broadly speaking, from the review of literature, we may be able to distinguish between two schools of thought. While the first school of thought is concerned with the connection between intergenerational mobility and the degree of income inequality, the second school of thought is of the view that the persistence of intergenerational mobility is a growing threat to the "openness" of society or equality of opportunity. In addition to the description of various empirical studies, we provide a summary of the research at the end of the literature review.

2.2.2.1 International level

One of the earliest attempts to draw a meaningful analysis of intergenerational mobility was undertaken by Atkinson (1980). Although his study provides a detailed analysis of the methodological obfuscations in assessing intergenerational earnings mobility, it gives empirical evidence on the intergenerational mobility during the period 1950 to 1975-78 in Britain. While the earnings of fathers were collected in 1950 and the earnings of children (son) were taken 1975-78. In continuation of the theoretical model proposed by Becker and Tomes (1979), Atkinson attempts to provide the comparison of various forms of degrees of mobility. Presumably, the major part of Atkinson's work zeroed in on the methodological issues, particularly identifying the right dataset on intergenerational income mobility. The datasets on

intergenerational mobility require scrutiny before making any statistical inferences. The study showed the intergenerational earnings mobility is 0.2.

Following the study by Atkinson (1980), Atkinson et al. (1993) published a book to unearth the several issues related to the methodology, including collecting and processing suitable and reliable data for estimating intergenerational mobility. Using the Rowntree survey of York, the authors identified about 1755 children of Rowntree parents. Of the 1755 children, about 1113 children were staying within York even after thirty years. Based on earnings and education across generations, the authors proved the mobility. The overall correlation between fathers and sons' earnings was estimated to be 0.5. The overall correlation was 0.3 when the authors consider the education variable in the model, indicating that skills and knowledge acquired through formal schooling have more effect on earning mobility. Since poor children can't afford expensive education, they are unlikely to report a high upturn in the ladder of their earnings stream. Nevertheless, this study concludes that there is sufficient evidence to establish the fact that the earnings of children, to some extent, are influenced by the fathers' influence.

Becker and Tomes (1986) attempt to develop a framework in which they trace how the transmission of economic status, which include earnings, consumption pattern, and social capital, from parents to their descendants. As mentioned earlier, parents are trying to maximize utility by maximizing the economic well-being of their children. What determines the degree of intergenerational mobility is an interesting aspect. According to them, two different generations of a family have both investment and consumption responsibilities with the objective of maximizing utility. It is to be noted that there has been a steady decline in the degree of inequality in earning in rich countries. In other words, there is a diminishing trend in the transfer of the economic advantages from the previous generation to the next, and the economic advantages are almost nil after three generations.

Without an iota of doubt, it would be reasonable to argue that the attempts by Atkinson (1981) Atkinson et al. (1993), and Becker and Tomes (1986) to capture intergenerational mobility are considered to be foundational works in this field. Moreover, these studies are of particular interest to researchers because it provides insights to explore the topic empirically with the help of rigorous methodology. The definitional and methodological issues brought out by the earlier studies made the way for new studies to explore the idea of intergenerational

mobility empirically. Among the research studies published at the beginning of the 1990s, the two most sophisticated pieces of research studies published in the context of the USA are worth exploring. These two papers are published by Solon (1992) and Zimmerman (1992).

From a policy perspective, the main concern was that the degree to which income status is transmitted from one generation to the next. As mentioned earlier, one of the main reasons for a spur in academic work on this topic is that the transmission of economic status across generations tends to violate what is commonly termed 'openness of society' which provides equal opportunity to everyone in the society. When the earnings are transmitted from one generation to another, it does not provide equal opportunities to everyone in the society. Put it in a slightly simplified way, if a family member of one generation is rich, it is likely that the family members of the next generation are also rich, indicating that there is a transfer of wealth from one generation to another. Put simply, inequality continues to persist. Therefore, it requires government intervention.

The idea of exploring the extent of intergenerational income mobility in the United States was accelerated by Solon (1992) with the use of more sophisticated methods. In the case of the USA, there were not sufficient empirical works to suggest the persistence of inequality and intergenerational earnings mobility. The main rationale for estimating the intergenerational earning coefficient is that the extant literature on the topic is biased downward, mainly due to the measurement error and absence of representative samples. Solon's study, based on the data extracted from the Panel Study of Income Dynamics (PSID), suggests that the estimated intergenerational correlation sufficient is higher than the results of the existing study. In other words, this study suggests that the mobility is relatively less than found by the earlier works. According to the estimates, the intergenerational earning elasticity is 0.4.

Zimmerman (1992) published a research paper on intergenerational mobility in the context of the USA. Using a sophisticated methodology, Zimmerman (1992) attempted to provide estimates of the correlation between fathers and sons' lifetime earnings. For this purpose, the author extracted data from the National Longitudinal Survey. Compared to earlier works, which report relatively low earning elasticity. The low earnings elasticity represents high mobility. As mentioned earlier, the estimates provided by earlier works are biased downward because of error due to measurement, and poor sample. Moreover, the exact

measurement of a lifetime earning was also a critical issue. Like Solon's study, the study showed the intergenerational earning coefficient is 0.4, indicating that intergenerational mobility is limited.

Following the seminal work of Solon (1992) and Zimmerman (1992), there have been several studies attempting to estimate the elasticity of intergenerational mobility by considering the earnings of parents and their children. One of the salient features of subsequent works is that many attempts have been extended to other countries, particularly outside Western Europe and the USA. One such attempt was carried out by Lillard and Kilburn (1995), using wage data for children and their parents from the Malaysian Family Life Surveys. They found that the estimate of intergenerational earning mobility is 0.26 for Malaysia, quite similar to the earlier attempts provided in the literature review. The study covered a period of 50 years, starting from the mid-1930s to 1988. Compared to other studies, this study covers earning mobility of daughters and sons together using two consecutive surveys Malaysia Family Life Surveys. More interestingly, in addition to the permanent earnings of fathers, level of education of father, mother, and child, the authors investigated the correlation coefficient of children's earnings. One of the salient features of this study is that it takes into account more than one child if the family has multiple children. The findings of this study indicate that intergenerational relationship is extremely strong for daughters and sons. The investment in education by children is very sensitive to the earnings of fathers.

Dearden, Machin, and Reed (1997) further explored the scope of intergenerational mobility in the context of Britain. Unlike the earlier works, this study has chosen a representative sample of all eligible persons born in the country over a week of March 1958. Based on the longitudinal data extracted from the National Child Development Survey on children and their parents, this study measured Britain's intergenerational mobility. Not surprisingly, the study found that intergenerational mobility in terms of education and earnings is limited. Also, there was clear evidence to suggest that the intergenerational earnings and education correlation between fathers and both sons and daughters are strong. One of the interesting findings of this study is that those who are at the bottom of the earning distribution are likely to show upward mobility rather than downward mobility of those who are at the top of the distribution.

Using the Singapore National Youth Survey 2002, Ng (2007) examines the transmission of income across generations in the context of Singapore. Based on the interval and OLS regressions methods, the author attempts to explain the problems due to the estimation of permanent income and respondent errors. Because of these problems, this study makes use of the prediction of permanent income. The correlation coefficient of this study ranges from .23 to.28. Compared to other developed countries, the estimated correlation coefficient is high. The study found that the investment in human capital is essential as it operates as a pushing factor, particularly to males and low-income families. Based on the results obtained from a quartile transition matrix, the study found that the Chinese are likely to have higher mobility and the economic status of the rich was persistent. Since Singapore comprises a well-educated and skilled workforce, the findings presented by Ng (2007) have far-reaching implications for the economy.

In a comparison of IGM between Europe and North American countries, Blanden et al., (2005) found that while Northern Europe and Canada reports high social mobility, whereas Britain and the US have low social mobility. Their study suggests that evidence for a strong relationship between family income and education attainment mainly accounts for the low social mobility in Britain. The situation in the US is similar to Britain. Unlike other countries in the World, the investment in education plays a key role in the US labour market. The cost of education, particularly college education, in the US is very expensive and the income of parents determines the educational benefits of children in the US, which is known for racial discrimination, with black families being treated poorly. Perhaps, the racial dissemination may also account for the low social mobility.

Notably, Sato and Yoshida (2008), while examining the status of intergenerational mobility within the different income groups, identified that “transmission of wealth” is much faster than “transmission of poverty”. The study answers one of the key questions that whether the mobility among the wealthy class is explained by transmission of income or any other channels. Rather than the direct transfer of income to the next generation, the wealthy class can invest substantially in their children’s education and subsequently improve the status of employment. The speed at which the transfer of wealth from one generation to the next has significant economic implications.

Mocetti (2007) examines the degree of intergenerational mobility in the context of Italy. This study is quite distinct from the previous studies in the sense that it extends the extant literature by providing a technique of income elasticity. The study applied the two-sample two-stage least squares method, which resolves the problem if an appropriate data set is missing. Using the Survey of Household Income and Wealth, the study shows that Italy reports lower intergenerational mobility as compared to other developed countries. One of the critical aspects of intergenerational mobility is that why some children as successful in the labour market, while others are not. His study examines the reasons whether the economic status of children is associated with their parent's economic status.

Dunn conducted a similar study in the context of Brazil in 2007. Distinct from the previous studies, this study draws on insights based on the household survey data conducted in Brazil. Using econometric techniques, the author estimated the track of transmitting lifetime earnings to identify the impact of parents' earnings on their children's decision making. To estimate the effects of intergenerational earnings, this study used the life-cycle earnings of both parents and sons. Not surprisingly, the author claimed that the estimation of intergenerational earnings transmission is highest as compared to any other country in the world. Since the earnings of young sons are assumed to underestimate the actual lifetime earnings, the methods used by this study address to obtain a better way of measuring the transmission of lifetime earnings. Similar to other studies in this chapter, Dunn (2007) shows that the transmission of earnings across generations is facilitated by the investment in education.

Following the earlier empirical assessment of intergenerational mobility in Singapore, Ng et al., (2009) extended the extant literature by comparing intergenerational earnings mobility in countries: Singapore and the United States. In the case of Singapore, the data was sourced from the Singapore National Youth Survey and the Panel Study of Income Dynamics (PSID) was used to extract data for the USA. Not surprisingly, the authors found that the mean estimated earnings elasticities are more or less similar. While it is 0.26 in Singapore, the United States reports 0.28. One of the major questions is that whether the estimated earning elasticity is high or low. Compared to other countries in the world, the estimated earnings elasticities are low in Singapore and the USA. There is no surprise in the findings by the authors as both countries have more or less similar economic structures and standards of living.

Using the Panel data set, Celhay et al. (2010) attempt to compute the IGE in Chile. The estimated elasticity is 0.59 for men in Chile. In addition to estimating intergenerational income elasticity, the study also attempted to estimate schooling mobility. Based on the data extracted from the household panel survey, the authors attempted to use the actual income data for parents and children, instead of using only the actual income of the children. The previous studies in the context of Chile found the income of parents by asking their children. The findings of this study showed that intergenerational income elasticities are high as compared to other countries in the world. A gender-wise comparison shows that intergenerational income elasticities are higher for sons than for daughters. While looking at educational mobility, the authors found results similar to income elasticities. What is interesting is that the transfer of economic status more or less remain the same during the last years, the educational mobility is found to have increased during the last years.

Following the study by Celhay et al. (2010), Núñez and Miranda conducted a study in 2011, which gives empirical evidence on both intergenerational income and educational mobility in urban Chile. The study was placed in the context of Greater Santiago in Chile. Interestingly, the study found that intergenerational income elasticity varies from 0.52 and 0.54. In comparison with other countries in the world, it appears that intergenerational income elasticity is high. The study also showed that the younger cohorts tend to have lower intergenerational educational mobility, probably because of the life-cycle effects. Considering the different positions of the income distribution, Núñez and Miranda found that the two extreme positions report a higher degree of intergenerational persistence. The study observed one of the salient features that the top of the income distribution comprises a high concentration of income.

Gong et al., (2012) attempt to understand the transmission of income across generations in urban China. By minimizing the potential measurement error and biases, Gong et al. estimated the intergenerational income elasticity for urban China. The study addressed two critical issues, measurement bias due to income fluctuations and life cycle effects. Unlike other studies in the field, the distinct feature of this study is that it covers not only father-son pairs in the analysis, but also father-daughter pairs, mother-son pairs, and mother-daughter pairs. The findings of the study suggest that IGE ranges between 0.74 for father-son, 0.84 for father-daughter, 0.33 for mother-son, and 0.47 for mother-daughter pairs. The findings of this study

have significant implications for Chinese policy formulations. China, one of the fastest-growing economies in the world, has witnessed a rapid growth of GDP per capita, mainly triggered by the transfer of parents' income to their children. Similar to the previous studies, this study highlights that the transmission of intergenerational mobility is mainly fuelled by educational attainment.

Ueda (2013) attempts to understand the extent of intergenerational mobility of earnings in South Korea. The relationship between parents and children's earnings is estimated using household survey data. The study was conducted in two different phases. In the first phases, using a simulation extrapolation method, the IGE is computed, which is estimated to be about 0.24 or less for sons of 30 years old. In the second phase, using a two-stage approach, the IGE is computed, which is about 0.25 for sons and 0.35 for daughters of 30 years old. If we consider the age from 25 to 54 years old, the IGE is 0.35 for sons and 0.4 for daughters. In the newer generation, children from low-income households get more opportunities in comparison to children from the old generation.

Using administrative earnings records, Chetty et al., (2014) attempt to provide a detailed analysis of intergenerational mobility in the context of the USA. Considering the birth cohorts for 1971-1993, it is found that intergenerational mobility has not changed much for the above-mentioned birth cohorts. The authors attempt to measure intergenerational mobility using the income of parents and children and the children are selected from the window of those who are born between 1971 and 1986. In addition, the authors also estimate the link between the likelihood of attending the college degree given the parent's income. For this purpose, the more recent cohorts are used. Interestingly, the calculation of transition probabilities, which estimate the likelihood of children to move from the bottom quintile of the income distribution to the top quintile. Using all these measures, this study found that there is the same chance for all those who entered the labour market in the past and those who enter the labour market at present. However, it should be noted that the impact of the 'birth lottery' is apparent because of the rising inequality.

Using cross-sectional data, Kan et al., (2015) estimated intergenerational income mobility in the context of Taiwan. Interestingly, this study was conducted in four pairs of individuals: father-daughter, father-son, mother-son and mother-daughter. The computed

elasticities vary significantly across these pairs of individuals. The estimated elasticities are 0.18, 0.23, 0.50 and 0.54 for father-son, father-daughter, mother-son and mother-daughter, respectively. It was observed that the income elasticity of mother-son and mother-daughter goes up concerning their children's birth year, while the elasticity of father-son, father-daughter is more or less stable. One of the limitations of the mean-regression estimation is that it does not provide many insights into the fast-growing countries. Instead, the *relative* mobility is estimated using structural quantile regression models. The key message from this study is that parents' income impacts children's income in terms of absorbing children's income shocks.

One of the crucial aspects of intergenerational mobility is to examine income mobility at the individual and household levels. Dang (2015), while examining intergenerational economic mobility in Vietnam, looked at the degree of income mobility for both sons and daughters. Using the data extracted from the Vietnam Household Living Standards Survey of 2012 and Vietnam Living Standards Survey of 1997-1998, Dang applied the two-stage least squares estimation for both father-son pairs and father-daughter pairs. The estimated IGE indicates that the country is in the phase of the intermediate stage. More aptly, the study showed that if fathers' earnings increase by 10 per cent, sons' earnings and individual income will increase by 3.61 per cent and 3.94 per cent, respectively. Similarly, the corresponding figure for daughters is less than that of sons' earnings. More clearly, if fathers' earnings increase by 10 per cent, daughters' earnings and individual income will increase by 2.84 per cent and 3.33 per cent, respectively. A salient feature of this study is that it touches upon the entire economic system of the economy, starting from the country's central planning economy to a market-oriented system.

Kim (2017) conducted a study in South Korea by examining intergenerational earnings mobility for sons who were born between 1958 and 1973 in South Korea. The estimated intergenerational earnings elasticity of South Korea is compared with other countries to understand the relative position of the country in social mobility. Using the data extracted from Korea Labor and Income Panel Study (KLIPS) and the Household Income and Expenditure Survey published by the Korean National Statistics Bureau. A two-sample approach is followed for conducting this study since the existing dataset does not include the earnings of both sons and fathers at the same time. The elasticity is estimated to be 0.4, which is in line with the findings of existing studies and low.

The findings of the study are important in several aspects. Two important features are worth noting. First, Korea witnessed impressive economic growth in the 1990s as the real GDP per capita increased 15-fold. It is interesting to note that there was a steady decrease in the inequality in wage earnings from the 1970s to the 1990s. The author attempted to answer an important question is that whether the continuous decline in earnings inequality is associated with the high degree of intergenerational mobility. Second, there was a resurgence of demand for education in South Korea. The increased demand for education has not only increased the quality of education but also expanded the educational system. A substantial improvement in all levels of education, particularly the primary and secondary levels of schooling, has improved the socio-economic standing of different sections of society.

The link between economic development and intergenerational mobility has not been well documented in the case of East Asian economies. Keeping this aspect in mind, Chu and Lin (2016) carried out a cross-sectional study focusing on fathers and sons in two distinct periods in Taiwan. The study was carried out in the context of Taiwan, one of the emerging economies in the world. In their study, they estimated intergenerational elasticities using the earnings of both fathers and sons in two distinct periods. As mentioned earlier, Taiwan is an emerging economy with a slow pace of economic growth. The study adopted a two-sample approach developed by Björklund and Jäntti (1997). The period of study is classified into two periods: the period between 1990-1994 and 2005-10. While the period between 1990 and 1994 recorded fast economic growth and the country was in a state of developing economy, the second period witnessed slow economic growth and the country was in the stage of a developed economy. The study reveals two striking features: first, the empirical evidence suggests that intergenerational earning elasticity ranges from about 0.4 to 0.5; second, notwithstanding a rapid economic development in the country, the transmission of economic status across generations in Taiwan was quite stable. A summary of all the empirical studies reviewed in this section is given in Table 2.1.

Table 2.1

Summary of the international studies on intergenerational earnings mobility

Author (s)	Year of publication	Data source	Country	Method	Estimate of β
Atkinson	1980	Survey data	UK	OLS	0.358
Atkinson et al.,	1993	Rowntree Survey	UK	OLS	0.425
Becker and Tomes	1986	Consensus estimates		OLS	0.200
Solon	1992	PSID	USA	OLS and IV	0.386 – 0.526
Zimmerman	1992	NLSY	USA	OLS, IV, and GMM	0.248-.42
Lillard and Kilburn	1995	Family Life Survey	Malaysia	OLS	0.25-.26
Dearden, Machin, and Reed	1997	National Child Development Survey	UK	Log-linear regression	.40-.75
Ng	2004	Youth National Survey	Singapore	OLS	.23 -.28
Blanden et al	2005	Various data sources	Europe and North America	OLS	0.29
Sato and Yoshida	2008	Japanese General Social Survey	Japan	Dependent variable model	--
Mocetti	2007	Survey of Household Income and Wealth	Italy	Two-stage least square	0.50
Dunn	2007	Household Survey Data	Brazil	OLS	.68
Ng et al., 2009	2009	Youth National Survey and PSID	Singapore and USA	Regression	0.26 - 0.28
Celhay et al.	2010	Panel CASEN survey	Chile	Log-linear regression	--
Núñez and Miranda	2011	Employment and Unemployment Survey	Urban Chile	Two-stage least square	*0.52 to 0.54*
Gong et al.,	2012	Urban Household Education and Employment Survey	Urban China	OLS	0.36-0.97
Uaed	2013	Microdata	South Korea	Solon Model	*.25*
Chetty et al.,	2014	Statistics of Income	USA	Rank-rank	--
Kan et al.,	2015	Survey of Family Income and Expenditure	Taiwan	Quantile regression	*0.18 – 0.54*
Dang	2015	Household Living Standards Survey	Vietnam	Two-stage least square	*0.28 – 0.39*
Kim	2017	Korea Labor and Income Panel Study	South Korea	OLS	*0.22*
Chu and Lin	2019	Taiwan Social Change Survey	Taiwan	OLs	*0.4 -0.5*

***Source**:* Compiled by the author from various literature.

2.2.2.2 Evidence from India

Based on the two rounds of NSS, namely the 1983 and 2004-05 rounds, Hnatkovska et al. (2013) presented evidence for a high degree of intergenerational income mobility in India. Interestingly, the elasticity of wages for children in comparison to the earnings of their parents has declined from 88 per cent to 45 per cent for SC/STs and from 76 to 58 per cent for non-SC/STs. An analysis of SC/STs and non-SC/STs by income class shows that both SC/STs and non-SC/STs belonging to the middle-income class witness the sharpest increase. More clearly, considering these two groups, children who belong to SC/STs have a high chance to improve their relative standing in the income distribution than non-SC/STs children.

However, what is surprising is that non-SC/STs are likely to record a larger size of improvements than SC/STs. Notwithstanding the striking features, the empirical estimate of IGM has a major limitation. In the estimation of IGM, both grandfather and father are taken into account in the same generation and both child and grandchild were put together in the next generation. This sort of classification does not seem appropriate to exploring the mobility between adjacent generations. Moreover, it is noticed that the estimation of intergenerational mobility for STs and SCs together does not consider the differences arising out of the two social classes as SCs are considered to be much more advanced than STs in India.

Departing from the conventional way of looking at intergenerational mobility, Mishra and Kumar (2018), using the Indian Human Development Survey (IHDS) rounds of 2004-05 and 2011-12, indicating the incidence of inequality across the various income distribution. Interestingly, it is found that the per capita income for the top 20 per cent of the income distribution increased from ₹25,059 in 2005 to ₹69,641 in 2012, recording an average growth rate of 25.4 per cent during this period. At the same time, the per capita income for the bottom 20 per cent of the income distribution has increased from ₹1389 in 2005 to ₹3373 in 2012, with an average growth rate of 20.4 per cent. Notably, the estimation of income mobility with the help of the transition matrix suggested a higher persistence at the top of the income distribution and a low persistence with 34 per cent at the bottom of the income distribution in both rounds.

Similar to Mishra and Kumar (2018), Li et al. (2019) revealed that India has abysmally low social mobility, suggesting that only 3 out of 10 poor households can come out of their poor status. The findings indicate that inequality is immedicable. One of the key objectives of this study is to investigate the status of economic mobility in India while taking into account the issues arising out of measuring intergenerational mobility in the Indian context. A detailed analysis of India's rising inequality and its impact on different social groups is important to understand the progress of welfare schemes initiated in India over the past few decades.

Concerning measuring mobility, this study applied partial identification of transition matrices to panel data on household consumption. It also finds that India has very low mobility. More clearly, it showed that about three-fourths the poor households tend to remain poor or at-risk of being poor between 2005 and 2012. An analysis across religions, social groups, and rural-urban households indicates that Muslims, lower-caste groups, and rural households may find it difficult to move out of poverty compared to Hindus, upper-caste groups, and urban households. The shreds of evidence presented to show that inequality in India is chronic and refute the fundamental notion that disadvantaged groups are moving towards the average.

Using the 50^{th} (1993) and 66^{th} (2009) rounds of the NSS, Ray (2014) suggested that absolute intergenerational income mobility is low. Departing from the previous findings, Ray found that only 22 to 25 per cent of the male workers with 20 years and above had higher wage income than their father. What is surprising is that about two-thirds of workers with 20 years and above have lower wage income than their fathers. In addition, estimates of the transition matrix show that relative IGM for income has declined from 20 per cent in 1993 to 18 per cent in 2009. However, the estimates of wage income elasticity show that the persistence of the child's wage income over the father's wage income has declined from 0.55 in 1993 to 0.38 in 2009. An analysis of mobility by social groups indicates that SCs registered the highest improvement in intergenerational persistence and OBCs and STs also recorded improvements but less than individuals of general caste. Less impressive about this study is that the recording of income of father and son was done at significantly different ages.

Using the 68^{th} round of the NSS, Lefranc and Kundu (2020), with the help of multiple imputations, impute values for the non-response part by using the possible information provided by the response and non-response part. The EUS rounds of NSS covers wage data for

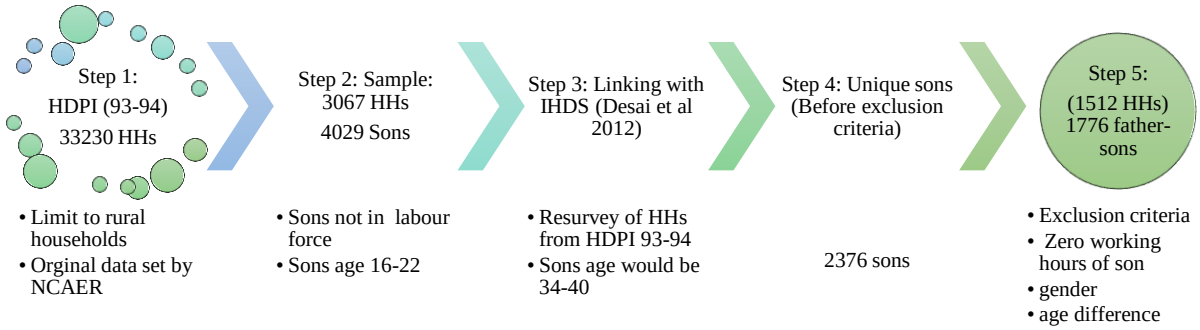
various categories of employment such as self-employed, regular and salaried employees, and casual workers. While the wage data for regular and salaried workers are more reliable, the wage earnings by self-employed and casual employees are difficult to obtain because of the nature of their work. Therefore, it is required to impute values for the non-response part to tackle the problem of missing wage values.

By measuring both inequality and inequality of opportunity using consumption and wage data, the study suggested a higher value of mean log deviation for consumption when inequality was the variable of interest and a higher value of mean log deviation for a wage when the variable of interest was inequality of opportunity. One of the striking findings of this study is that about 39 per cent of wage inequality in India is arising from unequal social and parental backgrounds that include caste, sex, region, parental education and father's occupation. One of the limitations of the study is that it uses multiple imputations. It may produce unexpected results as it involves intensive calculations and approximations.

In an attempt to examine intergenerational mobility in developing economies, particularly India, Mohammed (2019) applied multiple rounds of cross-sectional datasets and panel datasets. This study aims to analyse the results obtained from different rounds of cross-sectional data in a comparative framework. Two major sources of data used in this study are the EUS published by NSSO and the HDPI-IHDS panel dataset. Considering the NSS dataset, three rounds were taken into account: Round 38 (1983), Round 50 (1993–94), and Round 68 (2011–12). Distinct from the NSS dataset, HDPI-IHDS is a panel dataset, covering the socio-economic status of the same households in multiple periods. The following diagram illustrates the procedures to source data from the HDPI-IHDS data (Figure 2.1).

Figure 2.1

The procedures followed for sourcing data from HDPI-IHDS



Source: *Compiled by the author from Mohammed (2019)*

This is one of the classic papers, addressing several issues that have not been addressed in the previous literature. The major questions addressed by this study are as follows. First, is there any change in the degree of intergenerational earning mobility when the household includes adults, who are not parents or children of the representative sample? Second, perhaps, the most important methodological issue is that whether IGE estimates are more reliable when we use household consumption expenditure, rather than using household income data. Third, how mobility estimates are influenced when we consider co-resident samples? Fourth, will there be a change in the degree of mobility estimates when we adopt scaling parameters are obtained from the sampling data? And lastly, is there any reason to substantiate the relationship between father and son's economic status is non-linear? One of the salient features of this study is that it describes the changes in occupational structure by social group. The study used two digits of the NCO-68 codes of occupation in 1993–94 and NCO-04 codes of occupations in 2011–12 to examine occupational mobility.

One of the most recent studies by Asher et al., (2020) examines intergenerational mobility in India over time, and across groups. Departing from the conventional techniques such as regression and transition matrix, this study followed a set of rank-based mobility measures. In addition, the method adopted in this study upward mobility that is more suitable in the context of developing economies such as India because of the data constraints problem. The intergenerational mobility in India has been constant since the new economic reforms. It is of interest to note that the rising mobility among Scheduled Castes boys is offset by declining mobility among Muslim boys. In comparison to boys, mobility among girls is lower and there

is hardly any significant cross-group variation over time. What is interesting is that there is a high degree of mobility in southern, urban regions, and have a high level of educational attainment. The affirmative action taken by the government for improving the economic status of the Scheduled Castes is captured. A summary of all the empirical studies reviewed in this section is given in Table 2.2.

Table 2.2

Summary of the studies examining intergenerational income mobility in India

Author (s)	Year of publication	Data source	Major observations/ features
Hnatkovska et al.	2013	NSS-EUS	SC/STs and non-SC/STs
Mishra and Kumar	2018	IHDS	Inequality across income distribution increased
Li et al.	2019		Differences within and across religious and social groups
Ray	2014	NSS-EUS	Low absolute intergenerational income mobility
Lefranc and Kundu	2020		Social background matter in India
Mohammed	2019	IHDS-NSS (EUS)	Earnings and occupational mobility across social groups
Asher et al.	2020		Improved the economic status

Source: *Compiled by the author from various literature.*

2.3 Education and Occupation Mobility

2.3.1 International Studies

Intergenerational mobility has extensively been debated and discussed by both sociologists and economists. While economists explored the idea of intergenerational mobility in terms of income, sociologists and other social scientists, attempt to present the empirical evidence for intergenerational mobility in terms of occupational structure, educational attainment, and other characteristics of parents and their children. From a policy perspective, the empirical estimates of educational and occupational mobility are of paramount importance in developing countries such as India because of the implementation of affirmative actions and redistribution of policies. The most recent studies attempt to provide a detailed analysis of intergenerational mobility across various social groups and income classes. The review of various empirical studies indicates that the comparison of absolute income between the two generations from before and after liberalization in such a way that both father and son are of the same age is missing in the literature.

The first area of study that is quite relevant for this study is the human capital theory, which was developed by Becker and Mincer. As mentioned earlier, the theory provides vital insights into the economic rationale for the parents' decision to invest in their children's education. A detailed explanation of the impact of human capital investment on children's income and occupation levels was illustrated by Becker and Tomes (1979). The occupational choice of children is greatly influenced by parents' investment in their education, which operates as a gateway to obtain better skills and knowledge. In addition, the theory of social status attainment provides a series of additional factors, which are mostly unobservable characteristics such as social connections, family interactions, lifestyles and other advantages by which parents transfer, influence their children that persist throughout life (Haveman & Wolfe, 1995).

The transmission of benefits from parents to their children operates directly. For example, it is reasonable to assume that the son of a father with a professional job is likely to pursue and get the same occupation due to family connections. This is further illustrated in Weber's concept of social closure, which describes how "social collectives seek to achieve maximum rewards by limiting access to resources and opportunities to a limited circle of eligible" (Parkin, 2018). The same phenomenon can be presented with a simple example. If children want to get admission to top-ranked universities, they need certain qualities, which are generally available from affluent backgrounds. We can imagine that children with poor backgrounds want to get admission to universities, they will have to go through a lot of obstacles (Fishkin, 2012).

A study by Blau and Duncan (1967), in their influential book 'The American Occupational Structure', attempt to investigate the effects of family status on the economic achievements of children. By way of presenting a systematic analysis of the structure of American occupation, intergenerational occupational mobility is assessed. As noted by scholars earlier, the process of moving from one social position to another often manifest in the form of occupational change. As argued by Blau and Duncan, intergenerational mobility may be better conceptualized by tracing occupational changes by different generations of family members and factors affecting the occupational movement such as education, race, family connections, and the size of the family. In their book, Blau and Duncan attempt to trace the occupational structure by collecting empirical data of over 20,000 American men between

the ages of 20 and 64. The occupational change across generations was carried out using a representative sample drawn from the Current Population Survey published by the Bureau of the Census.

The model proposed by Maoz and Moav (1999) encapsulates the interconnection between income inequality and intergenerational mobility. The study gives a detailed explanation for why developed economies tend to have a higher degree of intergenerational mobility. In the economics literature, the relationship between these two variables has attracted growing interest in theoretical and empirical studies, but there is a lack of sufficient explanation for the relationship. The persistence of inequality is considered to be a key force driving mobility. The empirical evidence on the relationship between these factors shows inconclusive results, although the majority of the studies assume that there is an intrinsic relationship between these two. For instance, while Maoz and Moav (1999) establish a positive relationship between intergenerational mobility and wage inequality. It is observed that the costs associated with the investment in human capital are linearly related to income. The study concludes that education cost plays a crucial role in mobility and inequality. Similarly, Hassler et al. (2007) show that the relationship between inequality and mobility are both negative and positive.

According to Iyigun (1999), intergenerational income mobility measures the changes in the relative economic positions of families over a while. Over the last three decades, intergenerational economic mobility has been the core subject of several theoretical and empirical studies. Some of these studies have touched upon the mobility of different education costs from a comparative perspective. It is acknowledged that an examination of the link between government education and economic mobility has significant policy relevance. In developing countries such as India, education, be it primary, or secondary, or tertiary is predominantly funded by the public sector. Therefore, it is important to examine how the provision of public education help society to transform itself and achieve an equitable distribution of resources. There is no doubt that education is key to economic development as it determines individuals' socioeconomic classes. The main contribution of this work is that it investigates the link between educational attainment and intergenerational economic mobility. More importantly, the study found that the allocation of more resources into public education help to increase social mobility in tandem with the rise in economic development. The free and

compulsory education provided by the government would help millions of educated people to take part in the mobility process.

To understand the relationship between occupation and education mobility, Mueller (2000) undertook a study in the contexts of the United States and Germany. Broadly, this study made an effort to develop a theoretical framework by combing features of existing models such as human capital theory, status attainment theory, dual labour market theory, and Weber's theory of social closure. For carrying out this study, the author used data extracted from the International Social Survey of Program (ISSP) 1987 for Germany and General Social Survey 1994 for the US.

One of the major findings of the study is that social status is inextricably bound up with education attainment, which further is linked to access to employment in the labour market. Considering highly-skilled jobs are closely associated with higher education. On the other hand, the case of Germany is slightly different from the USA. What is interesting is that the former tend to have more mobility than the United States. Departing from the conventional techniques to understand intergenerational mobility, this study employed the RC-association model, which has several features in exploring social mobility. The pieces of evidence drawn from the data shows that the patterns are similar for both countries. The author observed that both countries report a strong degree of social closure, which is represented by self-recruitment. In sum, it can be stated that the rate of mobility is higher in Germany than in the United States.

Checchi (2006) attempts to address the issues of measuring intergenerational mobility and its impact on public welfare in the context of Germany, Italy, and the United States. A key question that this study attempts to answer is that why investment in education beyond a certain limit does not result in reducing social inequality? Unlike other developed countries, Germany has placed utmost importance on vocational training and follows a dual higher education system by distinguishing vocational training from traditional universities.

One of the salient features of this study is that the factors affecting intergenerational mobility, particularly level of education, using three different datasets. By decomposing various factors, the study found that the level of education is key to intergenerational mobility. The evidence gathered from these countries showed that almost half of observed immobility is

attributed to educational attainment. What is essentially important is that the scope of equality of opportunity needs to be widened, which in turn, is likely to reduce the magnitude of income inequality in the country.

With the help of a modified version of the Maoz and Moav model, Nakamura and Murayama (2011) report the relationship between income inequality and intergenerational mobility in a dynamic framework. One of the key features of the study is that it touches upon the impact of technological changes on inequality. In addition, the study overlooked the role of education cost in the income distribution and is assumed that it is a decreasing function of income. The study concludes that the dynamic relationship between income inequality and intergenerational mobility depends on the education costs, without providing many insights on constituents of education costs.

Using the American Community Survey 2007-09, Carnevale et al. (2011) attempt to establish that the higher the investment in education proves to be a better source of employment opportunities and therefore a high chance to earn good returns in the labour market. One of the salient features of this study is that what sort of college degree is worth investing in. In addition to the college degree, any other degrees that might influence a person's capacity to earn are taken into consideration. By way of considering the lifetime earnings across all types of education and occupational earnings, this study examines intergenerational mobility for different social groups and age groups. The conclusion from this study is that the investment in a college degree is essential as it provides a wide array of employment opportunities. In addition, a college degree provides a better-earning capacity for those who have better educational credentials.

A study by Ng (2014) provides a clearer framework regarding the effects of educational investment on intergenerational mobility. The study was conceptualized in the context of Singapore. The improvement in access to education is likely to decrease intergenerational mobility. Access to education, according to this study, can be improved in several ways. It is can be improved through privatization of basic and tertiary education, low drop-out rates, expanding investment in higher education with an affordable fee, government scholarships, and allocating a significant share of public expenditure on education. Affordable access to education increases the productivity of the labour force in a country. Interestingly, this study

provides insights on a comparison between Singapore and Finland, indicating that there is a scope for achieving greater equity and social mobility without reducing the degree of economic competitiveness from the existing level. According to this study, Singapore has moderate intergenerational mobility.

In continuation of Checchi (2006), a study by Chen et al., (2020) explored the linkage between higher education tuition and intergenerational mobility. The main objective was to examine intergenerational education mobility by looking at the policy effect of the reforms undertaken in the mid of 1980s. This study was contextualized in the case of China. By constructing a theoretical framework, an attempt was made to examine how parents' decisions to invest in the education of children create borrowing constraints. To find children's education, the authors consider college tuition and subsidy reform and its impact on intergenerational mobility. The data was extracted from the census of 2000 and the China Family Panel Studies (CFPS). One of the key findings of the study is that any increase in education costs due to the reforms is likely to reduce intergenerational educational mobility. More importantly, this phenomenon was observed in regions that reported a relatively higher increase in education costs.

Zhuo et al., (2021) attempt to understand intergenerational occupational mobility in rural China. Using the data from Chinese Rural Development Surveys, this study examines the role of human capital in intergenerational mobility over three generations. The survey covers four stages, consisting of panel data from 2000 households in 100 villages. More specifically, this study looked at the role of skills and knowledge over three generations and its impact on occupational mobility. The survey divided the households into four groups. The first group of the family comprises only household heads and their spouse. The second group of the family comprises children of the households who are depending on their parents for financial needs. In other words, the children are not financially independent. The third group of family includes married children residing with the household head (father) and sharing the common space and kitchen. The fourth group covers relatives or non-relatives who are residing temporarily in the household. Typically, they reside for three or more months. This study reiterates the fact that the investment in human capital is a vital source of occupational mobility. Based on the regression models, the study confirms that investment in human capital, skills, and training facilitate farmers to shift their occupational status.

A study by Santiago-Caballero (2021) was conducted to examine changes in intergenerational occupational mobility in pre-modern Spain. This study contextualized occupational mobility to a small region called Valencia by looking at the marriage records obtained from the civil registry. One of the key findings of this study is that there was an improvement in occupational mobility between 1841 and 1850. However, the author found that the same situation did not continue in the next decade. One of the remarkable findings of this study is that the supports given to the bottom of the income distribution did not last for long. In general, the author found that occupational mobility in the region was lower as compared to other European countries. By 1870, the author claims that a polarised society was visible in Valencia. It is interesting to note that the downward mobility was quite visible and apparent among the lowest income groups. A summary of all the empirical studies on intergenerational educational and occupational mobility in this section is given in Table 2.3.

Table 2.3

Summary of the studies on Intergenerational education/occupation mobility

Author (s)	Year	Country	Data source	Key findings
Blau and Duncan	1967	USA	Current Population Survey	Changes in occupational structure
Maoz and Maoz	1999	--	Theoretical Model	Why mobility is high in developed countries
Iyigun	1999	--	Theoretical Model	Impact of public education
Mueller	2000	Germany & USA	International Social Survey of Program	Germany has higher mobility
Checchi	2006	Germany, Italy, and the USA	Individual data sets	Education costs and mobility
Nakamura and YuMurayama	2011	Japan	Theoretical Model	Dynamic framework
Carnevale et al.	2011	USA	American Community Survey	Education costs and mobility
Ng	2014	Singapore	Programme for International Students Assessment	Reviews findings in a comparative framework
Yuanyuan Chen; Quanlin Liu; Kun Wu	2020	China	The census of 2000 and the China Family Panel Studies	Education costs affect negatively mobility
Zhuo et al.,	2021	China	Chinese Rural Development Surveys	The role of investment in human capital, skills, and training is important
Santiago-Caballero	2021	Spain	Civil Registry of marriage records	Lower occupational mobility the select region

Source: *Compiled by the author from the respective literature.*

2.3.2 Evidence from India

Regarding the empirical evidence from India, we reviewed a few research papers published recently. Based on the data sourced from the National Election Study (NES) of 1996, Kumar et al. (2002) illustrated mobility in occupation in terms of origin and destination. India is predominantly an agrarian economy, employing about two-thirds of employment in the country at the time of independence. In this background, the authors found that 90 per cent of the people related to cultivation came from the same background. In other words, the children of farmers tend to become farmers. The author observed that this tendency is due to the transfer of land from father to his son. Salaried employees, who are usefully employed in white-collar and skilled employment, move to their destination beginning from the diverse background of their father. What is striking is that about 68 per cent of individuals with unskilled backgrounds remain unskilled.

Using the initial survey of India Human Development Survey (IHDS-1), Motiram and Singh (2012) found that children with unskilled and receiving low wages tend to remain in the occupational structure. Based on the unit-level records sourced from the IHDS 2005, the authors investigate occupational mobility across generations in India. In the Indian context, the authors claim that there is hardly any systematic and rigorous studies to address the issue of occupational mobility. The analysis of intergenerational mobility was performed according to the economic status of individuals. Moreover, the classification as per the rural and urban sectors and for different caste groups is a useful way of analysing the mobility. One of the striking findings of the work is that about 50 per cent of the children belong to agricultural labourers, who perform low-skilled and low-wage occupations, tend to become agricultural labourers. The study concludes that there exists a great deal of inequality of opportunity in India.

A study by Hnatkovska et al. (2013) focussed on intergenerational educational and occupational based on the EUS rounds published by NSS. Departing from the previous studies mentioned in the literature review, one of the major objectives of this study is to analyse the mobility pattern in a comparative framework by looking at the education mobility among non-SC/STs and SC/STs. One of the key observations made by this study is that differences in the degree of intergenerational mobility between advantaged and disadvantaged groups have come down. Therefore, it is worth noting that an analysis of occupational mobility between these two

groups shows that there exists a stagnation, perhaps due to reasons other than caste. The SCs and STs are generally considered as the disadvantaged social groups in India. This research applied median wages to classify occupations. One of the drawbacks of the EUS data is that wages and incomes are missing for many workers, mainly for self-employed workers. The self-employed comprise about 55 per cent of the total workforce in India. From a review of these research papers, it is observed that the inclusion of both grandfather and father in the same generation is a major limitation. Similarly, the inclusion of children and grandchild in the next generation is also undesirable from a pragmatic point of view. From the review of many research studies, it is observed that such a step is usually redundant while exploring the mobility between adjacent generations.

In general, the application of probit regression to examine intergenerational mobility does not consider the distance between the occupation held by parents and children. While the probit model considers whether the son leaves the father occupation, the transition matrix is used to understand the distribution pattern. Keeping this aspect in mind, Reddy (2015) attempts to measure changes in occupational mobility using the EUS rounds of NSS data up to the year 2011-12. The intergenerational occupational mobility is low in India, particularly among the Scheduled Castes (SCs) and Scheduled Tribes (STs). Unlike other studies described in the literature review, the method employed in this study is complex and involves a few steps. The use of the log-linear approach may avoid such steps.

Concerning education mobility, Kishan (2018) examined the years of schooling between father and son are correlated. The main motive of this study is to examine the factors determining intergenerational education mobility, with special reference to India. Based on the IHDS-II, which was published in 2011-12, this study looked the mobility beyond co-resident only, which is generally considered for intergenerational mobility. The author used about 44,532 samples, comprising both son and father in a family.

This study found evidence for a high degree of intergenerational persistence in education. At the same time, the degree of intergenerational persistence observed in education is declining slowly throughout the study. It also considers quantile regressions and found that the educational outcome obtained by father and son is non-linear. The analysis of this study was carried out across various advantaged subgroups such as urban people, upper castes, and

Hindus in comparison to disadvantaged subgroups such as rural people, lower castes, and minority religions. The study found that gap between these two subgroups has widened. The shreds of evidence also suggest that the generation during the fathers' time experienced a high degree of inequality but less mobility, corroborating the nexus between inequality and social mobility illustrated in the 'Great Gatsby Curve'. Apart from the micro variables, the author found other macro variables, mainly economic growth and public expenditure, affecting mobility. Both macroeconomic variables tend to positively influence educational mobility.

Similar to the preceding study, Ray and Majumder (2010), using two rounds of NSS, namely the 1993 and 2004 rounds of EUS, presented evidence for less mobility for both occupation and education, with the former being less than education mobility. Mobility, be it educational or occupational, is important for all groups of individuals in society, particularly those who are at the bottom of the income distribution. However, it is argued that that upward mobility is significantly concentrated in the hands of a few people who are socially well-off, leading to a great deal of difference in educational attainment and occupational levels. This study provides ample evidence to suggest that the level of intergenerational mobility is persistent in both educational levels and occupational structure for different categories of groups is persistent. One of the key features of this study is that it verifies the pattern observed at the national across India, looking at the different states in India. Finally, the study shows that there is some sort of intergenerational stickiness when we consider educational achievement and occupation together. From a policy perspective, the study showed that occupational mobility is lower than educational mobility. It indicates that the progress made in the educational front has not been transformed to occupational mobility and there exists labour market discrimination.

Based on the data sourced from the first round of the IHDS data, Azam and Bhatt (2015) computed the average intergenerational correlation for India. The estimate shows that the correlation is 0.523, which is higher than 0.420, which is the average global correlation. An examination of the association between expenditure on education and intergenerational educational mobility is strong. To examine the mobility further, the authors created a database of father-son pairs, which is considered to be representative of the adult male population at the national level. In their study, the authors have examined the intergenerational educational mobility among various social groups for birth cohorts of 1940–1985. To measure the extent

to which a father's education predicts a son's education, the author used the regression coefficient. It is found that educational persistence has declined over time, suggesting that increases in average educational level are influenced by increases among children of less-educated fathers. An analysis of the correlation between the level of education by fathers and sons does not show a declining trend. One of the serious concerns is to investigate the source of such a discrepancy, which results from the use of two different methods of measuring educational persistence. An analysis of intergenerational correlation by income distribution shows that the lower end of the fathers' educational distribution declined and increased at the top end of that distribution.

A study by Emran et al. (2020) explores further the Becker-Tomes model of intergenerational educational mobility in the context of rural areas of India and China. One of the salient features of this study is that his study explores farm-nonfarm occupational structure in a comparative framework in the context of rural China and rural India. According to this study, what determines relative mobility is the returns to education for parents and the efficiency of human capital investment in children's education. The sons in rural India experience less access to educational facilities compared to their counterparts in rural China during the period from 1970 to 1990. According to this study, the differences observed in the comparative framework are due to the genetic correlations in China, whereas the same does not hold in India. For instance, a son's investment in schooling is greatly influenced by the father's nonfarm occupation, which is a complementary factor. As mentioned in the first chapter, India's structural change has favoured the emergence of nonfarm sector employment, which might have impacted educational inequality.

A study by Sil & Dhillon (2020) attempts to investigate the occupational changes between two different generations of a family using two rounds of the IHDS. To trace the changes in occupations across generations and factors determining occupational mobility, the study applied a matrix and multinomial logistic regression model, respectively. The analysis indicates that the lower-class occupations are mostly stable across generations. It is interesting to note that the tendency to change in occupations has been prevalent among the most disadvantaged caste groups in India. The tendency to change occupations may be of upward direction or downward direction. The downward direction is commonly observed among poor workers. At the same time, the downward direction has hardly been

observed among highly educated members. Not surprisingly, the highly educated members work in superior fields and earn better than their parents. There are two important messages from this study. First, education matters a lot in intergenerational occupational mobility. It transforms people from lower-order positions to higher-order positions. Second, poverty is an obstacle in occupational mobility, irrespective of social groups.

Based on three rounds of sample surveys in India, Lahiri & Nandi (2020) examine intergenerational occupational persistence. The study found that about two-thirds of Indian residents were employed in the sector in which their fathers were employed. An examination of occupational mobility by social group and religion shows that STs and Hindus are highly probable to report high occupational persistence as compared to the General group and Muslims, respectively. Similarly, a sector-wise analysis shows that the rural sector is highly probable to show more persistence than the urban sector. Although India is unique, there exists a great deal of disparity across states. Not surprisingly, the study also showed evidence for intrastate disparity for different social groups. The northern and central states such as Bihar, Madhya Pradesh, Chhattisgarh, and Jharkhand are reported to have high occupational persistence. This study applied the probit model to estimate the probable factors influencing intergenerational persistence. Using the probit model, the study showed that the economic background of a family, among other variables, has a significant impact on intergenerational persistence. One of the key messages highlighted by this study is that it is not the educational level, rather the family background matter in determining occupations in India. A summary of all the empirical studies related to educational and occupational mobility in India is given in Table 2.4.

Table 2.4

Summary of the empirical studies on intergenerational mobility in India

Author (s)	Year	Data source	Major observations
Kumar et al.	2002	National Election Study	Unskilled individuals remain unskilled
Motiram and Singh	2012	IHDS-I	Sons of unskilled and low paid fathers remain in the same occupation
Hnatkovska et al.	2013	EUS-NSS	Intergroup difference across social groups in India
Reddy	2015	EUS-NSS	Less occupational inter-generational mobility in India
Kishan	2018	IHDS-II	Investigation of intergroup difference across social groups in India
Ray and Majumder	2010	EUS-NSS	Strong intergenerational stickiness in educational achievement
Azam and Bhatt	2015	IHDS	Investigation of intergroup difference across social groups in India
Emran et al	2020	Individual country data	Occupational dualism in intergenerational educational mobility in India and rural China
Sil & Dhillon	2020	IHDS	Education is important.
Lahiri & Nandi	2020	EUS-NSS	Family background plays a key role in occupational mobility

***Source**: Compiled by the author from various literature.*

2.4 Social Mobility in India

2.4.1 Background

The research on social mobility has gained great momentum when the researchers found that the status of social mobility has significant implications for the economic growth of s country. Broadly speaking, social mobility refers to 'the ability to move from one position to another. Upward social mobility refers to the ability of the family members to move from a lower position to a higher level of education or occupational status. Economists measure the social position in terms of the ability to earn income or earnings. In other words, according to economists, social mobility is defined as the ability of family members to move from a lower class to a higher social class or income group.

In general, social mobility includes economic mobility, particularly income mobility. From a pragmatic point of view, achieving a high degree of social mobility is essential. It enhances not only economic growth but also ensures the persistence of equal opportunities in society. Regarding social mobility, Aldridge (2001) put it, "Social mobility matters because equality of opportunity is an aspiration across the political spectrum. Lack of social mobility

implies inequality of opportunity" (pp 45). It has come from the 'meritocratic idea' – the idea that the success and growth of an individual depend on his abilities and efforts rather than on his parent's background or social position. It is generally linked with having a more open society where the strong association between parents and children's income is not necessary (Jantti & Jenkins, 2015).

However, this does not mean also that zero correlation between 'parent' and 'child' is optimum because this would present a strange market economy in which there is no return to human capital investment, as suggested in Black & Devereux (2010). Also, this highlights the importance of recognising the mechanism for intergenerational correlations; if it is due to differential human capital investment, the role of public provision or financing education comes into place.

The discussion on social mobility mainly revolves around two key questions. First, does social mobility across the country vary significantly? Second, perhaps the most important question is that whether social mobility has been rising or falling over time in different parts of the geography? A further examination of social mobility by gender and sectors (rural and urban) is also explored in the literature. The degree of social mobility can also be assessed at the household level. In such cases, it is important to address whether families experience upward mobility or downward mobility. The study of social mobility is mainly concerned with the changing nature of social ascension from one position to another or lower educational attainment to higher educational attainment. From a policy perspective, attempts to trace the changes in social positions are of paramount importance, as it reflects the efficiency of affirmative actions taken by the government to offset the effects of family status on the children's capability in the next generation.

While going through the extant literature, it is observed that a plethora of empirical studies examined intergenerational mobility in a cross-country framework. There has also been a growing academic interest in investigating the changes in social mobility over time. A few studies attempt to investigate the social mobility status across countries by drawing insights from empirical data. These studies include Goldthorpe (1985), Hout (1988), DiPrete and Grusky (1990), Jonsson and Mills (1993), Hauser and Huang (1997), and Vallet (2001). Goldthorpe (1985) studied the empirical obfuscations on the relationship between social

mobility and economic development in the context of the UK. Hout (1988) finds, by way of examing the relationship between workers' origin status and destination status that college education reduces the difference between origin staus and destination status of workers. Similalry, DiPrete and Grusky (1990) have looked at the changes in occupational status from 1972 to 1987 using the data from the General Social Survey. They found that government policies play an active role in equalizing opportunities.

Thus, from the policy perspective, it becomes essential to promote mobility in an optimum manner where chances of an individual may not get diminished for which he is not responsible. To promote mobility in an optimum manner, Fishkin (2012) focussed on the 'bottleneck approach'. In this approach, importance is given towards recognizing the main source of difference rather than looking at a problem from the top. For instance, if the majority of students in top universities come from a rich background because they are most successful in coming ahead in the entrance examination of these universities. In such a situation, the reduction of fees for the poor in top universities creates less impact than building capacities at the initial level by providing facilities and neighbourhoods where they can easily achieve all the qualities that are important for getting admissions in top universities. Correspondingly, Heckman and Mosso (2014) found that early intervention programs improve intelligence in a significant way and they are more effective than the programs targeting disadvantaged adolescents.

2.5 Research gaps

Overall, it is found that there is a limited number of studies on intergenerational mobility in the Indian context. This is an emerging area in the field of labour economics. It is worth undertaking a combined study on different types of mobility- education, occupation, and income after 2004-05. In the Indian context, it is felt that the relationship between income inequality and intergenerational mobility is observed. The majority of the studies are focused on calculating the rate of different kinds of mobility not on how they may be related to one another like education with occupation mobility. It is important to understand intergenerational mobility across social groups to know the effectiveness of the government intervention. India is diverse, comprising different states, religions, and social groups. Therefore, it is pertinent to examine the regional level differences and its impact on social mobility. From Indian empirical studies, it is found that there is a little emphasis put on knowing the factors of social mobility.

2.6 Concluding remarks

The main aim of this chapter was to present a detailed review of the literature on three aspects of social mobility. First, apart from a brief description of intergenerational mobility, the chapter provides a detailed review of the relationship between inequality and social mobility. Second, we extended the intergenerational mobility to other areas of interest, including education and occupation. Third, this chapter explores the possibility of forming a social mobility index by mapping the relevance and implications of social mobility. The findings from the existing literature on income inequality and intergenerational mobility and its associated issues suggest that India has low mobility and high-income inequality. However, due to the lack of availability of appropriate datasets in India, there are limited studies on IGM and those that talk about both concepts together.

CHAPTER 3
An Overview of the Data Sources and Variables

3.1 Introduction

As a continuation of chapter 1, which described roughly the main sources of data and techniques employed to analyse the intergenerational mobility, chapter 3 gives an overview of the data sources, the elucidation of key variables –earning data- definitional issues, methodological obfuscations, and types of techniques used to measure the extent of intergenerational mobility. As discussed in the introductory chapter, the main focus of this research is confined to India, one of the developing countries in the world. In addition, this chapter provides a brief description of the EUS rounds of NSS. The description covers aspects such as various techniques employed to examine intergenerational income mobility and the relationship between social mobility and inequality.

The remainder of this chapter is organized into seven sections. Section 3.2 gives a brief description of the EUS conducted by NSS. The main purpose of this section is to give an overview of the data sources and variables used. Section 3.3 lays out the measurement of intergenerational mobility and the main sources of data used. Section 3.4 explains the household characteristics available in the nationally representative sample, followed by individual characteristics available in the data sets in section 3.5. Section 3.6 presents the possible variables that influence the level of social mobility. Section 3.7 concludes this chapter.

3.2 Description of the EUS rounds of NSS

3.2.1 Quinquennial rounds on the employment and unemployment situation

The Employment and Unemployment Surveys of National sample Survey (NSS) is one of the most widely used sources of data in India. It is one of the most extensive household-based sampling data sources in India, with sample households of over 1 lakh drawn from almost all states in India. The first round (27^{th} round) of employment and unemployment was released in October 1972. Thereafter, the office has conducted quinquennial rounds on the employment and unemployment situation in India. It is evident from Table 3.1 that the 68^{th} round of EUS was carried out from July 2011 – June 2012. As mentioned earlier, it gives data on various

measures of the labour market in India both at the state and national levels. The data extracted from the EUS has widely been used for various purposes, including academic and policy formulation. The reference criteria adopted for both urban and rural categories are the same throughout these surveys.

Table 3.1

Various rounds of the quinquennial surveys for employment and unemployment

Year	Rounds	Reference – Urban sector	Reference-rural sector
1972-1973	27	Long period +1-week+1-Day	Long period +1-week+1-Day
1977-78	32	1-Year+1-week+1-Day	1-Year+1-week+1-Day
1983	38	1-Year+1-week+1-Day	1-Year+1-week+1-Day
1987-88	43	1-Year+1-week+1-Day	1-Year+1-week+1-Day
1993-94	50	1-Year+1-week+1-Day	1-Year+1-week+1-Day
1999-2000	55	1-Year+1-week+1-Day	1-Year+1-week+1-Day
2004-05	61	1-Year+1-week+1-Day	1-Year+1-week+1-Day
2009-10	66	1-Year+1-week+1-Day	1-Year+1-week+1-Day
2011-2012	68	1-Year+1-week+1-Day	1-Year+1-week+1-Day

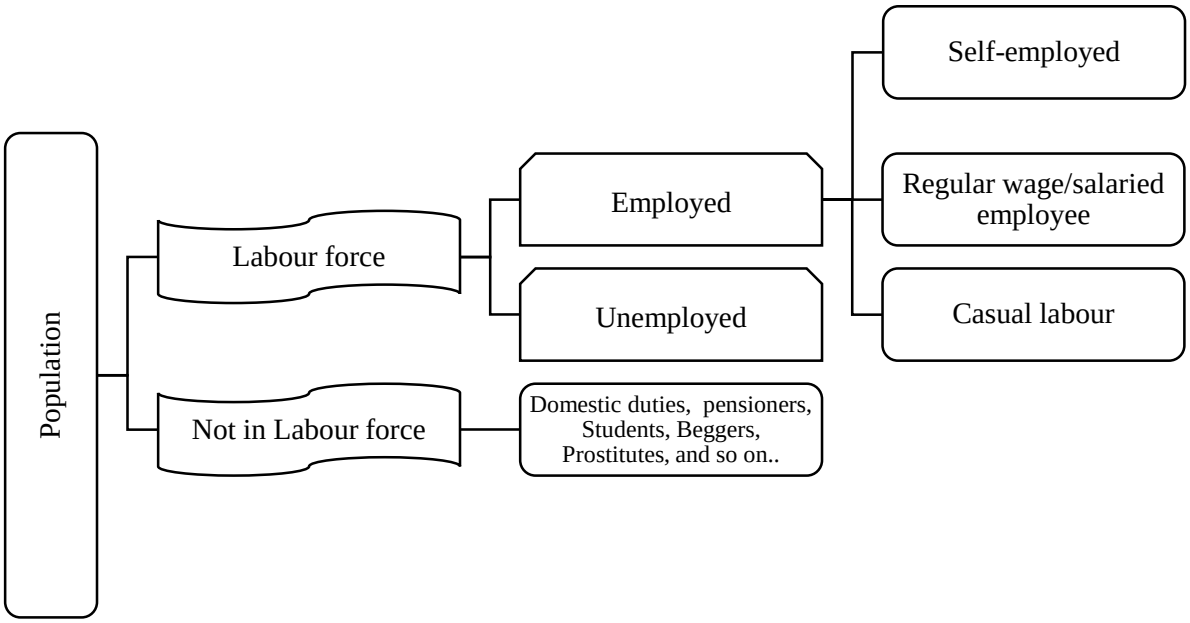
Source: **Compiled by the author from various NSSO reports**

3.2.2 Measures of labour market performance

As mentioned earlier, the basic purpose of conducting a nationwide survey is to present labour market measures, including employment and unemployment characteristics of various social groups, at an aggregate and state level. Using schedule 10, the data about socioeconomic characteristics of both participants and non-participants in the labour and non-labour markets. The concepts, definitions, methodology, and sampling procedures are laid down in the standard operating procedures of the survey. Three broad measures are used to assess labour market performance: labour force participation rate (LFPR), worker population ratio (WPR), unemployment rate (UR). While the labour force includes both workers and the unemployed, the workforce covers only those who are working in the labour market. The unemployed are those who are looking for a job but are not able to find suitable opportunities. The status of employment consists of three categories of the workforce: self-employed, regular wage or salaried, and casual labour.

Figure 3.1

The structure of employment and unemployment in India



Source: *Author's own based on the ESU estimation*

In addition to the different categories of employment, the survey also provides detailed information on economic activities performed by labour market participants. The occupational classifications of the workforce are given as per the National Classification of Occupation (NCO). It is also possible to derive the information related to the type of organizations or enterprises and conditions of employment such as the provision of social security benefits. Based on these specifications, it is possible to classify the workforce into formal and informal categories.

3.2.3 Sample records of households and individuals

As discussed above, the main source of data is the nationally representative sample survey conducted by the National Sample Survey Office (NSSO). More precisely, we used the unit records of 43rd, 61st and 68th EUS rounds of the NSSO. The 43rd, 61st and 68th rounds of the sample surveys were conducted in 1987-88, 2004-05, and 2011-12, respectively. The survey covers almost all states in the country, barring a few districts. It can be seen from Table 3.2 that the number of households surveyed averaged about 121000 households across the three

rounds considered for analysis. By using the unit records sourced from these rounds, we examine the evolution of intergenerational mobility in India over time.

Table 3.2

The household and population characteristics of the EUS sample surveys

Characteristics	EUS		
	43rd (1987-88)	**61st (2004-05)**	**68th (2011-02)**
Number of households (HH)	129,194	124594	101724
Rural households	83,343	79305	59700
Scheduled Tribe (HH)	14470	16203	13406
Scheduled Caste (HH)	18838	20284	15652
Other Backward Class (HH)	NA	46348	39721
Others (HH)	95332	41759	32943
Rural Population	449001	398025	280763
Male Population	345261	308627	233804
Age between 16 and 65	383633	373270	150851

***Source**: Estimated by the author from the respective rounds of EUS.*

3.3 Measuring intergenerational mobility

3.3.1 Data sources

For the estimation of intergenerational mobility, the following two rounds of the EUS are used: 43rd (1987-88), and 68th (2011-12). As mentioned earlier, these rounds of EUS are conducted by the NSSO under the aegis of the Ministry of Statistics and Programme Implementation (MoSPI). Broadly speaking, the EUS is the primary source of data related to various constituents of the labour market functioning both at state and national levels. It is a sample survey drawn from the Census Population. Drawing an appropriate sample size is a laborious task because of the diverse nature of the country. Therefore, the EUS survey follows a stratified multi-stage sample design, implying that the heterogeneous population is grouped into multiple homogeneous groups. Overall, the sample covers approximately 100,000 households across Indian states. More importantly, apart from covering all the districts of the country, the survey includes all religious and social groups.

3.3.2 Issues in measuring intergenerational mobility

The EUS is the largest sample data survey in India. Since 1983, the MoSPI has been at the forefront, collecting sample surveys on various social and economic issues. The unit of analysis is household. To examine intergenerational mobility, the EUS surveys are used. As mentioned earlier, intergenerational mobility is estimated by looking at the two different generations of a family. These two different generations participate in the labour market in two distinct periods. It should be noted that, while collecting the household information, the NSS does not collect information about parents if the sample respondent is living separately from his or her parents.

Keeping this limitation of the data, the present study follows two distinct approaches to estimate income intergenerational income mobility. In the first approach, the relative income mobility, based on a sample of co-resident households, is estimated. In the second approach, the absolute income mobility between two generations is measured. The absolute income mobility is measured using two independent samples. In addition, the 61st round of EUS is used to measure the Gini coefficient. The relative income mobility measures the extent to which the economic position of a person is independent of the economic status of his or her parents. The absolute income mobility measures the proportion of individuals whose income exceed their parents.

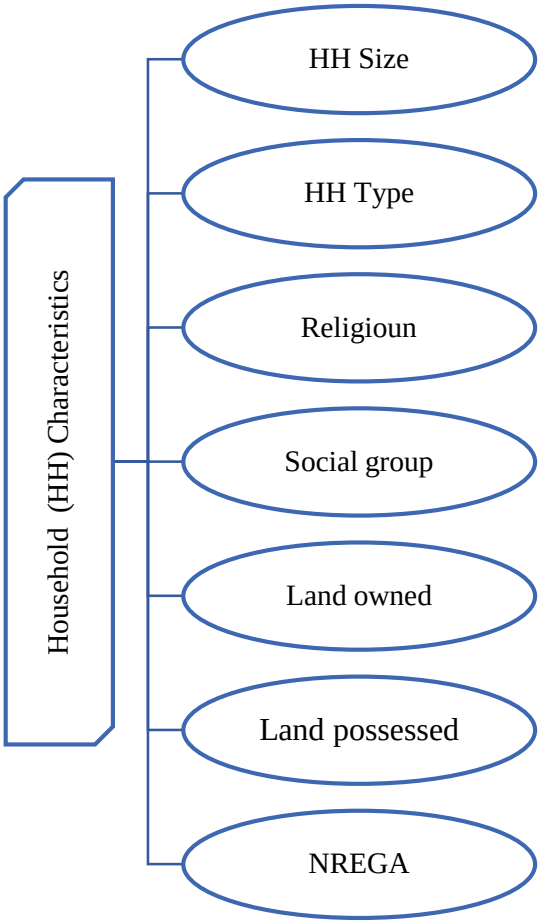
3.4 Household characteristics

As mentioned earlier, the information available with the EUS surveys is broadly categorised into two: first, data provided at the household (unit) level, and data provided at the individual level. It is possible to aggregate the household level data at the individual level and vice versa. Usually, the data regarding employment and unemployment surveys are collected using schedule 10. A close look at the schedule shows that the agency captures a wide range of characteristics about labour and non-labour market features. As shown in Figure 3.2, the household characteristics include household size, religion, social group, land owned, and land possessed. In addition, an important piece of information provided by the Ministry for the households in the rural sector is the details regarding Mahatma Gandhi National Rural Employment Guarantee (MGNREG), which is one of the largest public sponsored programmes by the government. The scheme offers 100 days of guaranteed employment to people who look for jobs in the rural sector. The scheme covers almost all districts of the country. The additional

details include whether the household has a job card, whether participated in MGNREG works during the last year, and the number of days participated in MGNREG works. For carrying out intergenerational earning mobility, it is also useful to use the monthly consumption expenditure, instead of wage earnings.

Figure 3.2

The major household variables available with the sample surveys



Source: Compiled by the author

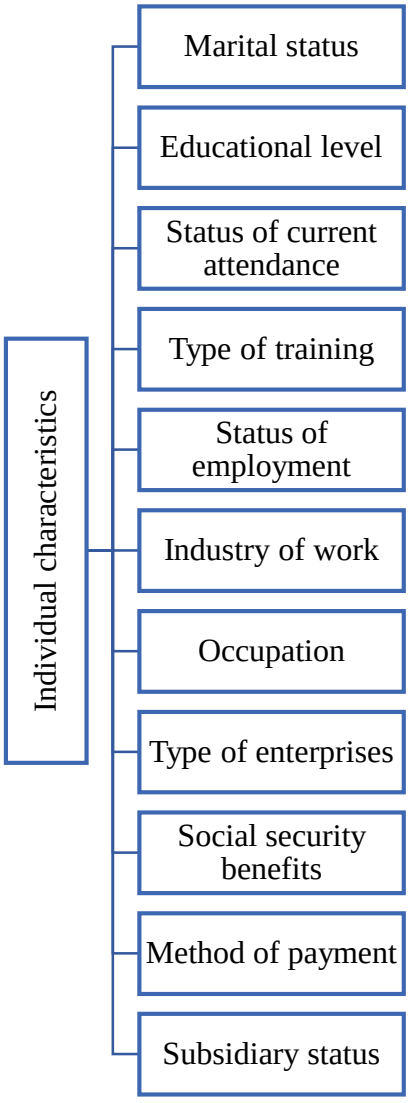
3.5 Individual characteristics

The individual characteristics obtained from the EUS may be classified into five groups based on identical behaviour: demography, economic activity and occupation, type of enterprise, condition of employment. The demographic characteristics include age, sex, educational level, the status of current attendance and vocational training. Similarly, the economic activity and occupation cover all those who are engaged in various main and subsidiary activities. The type of enterprises mainly captures the various types of enterprises excluding those who are

involved in self-employed. In addition, the survey gives details such as the location of the workplace, number of employees working in the enterprise. The condition of employment broadly captures the prevailing features of employment in various enterprises. These include the type of job contract, eligibility for paid leave, and availability of social security benefits. The last group of activities are those activities that are not part of any economic activities by definition. For example, there are several activities undertaken at the household level such as unpaid domestic activities. For this study, we capture only the relevant information to examine intergenerational mobility in terms of income, education, and occupation (Figure 3.3).

Figure 3.3

The major individual-level variables available in the sample survey



Source: Compiled by the author

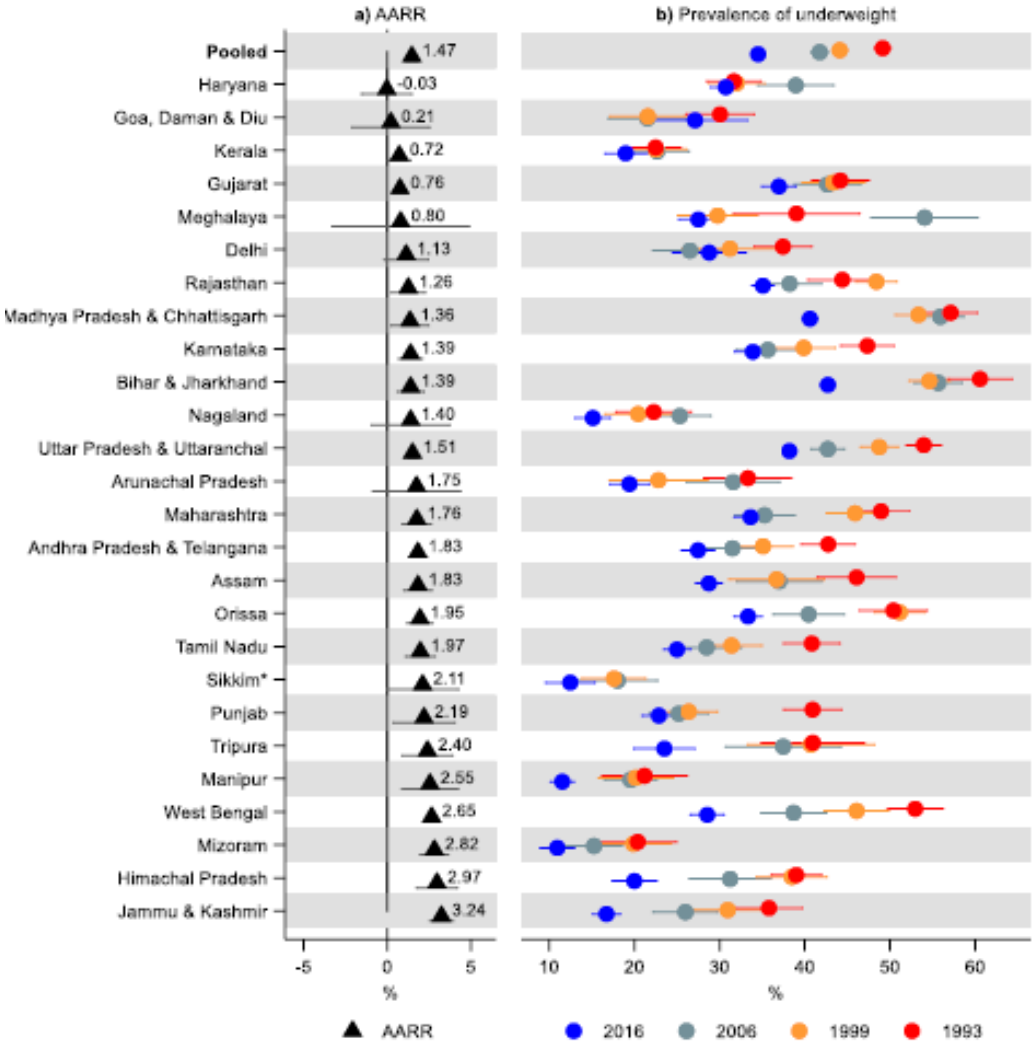
3.6 Determinants of social mobility in India: Some issues

To measure the trend of regional disparities among Indian states in terms of social mobility, we have selected a few possible factors that influence the level of social mobility. The select indicators may be used to construct the Social Mobility Index (SMI) of Indian states. This task was carried out in chapter six. In this section, the main aim is to review these myriad indicators and to provide the rationale for constructing the social mobility index. The measures are health, access to education, education quality and equity, lifelong learning, social protection, access to technology, work opportunities, fair wages, working conditions, and efficient and inclusive institutions. It may be of interest to note that these indicators are sourced from the Global Social Mobility Report 2020, published by the World Economic Forum. The following section presents the rationale for considering each indicator in the Indian context.

It is believed that health is an integral part of human life. Without this, one can't perform the task and work responsibilities. Therefore, healthy life is equally important. It is widely acknowledged that access to and provision of high-quality healthcare is an important factor. Access to basic healthcare facilities has a lifelong and lasting impact on employability and therefore on the ability to experience social mobility. Keeping this aspect in mind, we propose the following health-related indicators: life expectancy, adolescent birth rate, underweight for age. Life expectancy remains one of the most commonly used indicators for assessing achievements in the health sector. It is because a high life expectancy is directly connected to improved health care facilities. Broadly speaking, life expectancy is nothing but the average age a person or is expected to live. Similarly, the adolescent birth rate is an essential indicator of maternal health. It is observed that maternal mortality is higher for adolescent women than older women. The indicators give the annual number of births for women aged 15-19 years per 1000 women in that age group. Many researchers have highlighted that being underweight for age is a severe problem among children in India (Figure 3.4). Children with underweight for age have an increased risk of death. By using this measure, we expect that we would be able to incorporate the magnitude of the malnutrition conundrum.

Figure 3.4

Prevalence of underweight and average annual reduction (AAR) in underweight between 1993 and 2016



Source: *Karlsson et al., (2021)*

Human capital comprises both health and education. Like health, education is also important. An educational attainment is an important tool for the upliftment of people from lower economic status to better living standards. The fact is that the investment in education facilitates the formation of skills and knowledge and thus helps in getting good jobs. Hence, access to education has significant economic implications. The following indicators are taken for analysis: percentage of schools in the rural sector, percentage of dropouts, and mean years of completed education. The percentage of schools in the rural sector assesses the availability

of schools in rural areas. We believe that it is an important indicator in the Indian context as more than 65 per cent of the population lives in rural areas. The second indicator, namely, the percentage of dropouts is confined to ever enrolled persons in the age group of 3 to 35 years. This indicator sheds light on the problems people face on the way to education, on the one hand, and the intrinsic efficiency of educational systems, on the other hand. Lastly, we limited the third indicator to ted education among persons aged 15 years and above as one of the indicators of access to education. It measures the literacy level of the people in the state.

Along with educational attainment, access to high-quality education is equally important. It is expected that the attainment of high-quality education paves the way for earning high income to individuals in their lifetime. The provision of quality education with social inclusion leads to inclusive growth and ensure that high-quality education is available to all citizens, irrespective of their socio-economic background. The primary pupil-teacher ratio is an important indicator of the quality of education at the primary level. The study zeroes in on this indicator because it enables teachers to get to know their students better and thus effectively facilitate learning goals. The upper primary pupil-teacher ratio ensures a specified student-teacher ratio for each school. If a large number of students are managed by a single teacher, the learning will not be effective. Moreover, such a scenario indicates the imbalances or deficiencies in the recruitment of a sufficient number of teaching staff. The measure of gender parity index for higher education throws light on the relative access of higher education to women as compared to men in the state. Another measure is the percentage of schools for a child with special needs (CWSN). It refers to inclusive education which includes the inclusion of children and youth with disabilities. Hence, CWSN school is an important indicator for inclusive education and it highlights the presence of such institutions in the state.

Today, the economy is much more competitive. In the context of rapid technological change, it is important that the investment in human capital tends to be a lifelong endeavour and the path of learning becomes much more easy and accessible through the adoption of the appropriate kind of facilities and capabilities. For example, the use of computers in day-to-day learning activities facilitates more learning. Therefore, it is imperative to have the ability to use it daily. To assess the technological change, we consider the percentage of persons aged 5 years and above who can operate computers. Since the internet is the source of all sorts of information, knowledge and educational resources, it becomes essential that the majority

should have internet connections. It helps people to find opportunities, be it employment or higher studies, across the globe. Therefore, it is proposed to use the percentage of persons aged 5 years and over with internet access. Similarly, distribution per 1000 to persons aged 15 years and above who have undergone vocational training is used to assess the role of vocational education.

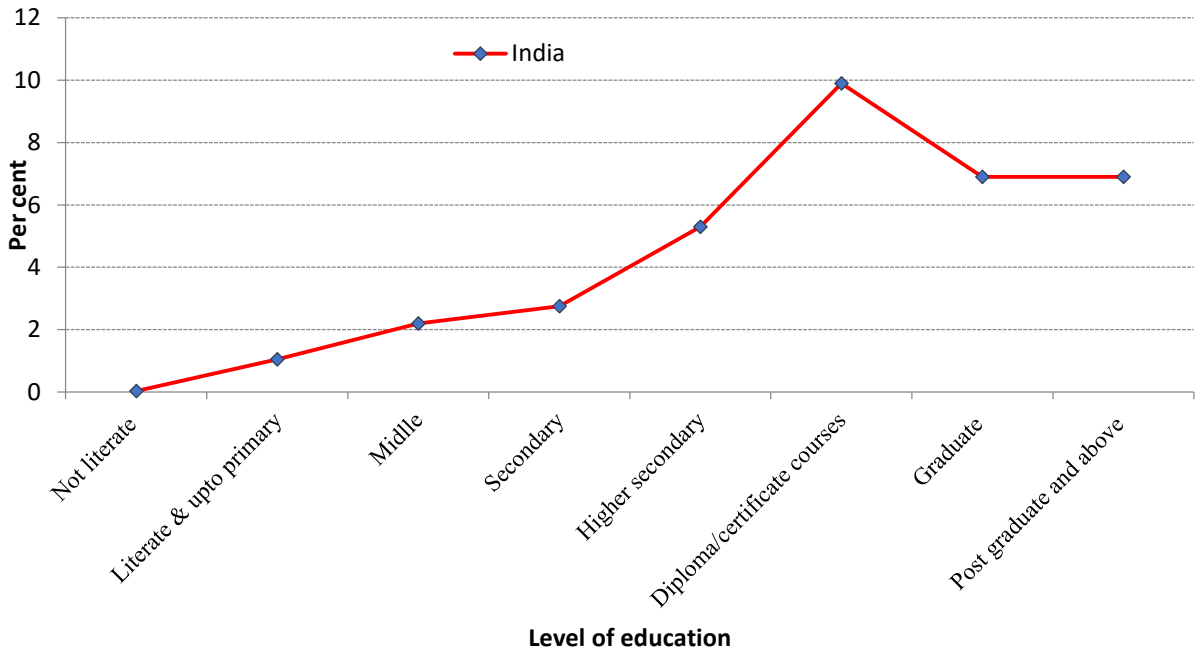
In its simplest sense, technology access means the level of technology access among the population. Access to technology has the potential to serve as an equalizer against inequalities by disseminating the relevant information. Appropriate measures are taken into account to measure the technology access. It is proposed to consider the percentage of the rural population with access to electricity to assess the basic human needs and economic activities. Access to basic needs is essential to improve living conditions and promote development. The study also takes into account the percentage of households with computer facilities to measure the penetration of information and communication technology (ICT). Computer, in general, has increasingly become an integral part of routine organizational work. More importantly, in recent times, the outbreak of the COVID-19 pandemic has made its need even an inseparable part of work. By taking into account the percentage of households with the internet, we are able to record the benefits of digital technology as it has become imperative to have internet access in every household.

The performance of the labour market is assessed using various indicators. The inclusion of work opportunities allows us to measure the ability of the economy to provide work opportunities to all sections of people, irrespective of their socio-economic backgrounds. The serious issue of prolonged unemployment and inactivity, especially among the youth, results from the inability to convert education into a job opportunity. We use unemployment for postgraduate and above to measure the gap between market requirements and institutional education. Typically, postgraduate and above education is considered sufficient to get employment. From a pragmatic point of view, the unemployment rate is increasing as the level of education goes up in India. In other words, the higher the level of education, the higher the chance of being unemployed (Table 3.5). This is one of the salient features of the Indian labour market. Another indicator is the unemployment in rural areas per 1000. It is acknowledged that the employment opportunities in the rural sector are less and most people depend on agricultural activities. If the unemployment rate is high, it indicates that the employment

opportunities in the non-farm sectors need to be strengthened. In addition, we use the percentage of female labour population ratio aged 15 years and above to assess the opportunities available to women.

Figure 3.5

The unemployment rate for different educational groups in India



Source: Computed by the author from EUS survey

Wages are rewards for services rendered in the market. Fair wages measure the ability of economies to provide fair wages. So, in this, we use the indicator of low wages as its proxy. Under the fair wage criteria, we include two indicators: the percentage of taxpayers and the total average wage earnings. If a state reports more number of taxpayers, it indicates that there is a smaller number of workers at the lower level, suggesting a fair wage rate in the state. The total of average wage earnings compares the average wage income of different states in the country. The prevalence of low average wage/ of any state as compared to other states indicates an unfair wage rate in the state.

Similarly, we consider working conditions, which measure the ability of the economy to provide good working conditions to all. The inclusion of this feature allows us to screen the parameters defining proper working conditions. We specifically looked at the aggregate of averages worked more than 48 hours. According to the Indian Factories Act 1948, a person

cannot work for more than 48 hours a week. Another indicator to measure the proper working condition is the percentage of regular salaried employees without pay leave. According to the existing Indian employment law, a minimum of 15 days of annual paid leave for employees must be allowed. The percentage of regular salaried employees without job contracts is also taken into account. Most of the working conditions are set out in the contract of the job. It avoids all kinds of confusion and delay on both the employee and employer side and hence it is considered healthier and more appropriate.

Social protection measures policies and programs are designed to reduce people's exposure to causes such as unemployment, exclusion, illness, disability and old age. Under social protection, two indicators are taken into consideration. The percentage of regular salaried employees without social security benefits measures the percentage of employees who do not receive social security benefits in each state. The percentage of households with any usual member covered under the health scheme. It is reasonable to argue that health insurance is the biggest necessity in today's life where it is becoming difficult to stay healthy.

And finally, the efficient and inclusive institutions measure the benchmark of an inclusive and efficient society that provides fair and equitable access to its justice system and its institutions and safeguards against the oppression of historically excluded groups. One of the important indicators is the rate of total crime against Scheduled Tribes (STs) and Scheduled Castes (SCs). The availability of higher education to persons with disabilities is a strong indicator of inclusive education. Therefore, we consider the percentage of persons with disabilities of 15 years and above have the highest level of education. The enrolment of SC/STs in higher education is an indication of the efforts undertaken by the state to uplift the socially and economically disadvantaged groups. Therefore, the gross enrolment Ratio (GER) in Higher education for SC/STs is taken into analysis.

3.7 Concluding remarks

The main aim of this chapter was to shed light on sources of data, sampling procedures, and methodological issues in carrying out intergenerational mobility in the Indian context. The chapter began with a brief analysis of the sources of EUS rounds of NSS. As mentioned earlier, an investigation of intergenerational mobility in the Indian context not only involves the

collection of data on income, education and occupational status across generations but is also a tedious task. While intergenerational income mobility is analysed using two approaches: the relative intergenerational income approach and the absolute intergenerational income approach. In addition to the intergenerational income, we estimated intergenerational mobility in terms of educational status and occupational structure. Further, an attempt has been made to construct a social mobility index for Indian states. The main aim is to examine the relationship between regional disparity and social mobility. We acknowledge that the key indicators of constructing the social mobility index are sourced from the recent report on the global social mobility index published by the world economic forum.

CHAPTER 4

Income Inequality and Intergenerational Mobility in India

I. Introduction

In the economics literature, there have been a plethora of empirical studies examining the intergenerational mobility between parents and their children's economic status (Atkinson 1980; Solon, 1992; Zimmerman, 1992; Lillard & Kilburn, 1995; Sato & Yoshida, 2008; Hnatkovska et al., 2013; Chetty et al., 2014; Ray, 2014; Mishra & Kumar, 2018; Chu & Lin, 2020). Intergenerational mobility refers to variation in economic status between two different generations of a family. Presumably, one of the earliest attempts to propose a theoretical framework for intergenerational earning mobility dates back to John Dewey in 1889. In his classic paper titled 'Galton's Statistical Methods', Dewey put it (pp:333): "[U]pon the average, children of parents who are exceptional, or who deviate from the mean, will themselves deviate from the mean only one-third of their parents' deviation".

Since then, many attempts have been carried out by social scientists to capture the degree to which economic status is transmitted from parents to their children, more precisely, from one generation to the next. From a policy perspective, the topic of intergenerational earning mobility has received tremendous scholarly attention mainly due to two reasons. First, from a policy perspective, the transfer of economic status from one generation to the next not only violates the fundamental norms of equal opportunity but also leads to persistent inequality in society. Second, both developed and developing countries have initiated a series of affirmative action plans. A high degree of intergenerational mobility tends to pose a severe challenge to government welfare programmes, which aim to uplift the socially and economically weaker sections of society.

The pioneering model proposed by Becker & Tomes (1979) provides a theoretical framework for intergenerational earning mobility. The model considers two different generations of a family, consisting of father and child. The following equation depicts the relationship between the permanent income of children and their parents: $Y^{child} = \phi Y^{father} + \theta A^{child}$. In this equation, Y represents permanent income and A denotes personal ability (Núñez & Miranda, 2011). Parameter ϕ reflects the positive effects of a father's income on his

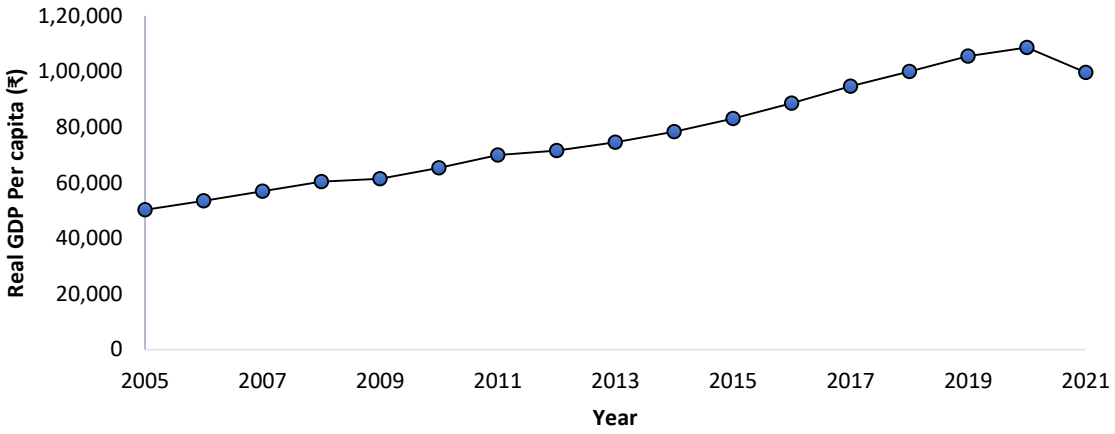
child's income. Similarly, θ is a parameter, capturing the effects of unobservable characteristics such as social relations and family values possessed by parents on a child's economic status. Therefore, the permanent income of the children is determined by the father's permanent income and the child's ability. The model explicates that the permanent income of the father has a positive impact on the permanent income earned by the child. Since the publication of Becker and Tomes's seminal paper, a considerable amount of empirical research has investigated the nature of intergenerational mobility in both developed and developing countries (Atkinson 1980; Solon, 1992; Zimmerman, 1992; Lillard & Kilburn, 1995; Dunn, 2007; Hnatkovska et al., 2013; Chetty et al., 2014; Ray, 2014; Mishra & Kumar, 2018; Mohammed, 2019; Asher et al., 2020).

There are two specific reasons for undertaking this research in the context of India. First, in line with an improvement in the economic performance of the economy, Indian society has undergone a large transformation over the last five decades. It is worth noting that poverty reduction and the emergence of the middle class are two direct outcomes of economic resurgence. More clearly, these two changes resulted from the impressive economic performance of the country after the new economic reforms in 1991. The impressive economic performance is quite manifest in the GDP per capita (Figure 4.1). With the improvement in economic performance, there has been a sharp rise in income inequality (Figure 4.2), which is a major cause for concern. Evidence suggests that the proportion of the top 10 per cent income category in the national income has increased and the proportion of the middle 40 per cent and bottom 50 per cent income categories have declined (Chancel & Piketty 2019).

From an economic perspective, the rise in income inequality coupled with an increase in GDP per capita is a major cause for concern. Economists argue that this phenomenon is attributed to the degree of intergenerational income mobility (IGIM). The case of India is quite contrary to the evidence drawn from the rest of the world. As noted by Corak, (2013a), children benefit from the income of parents in Scandinavia countries, but parents' income or social status does not determine the child's future prospects. However, a recent study presents evidence for occupational immobility, indicating that the occupation of the children is mainly determined by the occupation of their parents (Reddy, 2015).

Figure 4.1

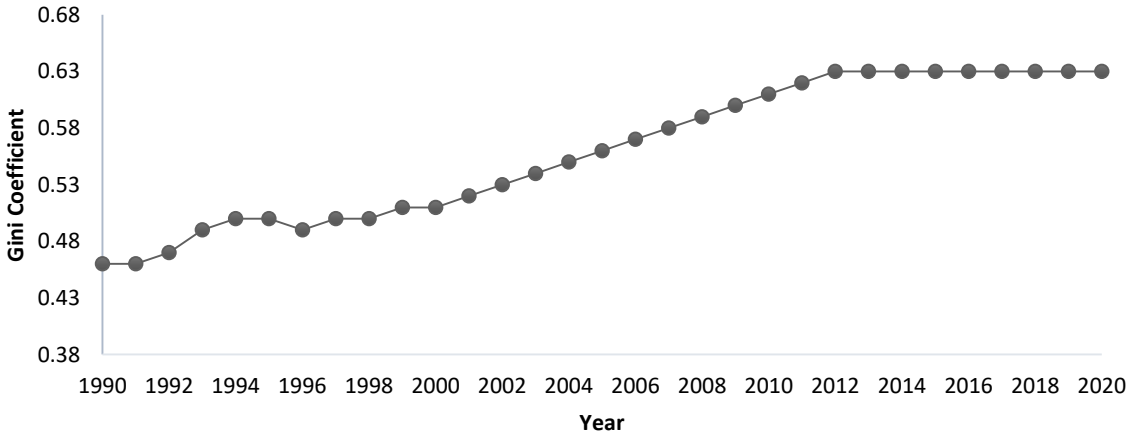
Real GDP per capita in India, 2004-05 (2011-12 Series)



Source: *Sourced by the author from the Reserve Bank of India*.

Figure 4.2

Gini Coefficients of National Income in India, 1990-2020



Source: *https://wid.world*.

Second, India is very diverse, be it economically, or socially or culturally. The country comprises several social groups, and these groups are broadly subsumed under Scheduled Caste (SC), Scheduled Tribe (ST), Other Backward Class (OBC), and General caste. Despite a noticeable difference across these social groups, a critical question that has been explored partially is that whether the inter-group difference has been diverging or converging. Drawing

upon existing empirical studies in India, we find that the results are inconclusive. Notwithstanding low economic mobility in India, Hnatkovska et al. (2013) indicated that the gap between the most disadvantaged social groups (ST/SCs) and general (non-ST/SCs) in the country has narrowed. More clearly, in comparison to the wages of parents, the elasticity of wages for children has declined from 88 per cent to 45 per cent and from 76 to 58 per cent for ST/SCs and non-ST/SCs, respectively. The results indicate that children who belong to ST/SC are more likely to improve their relative position in income distribution than non-ST/SC children. However, Li et al. (2019) suggested that ST/SCs are unlikely to move out of poverty because they are trapped in a vicious cycle of poverty.

Against this background, the main aim of this chapter is to examine the level of IGIM among different social groups in India. This chapter also examines the relationship between inequality and intergenerational mobility in this chapter. The situation of immobility of income arises when the growth of income is concentrated in the hands of a few. The persistence of income immobility is likely to accelerate the level of inequality by disregarding the equality of opportunities. Therefore, low social mobility is both a cause and a consequence of rising inequalities and hurts social cohesion and inclusive growth (Corak, 2013b). As mentioned earlier, measuring intergenerational mobility in the Indian context is a tedious task because of the lack of reliable panel data. In this chapter, using two approaches, namely relative income mobility and absolute income mobility, we measure IGIM. We attempt to answer two important questions. First, how much of a son's income is determined by his parent's income? Second, what is the ability of an individual to earn more than his parents at the same age?

4.2 Data source and Methodology

4.2.1 Data Source

In this chapter, we use the unit level records of the Employment and Unemployment Survey (EUS) conducted by the National Sample Survey (NSS) of India. The 43rd (1987-88), 61st (2004-05) and 68th (2011-12) rounds of EUS are used. The EUS provides the primary source of data for various characteristics of the labour market and non-labour markets at the state and national levels. Based on a stratified multi-stage sample design, the survey includes a sample of approximately 100,000 households covering almost all districts of the country. Among the available data sources, the EUS round is one of the largest sample surveys in India at the

individual and household levels. As mentioned by Hnatkovska et al (2013), Ray (2014), Mishra & Kumar (2018), Mohammed (2019), an examination of intergenerational mobility in the Indian context is fraught with several challenges including the non-availability of panel data. As discussed, two distinct approaches are followed, namely relative and absolute income mobility, to estimate IGIM. While in the first approach, a sample of co-resident households is used to estimate the relative income mobility, in the second approach, we measure the absolute mobility between two different generations using independent samples. The 61st round is used to measure the Gini coefficient based on monthly per capita expenditure (MPCE).

We followed these two approaches to capture intergenerational mobility due to two reasons. First, as per the concepts and definitions of NSS, the term household is generally confined to a group of members 'normally' living together and sharing food prepared in a common kitchen. If parents and their children are residing separately, the NSS does not include information about parents in the household listing of children. In this chapter, we focus on male members because married women in India typically live with their husbands or father-in-law. The survey does not provide information on their parents.

4.2.2 Methodology

4.2.2.1 Relative Wage Income Mobility

As mentioned earlier, the 68th round is used to measure relative income mobility. To measure the relative income mobility, only households with the working person and his father are living together are selected, rather than selecting whole sample households. The following criteria are applied to select the required households. First, in the selected households, the representative sample, that is to say, the son should be between 16 and 45. Second, both father and son should not be currently enrolled in any educational institution. Third, the wage should be reported. The proxy for income is the 'wages' of individuals. Applying these criteria, we get a sample of 10364 observations, which is the 'working sample' of the study.

This working sample is co-resident households. Presumably, one major concern is that the sample selection may be biased. To check whether the working sample is biased, a comparison is made in terms of socio-economic characteristics between the co-resident sample and sons who are residing separately from their fathers, called non-co-resident sons. Put it in a slightly simplified way, the households with non-co-resident sons have only one adult male of

working age. A preliminary assessment showed about 48390 records for non-co-resident households. The comparison does not show significant differences in terms of caste, rural-urban structure, education and consumption, proving that split decisions are random (Table 4.1).

Table 4.1

Comparison of co-resident sons and sons living on their own

Variable	**Co-resident**		**Living on their own**	
	Mean	SD	Mean	SD
Age	25.91	6.12	35.83	6.54
Percentage of the rural Population	69.72	…	57.87	…
Percentage of SC/ST	27.24	…	35.83	…
Years of education	9.94	3.41	8.84	4.46
Log MPCE	7.14	0.54	7.26	0.59

Source: *Computed by the author.*

The descriptive analysis of the co-resident analysis is carried out using four variables: age, educational level, occupation and income. The findings show that the average age of sons is 24 and fathers is 52. Similarly, considering the educational attainment, it is found that the mean years of education in the sons' generation is 9.93 years, while it is only 6.42 years in the father's generation. More importantly, the type of occupation in the sons' generation is largely skilled and semi-skilled, whereas about 39 per cent of the occupation in the father's generation is related to the farming sector. It is observed that a significant difference in the age of father and son and therefore the average income of father and son is also quite different. Since the main objective is to provide comparable estimates of income mobility in India across social classes, selection bias, if any, would affect all groups, therefore we conclude that the inferences drawn will be robust.

For analysis, after looking at the co-residents and non-co-residents in a comparative framework, the income of fathers and sons is grouped into four groups. These four groups are framed as per the distributional criteria suggested by Björklund and Jäntti (1997). The four groups are poor, lower-middle, upper-middle, and well-to-do. Interestingly, each group is

defined categorically. For instance, the poor are defined as those earning less than 50 per cent of the average income. Similarly, the income of lower middle income ranges from 50 per cent of the average to the average. While the income of upper-middle groups varies from 1.0 to 1.5 times the average, the earnings of well to do groups are more than 150 per cent above average. The above classification was used to estimate the cross-table of the father and child quintile groups, providing its probability distribution. Moreover, the analysis is more meaningful and its answers to find how the current generation performs among their peers as compared to their father's position.

4.2.2.2 Absolute Wage Income Mobility

This is a cohort study for individuals born during 1972-1977, comparing the weighted average income of these individuals with the weighted average income of their fathers when both were between 35 and 40 years of age. We have named both the groups as 'father' and 'son' groups because the working sample criteria are placed in such a way that it tries to capture the weighted average income of two successive generations. We took samples of the father and son group from two independent samples and compared the weighted average income of father and son at the state level, which was further segregated into the social group level, therefore, in this, we did not need data on the pair of father and son. Also, the segregation of the state-level data into social groups- STs, SCs and non-ST/SCs- enabled comparisons between these groups across states and within a state. Scheduled Tribes (STs) and Scheduled Castes (SCs) are among the most disadvantaged groups in India, while non-ST/SCs are considered to be economically better off than ST/SCs. The selection of the working sample from two independent samples allowed us to use monthly per capita consumption expenditure (MPCE) as a proxy for income in this approach. It was considered more appropriate than wages because it is closer to the utility concept and is also considered a better estimator for inequality (Becker & Mulligan, 1997; Battistin et al., 2009)

We selected father and son data from 43rd and 68th rounds of EUS, respectively. From the 43rd round (1987-88) we selected individuals who were between 35 and 40 years of age and also had a son between 10 and 15 years of age so that in the 1987-88 year a male child of 10 to 15 years of age would attain the age of 35 to 40 in the 2011-12 year (68th round). The age of 35 to 40 years was considered appropriate because at this age a person's income remains subject to minimal lifecycle bias (Grawe, 2006; Haider & Solon, 2006). Only one son is

selected randomly if a father has more than one son. This process allowed us to filter the equal number of records of fathers and sons from two independent samples to estimate absolute income mobility at the state level, where both fathers and sons are of the same age and belong to the generations before (1987-88) and after (2011-12) liberalization and structural reforms, respectively.

It is important to keep an equal number of records as we were comparing the weighted average income between generations. The selection leaves us with a working sample of 7286 observations from the seven states of the country. The seven states were selected based on high, medium, and low per capita GDP as according to constant 2011-12 prices by the Central Statistical Organization (CSO). The states selected are Kerala, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. Furthermore, the socio-economic characteristics of the data in Table 4.2 show that except for a moderate difference in the number of ST/SC in Kerala, the population of ST/SC and rural areas are similar for both samples of the data. As per census records, the migration of people is mostly within the state except in the state of Kerala. However, given its better health, literacy and low poverty in the state, we considered its inclusion important.

Table 4.2

Summary statistics of father and son in the independent samples

State	Variable	Father		Son	
		Mean	SD	Mean	SD
Kerala	Age	38.15	1.82	37.56	1.78
	% of the rural population	75	…	75	…
	% of ST/SC	13.54	…	9.38	…
	Years of education	9.57	4.05	9.16	2.85
	Log MPCE	6.7	0.9	7.46	0.57
Maharashtra	Age	37.87	2.09	37.49	2.05
	% of the rural population	54.3	…	54.03	…
	% of ST/SC	23.7	…	21.4	…
	Years of education	7.11	4.5	8.96	3.81
	Log MPCE	5.16	0.59	7.35	0.6
Odisha	Age	37.73	2.03	37.42	2
	% of the rural population	72.99	…	72.99	…
	% of ST/SC	35.77	…	37.96	…
	Years of education	6.2	5.99	8.42	4.48
	Log MPCE	6.19	0.716	6.85	0.52
Rajasthan	Age	37.88	2.12	37.52	2.14
	% of the rural population	64.36	…	64.36	…

	% of ST/SC	29.5	…	27.7	…
	Years of Education	5.13	4.91	7.64	5.04
	Log MPCE	5.15	0.68	7.21	0.5
Tamil Nadu	Age	38.09	1.92	37.7	1.87
	% of the rural population	52.8	…	52.8	…
	% of ST/SC	21.2	…	21.4	…
	Years of Education	6.42	4.54	9.19	4.29
	Log MPCE	5.1	0.71	7.33	0.55
Uttar Pradesh	Age	38	2.15	37.29	2.07
	% of the rural population	67.5	…	66.7	…
	% of ST/SC	23.16	…	20.47	…
	Years of Education	5.84	5.82	7.56	5.22
	Log MPCE	6.32	0.802	6.94	0.531
West Bengal	Age	37.67	2.01	37.62	1.9
	% of the rural population	62.55	…	62.55	…
	% of ST/SC	28.5	…	29	…
	Years of Education	5.88	4.55	8.66	4.96
	Log MPCE	5.07	4.55	7.16	0.58

Source: *Author's calculation*

Subsequently, to compare the real average income of father and son from the two rounds, the old year MPCE from the year 1987-88 were converted to the new year prices for 2011-12. For this, we apply the state level Consumer Price Index for Agricultural Labors (CPIAL) for rural areas and Consumer Price Index for Industrial Workers (CPI-IW) for urban areas and then linking factors were used to equate the base year. It is worth noting that index numbers between 1987-88 and 2011-12 were available with two base years i.e., with 1987-88 and1960-61 and we converted the index number with the base year 1987-88 to 1960-61 base year as linking factors are used to convert the index number with new base year into the index number with old base year.

$$MPCE\ 1987-88 \text{ at } 2011-12 \text{ prices} = \text{Actual MPCE } 1987-88 \times \frac{Index\ Number\ for\ 2011-12}{Index\ Number\ for\ 1987-88}$$

We assigned weights to calculate the weighted average income of STs, SCs and non-ST/SCs within each state. The main objective is to compare these values at the state level to record the difference in the mean income of people in the same social group between two generations. Upward mobility is confirmed, if the weighted average income is higher than that of the father generation (say 10 per cent or more).

Following the setting of absolute income mobility, the next step is to compute the Gini coefficient for STs, SCs and non-ST/SCs in seven states of the country using the 61st round (2004-05) of the EUS from NSS data, the Gini coefficient was calculated. It should be noted that MPCE is used as a proxy for income to calculate income inequality. The Gini coefficient ranges from zero to one where zero denotes perfect equality i.e., each income quintile has the same income and one denotes perfect inequality where the top income quintile generates all incomes. It was calculated using the following formula:

$$\text{Gini Coefficient} = \frac{Area\ between\ Perfect\ Equality\ Lorenz\ and\ Actual\ Lorenz}{Area\ under\ Perfect\ Equality\ Lorenz}$$

where,

Area under Perfect Equality Lorenz = 1/2 (Side × Side) and area under the Actual Lorenz Curve = Bar Width[3] × Bar Height[4]. The average Gini Coefficient for the states was verified by the estimates of the Planning Commission, Government of India. Below 0.30 it is assumed that there is low-income inequality and above there is high-income inequality.

4.3 Relative intergenerational income mobility

Panel A in Table 4.3 shows that the proportion of the lower-middle class is highest in both father and son generations. However, panel B shows that a son from the lower middle class is more likely to be in the lower middle class. Further, the higher middle class is more likely to be in the lower or higher middle, while sons from well-to-do backgrounds are more likely to be in the lower-middle or well-to-do class. In addition, the probability of being poor if the father is poor is 73 per cent while the probability of being rich if the father is rich is 39 per cent. Therefore, it can be suggested that there is lower mobility in co-resident households.

Concerning social groups in India, Table 4.3 Panel A reports the highest percentage of poor as well as well-to-do fathers and sons among STs. Notably, STs are the most backward class in India which comprises the highest number of poor and individuals belonging to well-to-do classes across both generations. Also, the highest percentage of well-to-do sons among STs coincides with the proportion of well-to-do sons among non-ST/SCs (Others). The conditional probability in Panel B is that STs are most likely to be poor from a poor father,

[3] The Bar Width is estimated using the cumulative percentage population difference
[4] The Bar Height is measured as the average of the cumulative percentage income

which is 81.9 per cent, while non-ST/SCs are more likely to be rich from a rich father, which is 42.3 per cent. In addition, the chances for ST/SCs to improve from lower-middle background to an upper-middle are lesser than non-ST/SCs.

Table 4.3

Mobility Matrices

Father's income class	Son's income class			
	Poor	Lower-middle	Higher-middle	Well-to-do
Panel A. Unconditional bivariate probabilities				
All Social Groups				
Poor	0.220	0.067	0.009	0.004
Lower-middle	0.093	0.273	0.023	0.009
Higher-middle	0.015	0.042	0.030	0.004
Well-to-do	0.037	0.065	0.028	0.082
Scheduled Tribes				
Poor	0.281	0.055	0.005	0.002
Lower-middle	0.072	0.214	0.007	0.005
Higher-middle	0.012	0.043	0.026	0.002
Well-to-do	0.064	0.076	0.029	0.107
Scheduled Castes				
Poor	0.229	0.071	0.008	-
Lower-middle	0.091	0.330	0.015	0.008
Higher-middle	0.018	0.043	0.036	0.003
Well-to-do	0.036	0.052	0.020	0.039
Others				
Poor	0.205	0.067	0.01	0.006
Lower-middle	0.097	0.261	0.029	0.01
Higher-middle	0.015	0.041	0.028	0.004
Well-to-do	0.032	0.069	0.032	0.096
Panel B. Son's probability conditional on father's income				
All Social Groups				
Poor	0.733	0.223	0.030	0.013
Lower-middle	0.234	0.686	0.058	0.023
Higher-middle	0.166	0.466	0.333	0.044
Well-to-do	0.175	0.307	0.132	0.387
Scheduled Tribes				
Poor	0.819	0.16	0.015	0.006
Lower-middle	0.242	0.718	0.023	0.017
Higher-middle	0.145	0.518	0.313	0.02
Well-to-do	0.232	0.275	0.105	0.388
Scheduled Castes				
Poor	0.744	0.231	0.026	-
Lower-middle	0.204	0.742	0.034	0.018
Higher-middle	0.18	0.43	0.36	0.03
Well-to-do	0.245	0.354	0.136	0.265

Others				
Poor	0.709	0.232	0.035	0.021
Lower-middle	0.244	0.657	0.073	0.025
Higher-middle	0.172	0.471	0.322	0.046
Well-to-do	0.141	0.304	0.141	0.423

Source: *Author's calculation*

The findings are quite consistent with the results drawn from the existing literature. It is found that it coincides with the findings of Li et al. (2019) and Ray (2014). However, if we observe the findings of Hnatkovska et al. (2013), it shows a substantial decline in wage elasticity for children in relation to their parents' wages, particularly for ST/SCs, which shows the convergence between the rates of mobility for ST/SCs and non-ST/SCs. This is in contrast to the findings of lack of mobility for STs, which mostly comprise the poor section. The difference in results may be due to different sample selections, as Hnatkovska et al. (2013) also recorded the grandfather in the father's generation, whereas we only placed the father in the parent generation. Also, they kept ST/SCs in the same group, from which the status of STs cannot be predicted. Further, Ray (2014) suggested improvement in the immobility for SCs and not STs between the period 1993 and 2009. Therefore, it can be suggested that mobility has improved for SCs, although the same trend is not observed for STs.

4.4 Income Inequality and Absolute Intergenerational Mobility

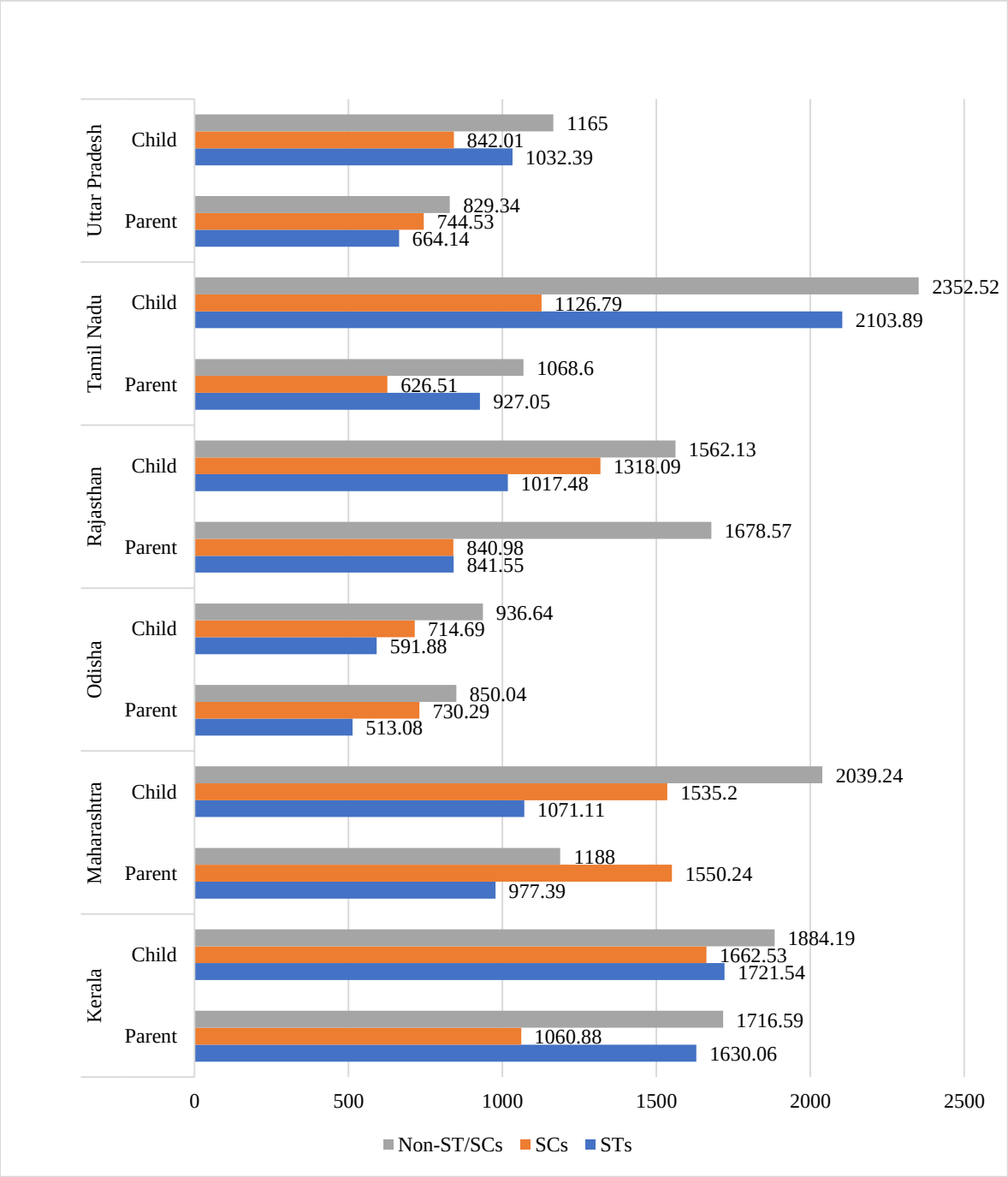
Figure 4.3 shows the improvement in the average income of the son over the father's generation in the case of Tamil Nadu, Uttar Pradesh and West Bengal for both ST/SCs and non-ST/SCs, while the level of inequality in Table 4.4 is also very high in these states. Of all the states, Tamil Nadu shows the highest margin of improvement in income for all social groups. The state of Rajasthan records immobility for non-ST/SCs and high inequality for them. In addition, income mobility for ST/SCs in the state was observed with relatively low inequality for them, indicating a positive relationship between income inequality and income mobility. Furthermore, Maharashtra is in contrast to Rajasthan in that the average income of sons has improved for non-ST/SCs and not for ST/SCs.

With regards to inequality, Maharashtra records a high level of inequality for all social groups while Rajasthan has a low overall inequality. Kerala reports high-income inequality and immobility for STs and non-ST/SCs while income mobility and low inequality for SCs. Odisha shows high-income inequality for all social groups and immobility for SCs

and mobility for ST and non-ST/SCs. Overall, it is concluded that, except for the state of Tamil Nadu, all other seven states do not show significant improvement even with absolute income between two generations. Thus, there is low-income mobility and high inequality. Also, the improvement or reduction in the absolute income levels for ST/SC in different states of the country is not much different from that for non-ST/SCs. Interestingly, Ray (2014) results also record less absolute income mobility between the years 1993 and 2009. Therefore, it can be suggested that the low absolute income rate of mobility is also present in the year 2012.

Figure 4.3

Weighted Average Income of Parent and Children or absolute income mobility



Source: *Author's calculation*

Table 4.4

Estimation of Gini Coefficients across social groups in India

States	Overall	STs	SCs	Non-ST/SCs
Kerala	0.36	0.44	0.30	0.35
Maharashtra	0.36	0.34	0.36	0.39
Odisha	0.36	0.32	0.41	0.34
Rajasthan	0.29	0.28	0.28	0.32
Tamil Nadu	0.37	0.40	0.33	0.38
Uttar Pradesh	0.33	0.36	0.29	0.34
West Bengal	0.33	0.33	0.31	0.36
India	0.34	0.34	0.33	0.37

Source: *Author's calculation*

4.5 Concluding Remarks

In this chapter, an attempt was done to investigate intergenerational mobility in terms of income and inequality across social groups in India, Based on the unit-level records of 43rd, 61st, and 68th rounds of NSS data on EUS, the study shows that in India there is low IGIM and high-income inequality. This analysis is extended to all social groups in the country. An analysis of relative income mobility shows that there is more immobility for ST/SCs than non-ST/SCs. Similarly, an examination of the absolute income mobility between the generations from the pre-reform and post-reform eras does not strongly support the argument that there is an improvement in the real average earnings of two generations across Indian states. This is true if we extend this analysis across social groups in the country. The results obtained from the two approaches to intergenerational mobility clearly highlight that a few Indian states lag behind in achieving equitable growth and require the utmost attention to mitigate the gap between social groups. Therefore, high-income inequality and low intergenerational mobility coupled with high economic growth clearly indicate the skewed economic growth in the country.

A state-level analysis is based on the assumption that highly unequal states always have lower mobility. Interestingly, this assumption does not hold in the case of Indian states. It is found that a few states in the country are having high-income inequality with income mobility.

This sort of findings also indicates that the relationship between inequality and intergenerational mobility is region-specific that needs to be studied in great detail at a regional level. More specifically, greater mobility in the states with a high degree of income inequality may be due to the rapid expansion of upper quartiles as appears in appendix Table 7,8,9,10. These findings call for a re-examination of the nexus between income inequality and intergenerational mobility. Moreover, it is essential to understand whether income mobility with lower inequality is associated with the inclusive growth and development of the region.

CHAPTER 5
Educational and Occupational Mobility

5.1 Introduction

The notion of social mobility is related to equality of opportunities so that individuals can achieve higher social positions regardless of the social background of their parents. It has two motivations, first, allowing better utilization of available talents leads to increased overall efficiency and productivity in the labour market; second, its objective seems more realistic than equality of outcomes among citizens, which is a desirable objective under many points of view (Corak, 2020). It encourages human capital investment that can be made equally available to all sections of society through better public institutions and policies. While equality of opportunities leads to more social mobility, higher income inequality threatens social mobility. In this context, the famous Great Gatsby Curve shows a negative cross-country relationship between income inequality and intergenerational mobility mentioned in Corak (2013a); which suggests that inequality skews opportunity and lowers intergenerational mobility.

In ancient India, education, skills and occupation were determined by the caste of a person, thus there was not much freedom for moving between different levels of society (Deshpande, 2010). Although, since 1950, the emphasis was on abolishing the caste structure and providing equal opportunities to all, strong limitations still exist in the country's occupational structure as shown by Reddy (2015). Within the same period, the country has experienced a substantial increase in income inequality, which can be proved by the fact that the share of the top ten per cent income group in national income is increasing and the share of the middle 40 per cent and lower 50 per cent income groups is decreasing (Chancel & Piketty, 2019). Interestingly, during this period, the country has also experienced rapid economic growth. In this regard, Aiyar and Ebeke (2020) conclude that the low level of intergenerational mobility may be the cause why high economic growth coexists with rising income inequality.

If we consider this to be a meaningful explanation in the case of India, then it would be interesting to study more in the depth of occupational intergenerational mobility to get a better understanding of the current situation in the country. As education is considered to be directly associated with occupation, if we take education and occupation together, it is possible to

realize whether education supports occupational mobility. If it is not supported with the attainment of education, then a conclusion can be drawn about the direct transmission of occupation which mostly goes against the idea of equality of opportunities. Thus, social mobility includes the measurement of occupational intergenerational mobility as in Erikson and Goldthorpe (2002) and social background is measured by the occupation of the individual's parent.

In this regard, the present study attempts to examine the three-principal study questions in the area of social mobility which are: (i) Do mostly sons of fathers with high levels of occupation get higher education? (ii) Do mostly sons with higher education enter a higher level of occupation? (iii) on the whole, how strong is the association between the occupation of fathers and sons? The purpose of this study is to look at the current occupational immobility by associating it with educational attainment and social background. So, this investigation is based on the assumption that occupational mobility depends on educational attainment and social background. The 68th round of NSS data for this purpose is used, which has been extensively used to study intergenerational mobility. By using an extended version of the Row-Column (RC) association models, which has hardly been applied before within the mobility field, we expect to complement the existing literature.

The association of an individual's social background with his education is moderate, while this relationship is quite strong with occupation. This is because, according to the results, education does not seem to play a huge role in deciding one's occupation in India. These findings are consistent with existing literature and emphasize the lack of quality education in the country. The rest of the study is organized as follows: Section 2 reviews the existing literature on intergenerational education and occupational mobility, section 3 deals with the description of the data and socio-economic characteristics of the working sample, section 4 discusses the association method and section 5 presents results and its analysis followed by the discussion and conclusions in section 6.

5.2 Studies on intergenerational occupation mobility and education attainment

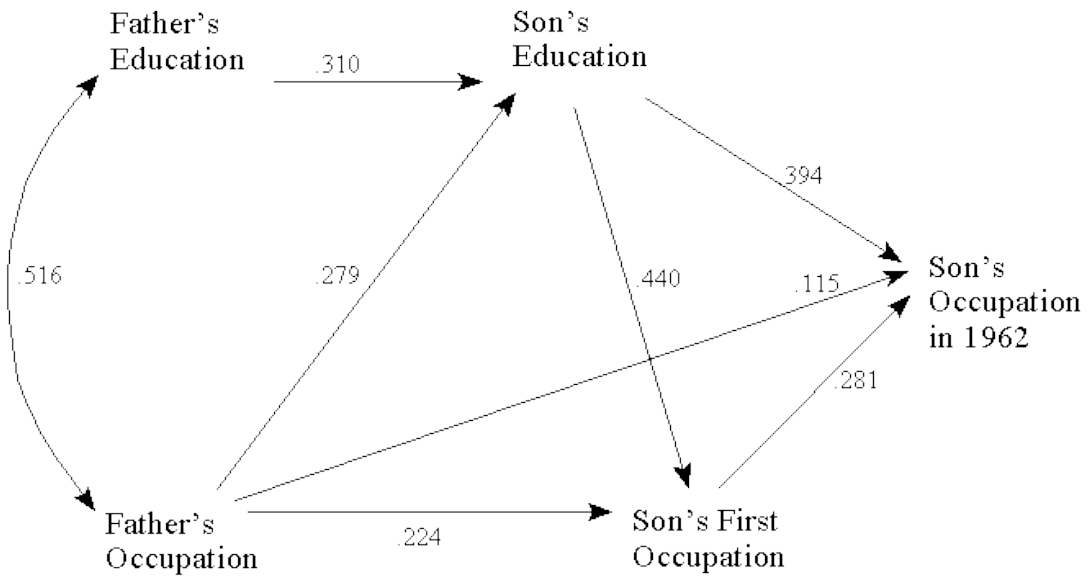
The first area of study relevant for this study is the human capital theory which was developed by Becker and Mincer and focuses on parents' decision to invest in children's education and

its impact on their income and occupation levels (Becker & Tomes, 1979). Parents investing in the education of their children may be seen as a way to affect the occupation they may obtain by investing to provide them with better skills and knowledge.

Status attainment theory focuses on additional factors, above and beyond the level of schooling, by which parents transfer, by family interactions, lifestyles and other advantages to their children that persist throughout life, including prospective adult wage advantages (Haveman et al., 1995). It may work by direct transfer of benefits from parents to their children if, for example, the son of a father with a better profession may get the same occupation due to family ties. Blau and Duncan (1967) illustrated how the educational and occupational status of fathers influence the educational and occupational status of sons. Figure 5.1 presents the status attainment model proposed by Blau and Duncan. The correlation between all characteristics of fathers and sons are classified into three categories: direct, indirect, and spurious effects. The direct effect is depicted by the straight line (path coefficient). For example, the direct influence of sons' education on their occupation in 1962 is almost three times higher than the father's occupation on his son's occupation in 1962.

Figure 5.1

The status attainment model developed by Blau and Duncan

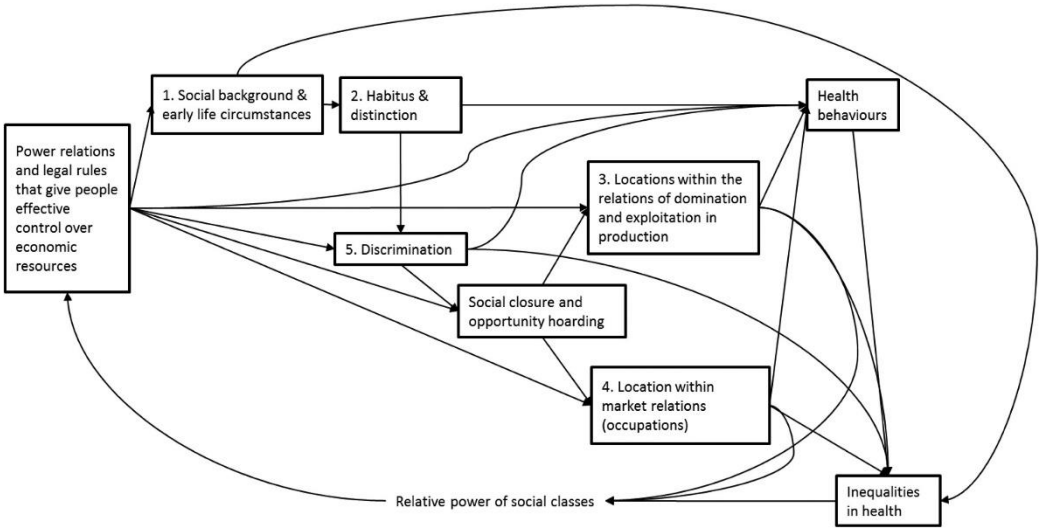


Source: *Blau and Duncan (1967), p. 170.*

Next, Weber's concept of social closure discusses how "social collectives seek to achieve maximum rewards by limiting access to resources and opportunities to a limited circle of eligible" (Parkin, 2018). For example, to get admission to good universities, if a person needs certain qualities, which are generally available among children from affluent backgrounds, then it will prove to be an obstacle for children with a less fortunate background to get admission in such universities (Fishkin, 2012). It would be interesting to look at an article written by McCartney et al., (2019), which explains the class mechanism accounting for inequality in health outcomes (Figure 5.2).

Figure 5.2

Dimension of class mechanisms and inequality in health outcomes



Source: *McCartney et al., (2019)*

Concerning empirical studies, we now review some applications with reference to the situation in India. Using National Election Study (NES) data of 1996, Kumar et al. (2002) described occupation mobility in terms of origin and destination. They found that 90 per cent of the people in farming came from farming backgrounds which may be due to the transfer of land from father to his son. The salaried class (which usually consists of white-collar and skilled occupations), apparently reach their position starting from fathers of diverse backgrounds. Also, 68 per cent of individuals from unskilled backgrounds remain unskilled.

Along the same line, Motiram and Singh, (2012) using the first round of the India Human Development Survey of India (IHDS-1), showed that mostly the sons of unskilled and low paid fathers remain in the same occupation. Another study on education and occupation intergenerational mobility using National Sample Survey Office (NSS) rounds from 1983 to 2005 has shown convergence in rates of conditional probabilities of education mobility among non-SC/STs and SC/STs caste groups (Hnatkovska et al., 2013), which suggests that differences in rates of mobility between these two groups have reduced, however, when it comes to occupational mobility, stagnation still exists which is due to factors other than caste. The Scheduled Castes (SCs) and Scheduled Tribes (STs) are among the most disadvantaged socio-economic groups in India. Hnatkovska et al. (2013) used median wages to classify occupations, and EUS data usually has many missing values in wages and incomes, mainly for self-employed farmers whose proportion is large in rural India. Next, they kept grandfather and father in the same generation and the child and the grand-child together in the next generation which is usually not appropriate when we want to explore the mobility between adjacent generations. Further, they used regression and transition matrices to measure education and occupation mobility. The probit regression, on the one hand, does not take into account the distance between the occupations of the father and son and only observes whether the son leaves the father occupation and the transition matrix only shows the distribution pattern.

Reddy (2015) measures changes in occupational mobility using the same data up to the year 2011-12. In this, the author suggested, there exists less occupational intergenerational mobility in India, especially among the SCs and STs. We note that the method used in the above study is complex, involving a few steps that can be avoided if using log-linear or related interactions which are not affected by changes in the marginal distributions. It is useful to mention that the interaction parameters in the RC model are not affected by the marginal distribution, so there is no need of standardizing the mobility tables required to have the same occupational distributions as in Reddy (2015).

With regard to education mobility, Kishan (2018), by looking at the correlation between father and sons' years of schooling, suggest education mobility. On the same line, Ray and Majumder (2010), using the 1993 and 2004 NSS rounds, suggested less mobility for both occupation and education, with occupational mobility being less than education mobility. Next, Azam (2015), using the first round of the IHDS data, estimated the average intergenerational

correlation for India at 0.523 which is higher than the average global correlation of 0.420. Also, they suggested a strong association between expenditure on education with the estimated intergenerational mobility in education attainment.

Mueller (2000) compared the association between occupation and education mobility between the United States and Germany using the International Social Survey of Program (ISSP) 1987 for Germany and the General Social Survey 1994 for the US. The author finds that social origin has a strong tie with education attainment which is associated with later access to occupation opportunities. For instance, higher education has strong ties with white-collar occupations. In comparison, Germany has been shown to have more mobility than the United States. Meyer et al. (1979), compared occupation and education mobility between Polish men and American men using regression analysis on the 1972 and 1976 survey data sets. They also suggested that the type of school determines occupational attainment. Further, Carnevale et al. (2011) used the American Community Survey 2007-09 to predict higher education opens up access to higher-paid jobs through the use of synthetic estimates of work-life earnings. Finally, we were unable to find many studies on the association of education with occupation mobility in the Indian context. In addition, the use of RC models has been more recent in this area through the use of mobility tables, which we expect will strengthen the existing literature.

5.3 Description of the data

5.3.1 Data sources

The data used in this chapter come from the 68th round (2011-12) of the Employment and Unemployment Survey (EUS) conducted by the National Sample Survey (NSS) of India. The EUS provides the primary source of data for various indicators of the labour force at the state and national levels. It follows a stratified multi-stage sample design and includes a sample of around 100,000 households covering almost all geographical regions of the country. It is the largest data gathering information on almost every social and economic aspect at the individual and household level since 1983 in India. It contains information about education in 13 broad categories ranging from not literate to graduate and above and occupation levels are classified according to the national classification of occupations (NCO-2004) four-digit occupation codes (Appendix 2). The basis of divisions in the occupational structure is based on the skills required to perform the functions and duties of an occupation.

5.3.2 Classification of educational and occupational level

Initially, we arranged the education categories into six groups: not literate, without formal schooling, primary, secondary, higher secondary or diploma certificate, and graduate and above that ranged from 1 to 6, respectively. However, because the proportion of sons in the second category of education is less than 0.2 per cent in the sample, we decided to merge categories 1 and 2, thus, in the analysis, education is taken as having 5 categories. We categorized occupation codes into four categories as unskilled, farming, skilled/semi-skilled and white-collar respectively by following the NCO single-digit occupation codes of Labour and Employment (2004) and Reddy (2015) occupational structure.

It is worth noting that there is no uniformity in selecting the framework of occupational structure as literature exists with different structural frameworks by different authors in the context of the same country. Here, the unskilled occupation includes labours from agriculture and fisheries, mining and construction activities. The farming business includes market-oriented skilled and subsistence agriculture and fishery workers. Skilled and semi-skilled occupations include office clerks, service workers, sales workers, craft-related trades workers, plant and machine operators, and assemblers. White-collar occupations include legislators, managers, and professionals.

5.3.3 Selection criteria

The NSS data does not contain information about parents if the person is living separately from his family. Therefore, in order to do the study on intergenerational mobility, we selected only those households where the working person and his father are living together. Also, we concentrate on male subjects because married women in India live with their husbands or father-in-law and the survey does not provide information on their parents. Thus, the criteria for selecting the working sample were households where the son's age was between 16 and 45 and both father and son were not currently enrolled in any educational institution and informed about their education and occupation. The above criteria for sample selection provide a sample of working fathers and sons from which we removed cases where the required information was missing. In case a father was living with more than one working-age son, we selected only one

son at random to ensure that we are obtaining the record of a father and a son in our working sample. This procedure led to a sample of 17410 households which is the 'working sample'.

5.3.4. Testing sampling selection bias

To check whether the selection leading to the working sample is unbiased, we compared the socio-economic characteristics of co-resident sons with sons who are living separately from their fathers. In practice, sons who are living on their own corresponding to households with only one adult male who is of working age. We found 48390 non-coresident households in the sample.

In addition, we compared the frequency distributions relative to the occupation of co-resident sons and non-co-resident sons. It can be seen from Table 5.1, we can see that except for some difference in the age between both the groups; years of education and log of monthly per capita expenditure (MPCE) is not significantly different. If we look at the distribution of occupation of co-resident sons and non-co-resident sons in Table 5.2, while the proportion of unskilled workers is similar between the two groups, farming occupation is more prevalent among co-residents. And skilled/semi and white-collar occupations are more prevalent among individuals living separately from their parents. This is due to the fact that a large proportion of co-resident families exist in rural areas and hence the proportion of co-resident sons engaged in agriculture is higher than that of individuals living on their own.

If we compare the education levels of co-resident sons with sons living on their own, then we find that the proportion of sons up to primary level education is higher in the case of sons living separately, while co-resident sons have more persons with higher secondary and equivalent education. However, this gap was bridged between the two groups by individuals with a similar level of graduate and above education. Thus, we believe that the working sample involving only co-resident households is representative and comparable, at least for the purpose of this study.

Table 5.1

Summary statistics for sons who are co-resident or are living on their own

	Co-resident			Living on their own		
Variable	Observation	Mean	SD	Observation	Mean	SD
Age	17410	26.05	6.2	48390	35.83	6.54
% of rural population		69.09	….		57.87	…
% of SC/ST		26.45	….		35.83	6.54
Years of education		10.09	3.41		8.84	4.46
Log MPCE		7.17	0.56		7.26	0.59

Source: *Computed from the unit records of the EUS*

Table 5.2

Occupational distribution of sons by living arrangement

Description	Score	Co-resident	On their own
Unskilled (U)	1	15.88	17.55
Farming (F)	2	29.45	16.66
Skilled/Semi (S)	3	36.47	43.35
White collar (W)	4	18.2	22.44

Source: *Computed from the unit records of the EUS*

5.3.5 Descriptive statistics of the working sample

Descriptive statistics of the working sample show that the mean age of sons is 26 and father is 55. There are 6.54 per cent sons without education while the father's generation comprises 32.43 per cent without education. The sons' generation consists of 43.08 per cent of the people with secondary education, while people with graduate and above education is only 15.09 per cent. However, it is better than the percentage of graduates and above in the fathers' generation, which is only 6.11 per cent. Therefore, it is possible to say that the level of education has increased in the generation of sons, which is proved by the education of 10.09 average years in the sons' generation, where earlier it was only 6.60 average years in the father's generation. If

we look at the level of occupation, then, the sons' generation is governed by skilled and semi-skilled occupations, which is 36.47 per cent and only 18.20 per cent white-collar occupations. While, father's generation comprises mostly of farming occupation which is 38.06 per cent and interestingly, no change has been recorded in the proportion of white-collar occupation which is 17.91 per cent in father's generation also (Table 5.3).

Table 5.3

Educational attainment of sons by living arrangement

Description	Score	Co-resident	On their own
Without Schooling (N)	1	6.54	16.80
Primary (P)	2	17.93	22 .38
Secondary (S)	3	43.08	34.87
HSC/Diploma/Certificate(H)	4	17.36	11.91
Graduation and above (G)	5	15.09	14.04

Source: *Computed from the unit records of the EUS*

5.4 Statistical methods: RC Association model

5.4.1 Introduction

Statistical methods suitable for the analysis of social mobility depend both on the nature of the data and the purpose of the analysis. For instance, when, like in Mazumder (2015), one has income data at the individual level for the father and the son, methods based on linear regression on incomes or on the corresponding ranks may be used, depending on whether one believes that the relationship is approximately linear or not. Instead, when, like in our case, data are in the form of contingency tables, methods based on interactions are more suitable. Another important distinction is whether one aims to summarize the overall degree of association by a single number like in Altham and Ferrie (2007) or to undertake a more analytical investigation, looking at several measures of association at the same time.

There is substantial agreement in the literature that the set of log-linear interactions computed on a contingency table provides one of the best assessments of the strength and the direction of association between the row and column variable. Clearly, stronger association means that the social class of the son may be more easily predicted from that of the father, thus,

stronger association is equivalent to smaller chances of social mobility. An important property of interaction parameters is that they are not affected by the structure of marginal distribution. This is related to the algorithm described in Altham and Ferrie (2007) which allows to transform a given contingency table into another having the same set of interactions and arbitrary marginal distributions. This may be important in the light of separating structural from relative or circulation mobility as discussed, for instance by Hauser and Grusky (1988) and Sobel et al. (1985).

It is well known that in an r * c contingency table, we can compute (r - 1) (c - 1) non-redundant log-linear interactions measuring the degree of immobility within different subsections of the table. There are, essentially, two different strategies to deal with such a multitude of measure: (i) to compute a unique summary measure by some appropriate average as in Altham and Ferrie (2007), an approach applied, for instance, in Reddy (2015), or (ii) try to fit some restricted model depending on a smaller number of parameters, a route followed in this chapter where RC association models are applied.

5.4.2 Use of RC Association model

RC association models were introduced by Goodman (1981) to simplify the association structure without losing important information. These models have been used for the analysis of social mobility by, for instance, Xie (1992) and Mueller (2000). An RC (1) association model has just one coefficient of intrinsic association: higher values of this coefficient indicate stronger association and thus lower mobility. In addition, the estimated model provides a set of row and column scores from which we can measure the relative distance between categories: if two categories are close to each other, the corresponding conditional distributions are very similar.

Various extensions of log-linear interactions have been studied in order to capture more specific features of association; they are essentially based on assigning a logit of type L (local), G (global) or C (continuation) to the row and the column variables. A wide collection of interaction parameters obtained by combining different row and column logit types are studied in Douglas et al. (1990) in the context of positive association, a notion closely related to social mobility when father and son social class may be ordered from lowest to highest, in that case,

stronger positive association means lower mobility. Douglas et al. (1990) also provide a graphical interpretation of the different interaction parameters.

5.4.3 Application of RC association model

RC association models may be used to extract the most relevant features of the association structure in a social mobility table when interactions are defined by combining row and column logit types, see for instance Bartolucci and Forcina (2002). One further extension, introduced by Kateri and Papaioannou (1994), has allowed to combine traditional RC association models, Correspondence analysis and a whole collection of other models into a unified class of RC association models depending on a scaling factor.

The statistical methods used in this chapter are based on the even larger class of RC association models of Forcina and Kateri (2019) which allow the user to choose both the type of interaction parameters as in Douglas et al. (1990) and the scaling factor as in Kateri and Papaioannou (1994). The advantage of this approach is that we may easily explore a large range of different models and select the one that is as simple as possible and fits the data best. The strategy used in this chapter is to search for the smallest K such that an RC(K) model fits the data sufficiently well. For the three tables analysed in this chapter, no satisfactory model with K = 1 seemed to be adequate; on the other hand, it was possible to find an RC (2) model which fits the data very accurately. While the deviance is uniquely defined, computations of the coefficients of intrinsic associations and the rows and columns scores depend on row and column weights; we adopted the usual strategy (see Kateri 2014, Chap. 6) based on uniform weights.

To allow a visual assessment of the various features involved, score plots are based on two panels, the one on the left displays scores scaled to have variance equal to the corresponding coefficient of intrinsic variation while on right vectors corresponding to row and column categories are scaled to have unitary length. The first panel is more appropriate to assess locations and distances within rows or columns while the right panel is more useful to evaluate the strength of association between row and column categories, as discussed by Goodman (1986). The strength of immobility in an RC (2) model depends on two coefficients of intrinsic association, where higher association means more immobility.

To give an idea of the degree of immobility implied by a given pair of coefficients, below we compare several hypothetical versions of the association between father occupation and son education. More precisely, we consider the joint frequencies that we had got if, keeping the rows and columns score fixed to the vales estimated by the best model, the pair of coefficients of intrinsic association, relative to the values estimated in the best fitted model were: a - the same, b - both divided by two, c - both multiplied by 2.5 (Table 5.4).

Table 5.4

Theoretical joint frequencies for the education of sons of fathers in U and W in three hypothetical scenarios

Father education	Son education				
	N	P	S	H	G
U, a	525	1221	1711	304	103
U, b	381	898	1639	550	396
U, c	1325	1690	756	77	16
W, a	134	499	1691	1073	1377
W, b	207	707	2108	943	809
W, c	0	13	1047	1609	2106

Source: *Computed from the unit records of the EUS*

5.5 Social mobility in India

5.5.1 Father occupation and son education

We now study the joint distribution of father's occupation and son's educational attainment in India. This will help us understand to what extent educational attainments of the son depends on his father's occupation in the sense that father with a better occupation have better chances to invest more in the education of their sons (Table 5.5).

Table 5.5

Observed joint distribution of households by father occupation and son education

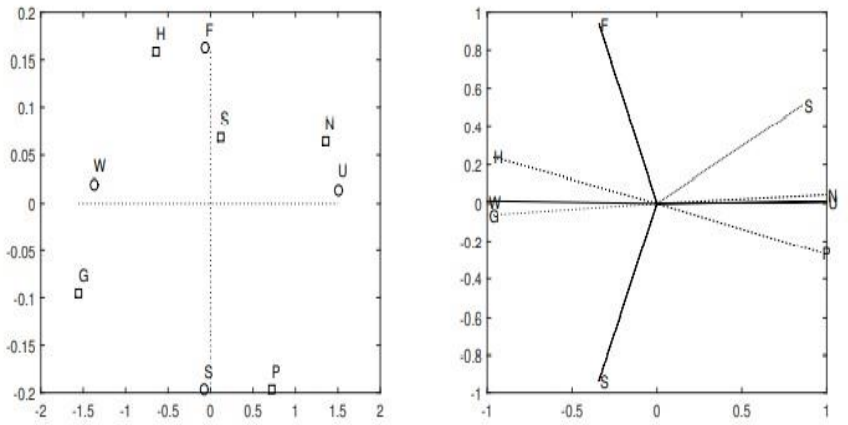
Father Occupation	Son Education				
	N	p	S	H	G
U	331	720	1055	205	68
F	410	1112	3041	1238	826
S	297	1001	2366	900	721
W	79	294	1042	705	999

Source: *Computed from the unit records of the EUS*

At first, a collection of extended RC (1) models as in Forcina and Kateri (2019) were fitted by setting logit type for occupation to L because its categories are not necessarily ordered and L, G and C for education, for a range of values of the ϰ parameter; the best of these models had deviance of about 18.05 on 6 degrees of freedom, which is significant. Thus, we moved to RC (2) models: the best fit was obtained by setting logits to L for occupation and G for education with ϰ = 0:13. This model has a deviance of 0.27 on 2 degrees of freedom. The coefficients of intrinsic association are equal to 1.04 and 0.02 respectively. Two versions of the row and column scores are plotted in Figure 5.3.

Figure 5.3

Left panel: plot of row (circles) and column (square) scores for the data in Table 5.5; right panel: row and column scores as unit vectors, row (solid line), column (dotted line)



The left panel indicates that U and W are most distant on the horizontal axis which is the most important while F and S are opposite on the vertical axis though they are almost equal

on the first dimension. Categories of education are ordered from N to G on the horizontal axis while H and P being the most distant on the vertical axis. In the right panel we should look mainly at the angle between row and column points: the smaller the angle, the more closely related are the two categories. This happens mainly for W and G on one side and U and N on the other, meaning that sons of white collars are likely to graduate while sons of unskilled fathers are the most likely to reach no formal education. However, the U vector is also in between the P and S education vectors, this is because, from the frequency distribution in Table 5.5, we see that about 75% of the sons of unskilled father get primary or secondary education.

Probably, this is the result of schemes like Sarva Shiksha Abhiyan (SSA), Mid-Day Meal Scheme, Right to Education (RTE) Act which have helped children from poor backgrounds get enrolment up to secondary level. Similarly, W is between H and G vectors, indicating sons of white collars are more likely to achieve higher secondary or graduate education. Also, F occupation is somewhere in between the pair H and S education vectors, indicating that farmer's sons are more likely to receive secondary or higher secondary education. On the whole, considering also the coefficients of intrinsic association, we may say that the effect of father occupation on son education is active but to a moderate degree. Thus, it is possible to achieve a reasonable amount of mobility in education regardless of an individual's social background. Now, it would be interesting to look towards the role of one's own education in determining one's occupation. Let us look at this in detail in the next part.

5.5.2 Son education and son occupation

The purpose of the following analysis is to determine how much the efforts spent in getting a better education improve the chances of getting a better job, in other words we examine the role of education in achieving higher level jobs in India. It is worth noting that here strong association means, roughly, that people get the job for which they are qualified, instead, weak association indicates that other factors, like family influence and connections, play an important role (Table 5.6).

Table 5.6

Joint distribution of households by son education and son occupation

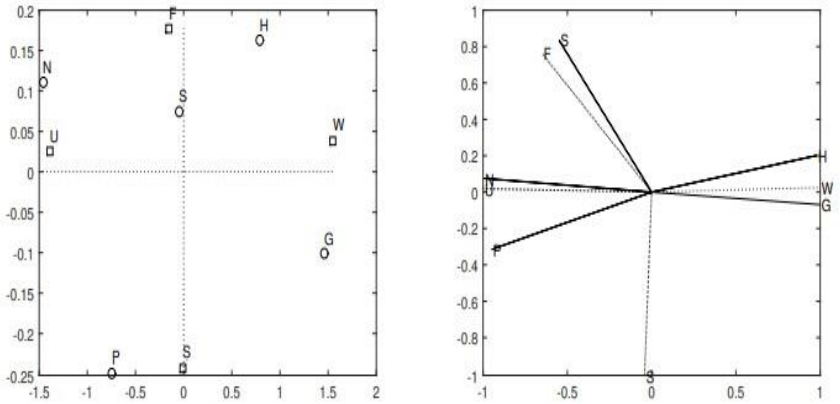
Son Education	Son Occupation			
	U	F	S	W
N	394	334	331	65
P	863	885	1161	222
S	1226	2452	2994	823
H	217	935	1155	729
G	59	503	755	1307

Source: *Computed from the unit records of the EUS*

Some preliminary model selection suggested that no RC (1) model fits sufficiently well the data, so we examined a range of RC (2) models, the one with logit type C for education and L for occupation with $\lambda = -0.100$ fits best with a deviance of 0.29 on 2 degrees of freedom, which means an almost perfect fit. The estimated coefficients of intrinsic association are equal to 1.09 and 0.02 respectively. The row and column scores are plotted in Figure 5.4.

Figure 5.4

Left panel: plot of row (circles) and column (square) scores for the data in Table 5.6; right panel: row and column scores as unit vectors, row (solid line), column (dotted line)



The left panel in the plots in Figure 5.2 indicate that, on the horizontal axis (which is the most important) education categories follow the natural order and are almost equally spaced; the vertical axis mainly differentiate between the P and the H categories. Among the occupation categories, U and W are opposite on the horizontal axis while F and S are opposite

on the vertical axis. Looking at the right panel, we find that the pairs of vectors N and U, G and W, F and S are close to each other. The first pair indicates that persons with no formal education are likely to remain unskilled; the second indicates a connection between secondary education and going into farming; the last between graduated people and white collars.

The left panel indicates that the pair H, S (education) is rather close to F (occupation), however, the right panel tells that H and F are not so close. Interestingly, the same results were also present in the above analysis of the association between father's occupation and son's education. Therefore, it indicates a circular pattern where sons of fathers with F or S occupation are more likely to receive H or S education and then they are again likely to continue with F or S occupation. Further, the fact that G and W are slightly close to each other, means that sons with a G+ degree have more chances of becoming white collars. On the whole, the strength of association is only a little stronger than in the previous table, meaning that education is not the only factor that determines the kind of occupation that a person can acquire. Possibly, other factors like social background or personal linkages are also important in determining one's occupation. We shall look towards this connection in the next section.

5.5.3 Father occupation and son occupation

The purpose of the following analysis is to examine the shape and strength of association between father occupation and son occupation. This is important to answer the following question: the effect of father's occupation on son's occupation is only indirect, that is induced by the fact that fathers with a better occupation can afford to invest more to provide a better education to their sons who, because of their education, can get a better job, or there is also a direct effect, in the sense that the sons of fathers with a better occupation, because of family ties, can get a similar occupation even if not adequately qualified. For these data all RC (1) models fit badly irrespective of the logit types while the RC (2) fits very well, so we set both logit types to G and searched for the optimal value of λ which equals -1.06 with a deviance of 0.02 on 1 degree of freedom.

Table 5.7

Joint distribution of households by father occupation and son occupation

Father Occupation	U	F	S	W
U	1607	110	577	85
F	521	4244	1178	684
S	468	446	3831	540
W	163	309	810	1837

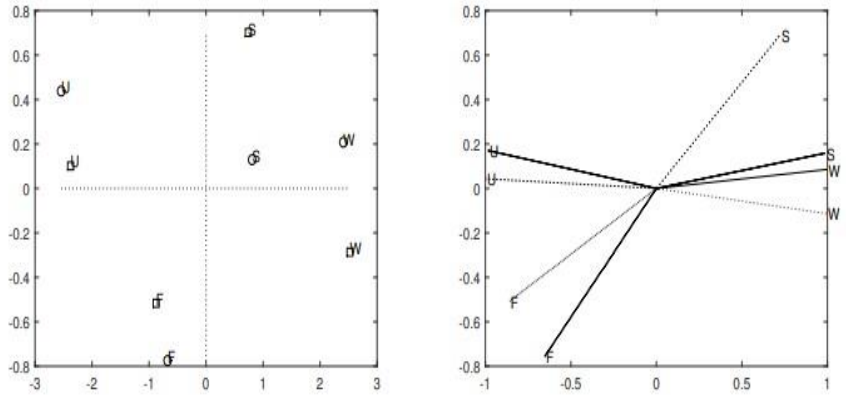
Source: *Computed from the unit records of the EUS*

The two coefficients of intrinsic association equal 3.34 and 0.21, respectively, almost three times larger than in the previous two cases above, indicating that, probably, family ties must be operating in addition to education. The left panel indicates that both the rows and columns scores follow the same order on the horizontal axis which is the most important. Note also that each category of father occupation differs from the corresponding category of son occupation mainly on the vertical axis which suggests that, to a first approximation, sons tend to remain in the same occupation of their father; indeed, the largest frequencies are along the main diagonal in Table 5.5. Looking at the right panel, we see that the association is strongest between unskilled and farmers, intermediate between white collars and weakest between skilled workers.

The above analysis shows that the association of father occupation to son occupation is strong. This implies that regardless of a person's education background, a son is more likely to get the same occupation of his father. Thus, it can be concluded that the connection is direct rather than mediated through education. If we try to match the ground reality with our results, then our results match the practical aspect prevailing in India. In India, it is found to a large extent that the father tries to keep his child in his profession. This may be due to less return from education as in Basole (2019) and the Annual Employability Report (2014) and hence father's influence in the labour market predominates in deciding his child's profession (Figure 5.5). This is consistent with the inference that wherever there is less return from education and skills, occupation pathway becomes the primary channel of intergenerational persistence (Blanden et al., 2014).

Figure 5.5

Left panel: plot of row (circles) and column (square) scores for the data in Table 5.7; right panel: row and column scores as unit vectors, row (solid line), column (dotted line)



5.6 Concluding remarks

In this chapter, inter-generation social mobility in India by using the 68th round of NSS data for the 2011-12 years was investigated. The results presented in this chapter indicate that the association between father occupation and son educational attainments is moderate, meaning that, probably because of the present policies of the government, together family efforts, the sons coming from a modest background have over 50% chances to reach, at least, secondary education. Unfortunately, the association between son education and son occupation is also moderate, indicating that education is not the main factor that determines occupation and, thus, social position. This finding is confirmed by the fact that the association between father and son occupation is much stronger than those passing through education. This means that there are other factors that determine one's occupation apart from education. Overall, it suggests that the role of social background in deciding one's education is only moderate while the role of the same social background is strong for deciding one's occupation. The strong dependence of occupation on social background suggests that India is still not an open society and especially work opportunities are not quite distributed.

We believe that there are three important interpretations for the above paradigms of social mobility in India. First, India's social structure evolved from a rigid caste structure but

still there exist restrictions in society especially at the lower level, which do not allow certain groups to grow and take advantage of development. Second, the limited role of education in determining one's occupation also exists due to the unsatisfactory quality of education in the country. This is proved by the fact that, despite several initiatives taken by the government at the lower level of education, only 9 out of 28 states have shown improvement in the School Education Quality Index (SEQI, 2019), while for 9 states it has gone down and the rest show no change as per National Institution for Transforming India. Further, if we look at India's position in advanced education, its score is 56.42 which is one of India's lowest component scores in the Social Progress Index (SPI 2020). At the same time, if we look at the component score for the quality of education of Scandinavian countries, it is quite higher than many countries in the world.

Overall, their ranking in the Global Social Mobility Index 2020 and SPI 2020 is quite high and the rate of inequality is also very low in these countries. Thus, it is possible to say that social mobility, which has been seen as an important tool to bring long term equality, has a clear link with fair education and occupational opportunities in the country. Third, other important factors such as health, infrastructure and technology are currently under development in the country, which directly contributes to the above social mobility indicators. Since India's resources are diverse and the requirements of one state may be different from others, a state-level study on social mobility indicators at the national level will help identify the lack of components at the national level and demonstrate the need for immediate improvement at the regional level. We intend to study social mobility indicators at the state level in subsequent work.

CHAPTER 6

The Nexus Between Social Mobility and Regional Disparity

6.1 Introduction

Social mobility has extensively been debated in the economics literature over the past five decades (Prais, 1955; Atkinson, 1980; Solon, 1992; Zimmerman 1992; Ng, 2007; Andrews and Leigh, 2009; Chetty et al., 2014; Corak, 2020). Strictly speaking, social mobility measures the capability of a family to move from one social ascension to another. In the economics literature, social mobility is conceptualized in terms of family income, educational attainment, and occupations. Social mobility is vividly portrayed as an outcome of equality of opportunity. By equality of opportunity, we refer to a situation in which an individual's growth and success solely depend on her abilities and efforts. In other words, the social grounding or economic status of parents hardly play any role in determining their children's success. However, as suggested by Black and Devereux (2010), the absence of any specific relationship between parent and child does not indicate an optimal situation because it will be viewed as a peculiar market structure with no return on human capital investment. From a policy perspective, we are more concerned about whether social mobility has been rising or falling with the improvement in economic progress.

In the context of widening the gap between the poor and the rich in India, an investigation into the degree of social mobility has gained great attention among social scientists in recent years. There are two specific channels through which the degree of social mobility affects economic progress. First, as mentioned earlier, the incidence of more economic inequality tends to impede social mobility (Becker & Tomes, 1979; Corak, 2013a). Second, it undermines the effectiveness of public welfare programmes aiming to uplift the socially and economically weaker sections of society. The recent Global Social Mobility Index provides several insights into accrued benefits of India from improved social mobility.

Constructing a mobility index at the country level appears to be quixotic as it does not touch upon the diverse nature of the economy, particularly the glaring rural-urban dichotomy and regional differences in socio-demographic and economic conditions. Therefore, to improve the status of social mobility at the country level, it is important to understand the current status of economic development at the regional level so that appropriate steps can be taken. This study

has two specific objectives. First, based on the data compiled from various sources, we aim to construct a comprehensive measure of social mobility, called the social mobility index (SMI). Using principal components analysis (PCA), we assess the role of various socio-economic factors in determining social mobility. Second, we examine the relationship between economic inequality and social mobility in India. To our knowledge, existing studies have largely neglected to address the role of regional differences in determining social mobility and how the status of social mobility can be improved.

The findings of this study show that while Delhi reports the highest social mobility, Chhattisgarh has the least social mobility. Moreover, we find that health and education are the two major factors that can maximize mobility at the national level. The rest of the chapter proceeds as follows. Section 2 discusses the relevant data and methodology used in this chapter. The results of the empirical analysis are illustrated and reported in section 3, followed by conclusions in section 4.

6.2 Studies on social mobility and its relationship with inequality

The present study on social mobility is rooted in and inspired by four related fields: (i) human capital theory, (ii) status attainment theory, (iii) dual labour market theory, and (iv) Weber's concept of social closure. Among all these theories, perhaps the most relevant for this area is human capital theory. In the economics literature, the theory of human capital was first formalized by Becker and Mincer. The fundamental crux of this theory is that what explains the decision of parents to invest in children's education and how does it impact income level and occupational structure (Becker & Tomes, 1979).

The second theory, status attainment theory, explains the role of additional factors, which are not strictly limited to educational attainment. The additional factors are advantages, which are mostly transferred by parents, family connections, social gatherings, and lifestyle. More importantly, these characteristics continue to persist throughout life (Haveman et al., 1995). The status attainment theory operates through transferring the family benefits directly from parents to children. It can be illustrated with a simple example. If the father is a medical practitioner (doctor), the son of the parents is likely to become a doctor. The dual labour market theory explains the dichotomy in the labour market, particularly the dichotomy between skilled

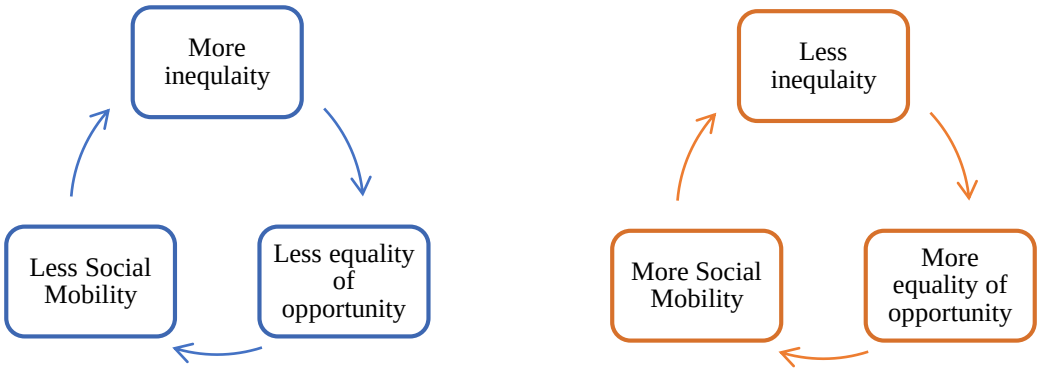
and unskilled occupations. Last, Weber's concept of social closure explains the attempt to achieve a maximum return by way of limiting resources to a small segment of society. For example, getting admission to top-rated schools in Delhi, the prospective student requires certain additional qualities. These additional qualities are available among children from affluent backgrounds. If this is the case, children from poor backgrounds will face obstacles (Fishkin, 2012).

A considerable body of research in the economics literature has shown that there exists an inverse relationship between inequality and social mobility (Atkinson, 1980; Solon 1992; Zimmerman 1992; Andrews and Leigh, 2009; Corak, 2013a; Chetty et al., 2014; Ray 2014; Mishra and Kumar, 2018; Li et al. 2019; Corak, 2020). Figure 6.1 illustrates the two contrasting scenarios of the nexus between inequality and social mobility. The vicious cycle of social mobility states that more inequality in society is less likely to facilitate social mobility as inequality limits the scope of equality of opportunity. In other words, inequality impedes social mobility through transferring the human and social capital of parents to their children. For example, the film industry in India continues to be dominated by a few families for decades.

On the contrary, countries experiencing a virtuous cycle of social mobility are likely to witness more social mobility coupled with low inequality. Essentially, the equality of opportunity paves the way for efficiency and productivity in the labour market by accelerating the growth of human capital investment and utilizing the available resources. Importantly, the equality of opportunity has a positive impact on social mobility and appears to be more realistic than equality of outcomes (Corak, 2020). The transition of economies from a vicious cycle into a virtuous cycle will have significant implications for economic growth. The theoretical model developed by Becker and Tomes (1979) establishes a clear relationship between inequality and social mobility.

Figure 6.1

Vicious versus virtuous cycle of social mobility



Source: *World Economic Forum, 2020*

6.3 Data and Methodology

6.3.1 Study Area

In this chapter, based on the size of the population and availability of data, we selected 22 states from 28 Indian states. Following the selection of the states, the screening of each state was performed using a wide range of indicators touching upon almost all major sectors of the economy, including health, education, labour market, and technology and governance structure. These measures have been used in the construction of the Global Social Mobility Index, the World Economic Forum. In this chapter, we performed the construction of a SMI in four phases: selection of socio-economic variables, application of a multivariate statistical technique, construction of an index value, and interpretation of results.

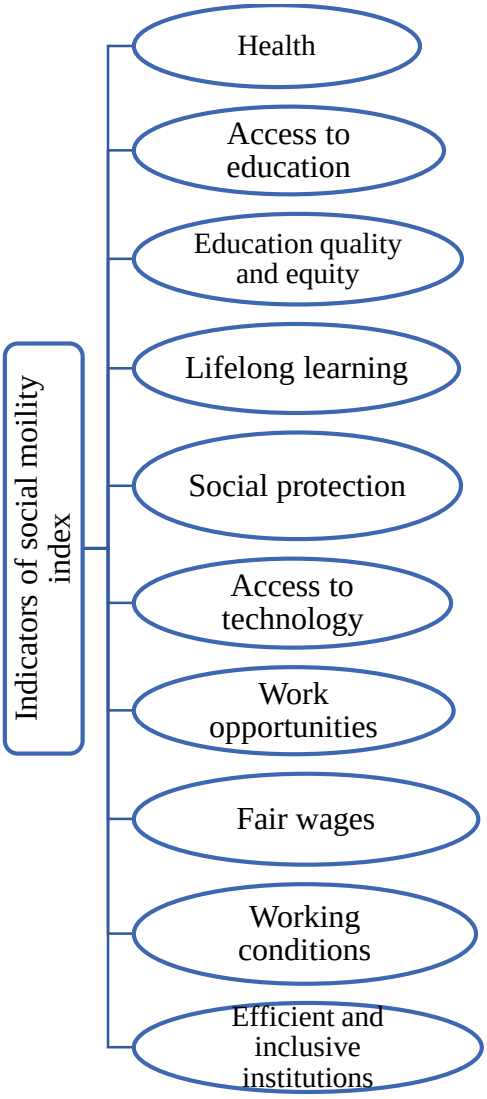
6.3.2 Selection of variables

Data for constructing a SMI come from various sources, including the Reserve Bank of India, the Ministry of Statistics and Programme Implementation. A comprehensive measure of social mobility requires inputs comprising several sectors, ranging from health to education. In addition to the level of education, several other factors play a vital role in determining the degree of social mobility. In this chapter, taking insights from Global Social Mobility Report, we consider 10 key sectors of the economy. As shown in Figure 6.2, the following indicators are proposed: health, access to education, education quality and equity, lifelong learning, social protection, access to technology, work opportunities, fair wages, working conditions, and

efficient and inclusive institutions. It is assumed that the vast difference across Indian states can be captured by these measures.

Figure 6.2

A comprehensive measure of social mobility



6.3.2.1 Health

Good health and well-being are the key areas of sustainable development goals adopted by the member nations of the United Nations. Like investment in physical capital, it is increasingly being recognized that the investment in human capital, which primarily comprises education and health, contributes significantly to the production process. High-quality healthcare is an important factor that has a lifelong and lasting impact on employability and therefore on the ability to experience social mobility. We included the following three indicators to assess the

overall performance of the Indian states in the health sector: life expectancy, adolescent birth rate, and underweight.

In its simplest form, life expectancy is the average number of years a person is expected to live. Life expectancy is an outcome of several aspects. Among several other factors, the availability of and access to a health care facility is one of the important determinants of life expectancy. Better the health care system, the better the life expectancy would be. According to the latest data, the life expectancy in India is 69 years. Adolescent birth rate: It is defined as the number of births per 1000 women aged 15 to 19 years. It is nothing but the fertility rate with specific reference to age group. In economics parlance, the adolescent birth rate is an essential indicator for assessing the status of maternal mortality as it is high for adolescent women than older women. Moreover, women with children in their early life are directly responsible for the infant mortality rate. At present, it is estimated at 10.9 in India, less than the global average of 65. Children with low weight for height are generally defined as underweight. Assessing the impact of nutritional imbalance on child mortality risks provides vital evidence on the economic condition of the people prevalent in different Indian states. Children with a severe case of underweight are likely to report a greater risk of death. The main goal of using this indicator is that it measures the access to necessities and nutritional status of the population.

6.3.2.2 Access to education

India is a young country, and the demand for education has grown exponentially over the last two decades. In addition, India is socially very diverse, comprising many advantaged and disadvantaged social groups. A significant proportion of the workforce in India is employed in the informal sector, which barely provides sufficient wages to lead to a decent standard of living. Therefore, to uplift the socially and economically deprived sections of the society, access to education not only is widely regarded as a vital source of enhancing skills and productivity of the workforce but also plays a key role in improving the overall economic well-being of the country. The gaining of skills and knowledge helps disadvantaged groups to improve their capabilities and productivity in the long run. Access to education is further decomposed into three following indicators: percentage of schools in rural sectors, percentage of dropouts amongst ever enrolled persons in the age group of 3 to 35 years, and mean years of completed education among persons aged 15 years and older.

The percentage of schools in rural sectors is measured using the availability of schools in rural areas as an indicator to assess access to schools as more than 65 per cent of the population lives in rural areas. Percentage of dropouts amongst ever enrolled persons in the age group of 3 to 35 years refers to a person, who is ever-enrolled, who is dropout if the person is not able to complete the enrolled educational level. This indicator represents the problems people face in completing an educational level in which he/she has enrolled. In other words, it highlights the intrinsic efficiency of educational systems. Mean years of completed education among persons aged 15 years and older: As a component of access to education, it measures the literacy level of the people in the state.

6.3.2.3 Education quality and equity

Along with the growth of the number of educational institutions, it is also recognized that promoting quality education is essential as it provides a platform for individuals to improve their standard of living. As mentioned earlier, schools play an important role in imparting fundamental knowledge, which lays down the foundation of human capital investment. Although the provision of basic facilities such as free education, paves the way for inclusive growth, the difference in the quality of education across Indian states is a serious concern. We identified the following components, which broadly represent the quality of education and gender parity.

Primary pupil-teacher ratio: It is one of the yardsticks to measure educational quality by assessing the number of students per teacher. A low primary pupil-teacher ratio not only enables teachers to interact with their students effectively but also effectively facilitate teaching and learning outcome. Upper primary pupil-teacher ratio: It ensures a specified student-teacher ratio for upper primary education. It may also highlight any imbalances or deficiencies in teacher postings. Gender parity in higher education: In India, the difference in participation of men and women in higher education is quite apparent across Indian states. In this chapter, we use the gender parity index for higher education to measure gender differences in higher education enrolments. This indicator sheds light on women's access to higher education relative to men in the state. Percentage of schools for children with special needs (CWSN): According to the 'State of the Education Report for India: Children with Disabilities, a report published by UNESCO in 2019, children with disabilities constitute about 1.7 per cent of the

total child population. About 75 per cent of the children with disabilities at the age of five are attending any educational institutions in India. An inclusive education system covers all sorts of children, including children and youth with disabilities. Hence, this component highlights the progress made by states to improve the enrollments of children with disabilities.

6.3.2 4. Lifelong learning

In the current context of rapid technological change, the development of human capital must remain a lifelong endeavor and such learning becomes easy and accessible through building the right kind of facilities and capabilities. Lifelong learning is further decomposed into the following three components.

Percentage of persons aged 5 years and above should have the ability to operate computers. With the advancement in information and communication technology, computers are commonly used in day-to-day learning activities. Therefore, it is imperative to have the ability to use it daily. This indicator measures such capabilities across Indian states. Percentage of persons aged 5 years and over with the ability to access the internet: India has witnessed a resurgence of demand for the internet, particularly in the rural sector due to the penetration of personal computers and low cost of internet access. Since the internet is one of the vital sources of all sorts of information, entertainment, knowledge and educational content, it has significantly improved economic opportunities through easy access. Distribution per 1000 to persons aged 15 years and above who have undergone vocational training: The role of vocational education in economic growth is well-recognized. In addition to imparting skills and training, vocational training prepares job-seekers to reap employment opportunities available in the formal sector.

6.3.2.5. Technology access

In view of the emergence of economic power with the advancement in technology, it is essential to capture the role of technology in enhancing social mobility. By technology access, we mean the level of technology accessible to the population. It has significant implications for creating equitable economic opportunities and developing human capabilities. In other words, access to technology has the potential to serve as an equalizer against inequalities by sharing information equally with all sections of society. To capture the impact of technology access on social

mobility, we consider three components: rural population with access to electricity, households with a personal computer, and households with internet access.

Percentage of rural population with access to electricity: Access to electricity is essential to operate any form of technology. However, a significant number of people living in the rural sector do not have access to electricity, which is one of the necessities. Access to electricity is indispensable for a basic standard of living and other activities. For instance, as an input, it facilitates economic activities and thereby promotes economic development.

Percentage of households with computer facilities: The significance of households having computer facilities reflects the willingness to adopt information and communication technology (ICT). Computer, in general, is important for performing routine organizational work in various institutions. In recent times, the COVID-19 pandemic has made its need even more urgent. Percentage of households with internet access: The number of internet users has witnessed exponential growth over the last decade. The World Bank suggests that a 10 per cent increase in internet use is likely to increase the economic growth of a country by 1.2 per cent. Considering the benefits of digital technology, it has become imperative to have internet access in every household. Unfortunately, unequal distribution of access to digital platforms such as the internet across Indian states is a cause of concern.

6.3.2.6. Work opportunities

Work opportunities measure the ability of the economy to provide work to all who want to work, irrespective of their socio-economic backgrounds. India's demographic dividend is a blessing to the country's goal of achieving a US$ 5 trillion economy by 2025. The serious issue of protracted unemployment among the educated youth results from their inability to convert educational attainment into a labour market outcome.

Unemployment for postgraduate and above: In a typical labour market structure, postgraduate and above is considered is the highest level of education and sufficient to get suitable employment under normal circumstances. However, if there is large unemployment at this level, it indicates a gap between labour market requirements and institutional education. Unemployment in rural areas per 1000: The rural sector plays a crucial role in augmenting demand for both durable and non-durable goods produced in the economy. Attention to the rural sector is more important as the availability of jobs in villages is less and people are

generally dependent on agricultural activities. If the rural sector is witnessing high unemployment, it shows the need for generating non-farm activities along with revising farm activities. Percentage of female labour population ratio aged 15 years and above: Despite an impressive economic performance, the female labour force has declined steadily in India. Interestingly, the percentage of women engaged in various economic activities varies significantly. From a pragmatic point of view, if women can participate in the labour market, it points towards an open and productive society.

6.3.2.7. Fair wages

Fair wages are defined as the minimum wages that are sufficient and essential for a decent standard of living. The ability of an economy to provide fair wages depends on several factors such as regulatory framework on minimum wage and cost of standard of living. We use the indicator of low wages as its proxy. We consider the following two components to understand the status of fair wages.

Percentage of taxpayers: More taxpayers in the state means a smaller number of workers at the lower level, which indicates a fair wage rate in the state. The total of average wage earnings: It compares the average wage income of different states in the country. The low average wage of any state as compared to other states indicates an unfair wage rate in the state.

6.3.2.8. Working conditions

Working conditions have been defined in several ways. The Factories Act, 1948 clearly describes several provisions related to workers' working conditions, including working hours, eligible leaves, overtime payment, job contract, and safety and security. Strict adherence to these provisions shows the ability of an economy to provide good working conditions to all workers. Under the various provisions of working conditions, we consider three following components that represent the labour market condition of workers' working environment.

The aggregate of averages worked more than 48 hours: As per the Factories Act 1948, the weekly working hours are limited to 48 for an adult worker. In other words, the act mandates that an employee is eligible for overtime wage if the working hours are beyond 48 hours in a week. Percentage of regular salaried employees without pay leave: As per the Indian employment law, employees are eligible for a minimum of 15 days of annual paid leaves. The

condition of salaried employees without pay leave reflects not only the penurious working condition of employees but also their denial of the right to live with human dignity. Percentage of regular salaried employees without job contract: One of the salient features of the job contract is that it lays down most of the terms and conditions such as appointment, nature of work, emoluments, and termination procedures. Issuance of a job contract avoids all sorts of employment-related disputes and maintains a healthy relationship between employer and employees during the tenure.

6.3.2.9. Social protection

Social protection is designed not only to increase employees' immunity to external shocks but also to protect the interests of elderly and informal workers, who are barely able to earn a decent wage. The informal workers comprise about 94 per cent of the total workforce in the country. The major measures of social protection include both basic and economic securities. Basic social security, as a principal and necessary entitlement, appears to be pivotal in defining the quality of employment.

To capture the coverage of social protection, we consider three indicators. The first indicator is the percentage of regular salaried employees without social security benefits, which measures the percentage of employees who do not receive social security benefits in each state. The second indicator is the percentage of households with any usual member covered under the health scheme. It is reasonable to argue that provision of health insurance is the fundamental responsibility of the government.

6.3.2.10. Efficient and inclusive institutions

Indian society is quite diverse- be it socially or culturally. An efficient and inclusive institution not only provides fair and equitable access to its justice system and institutions but also safeguards the interests of the historically marginalized and disadvantaged groups. To examine the impact of efficient and inclusive institutions on social mobility, we consider the following three indicators under the efficient and inclusive institutions: crime against Scheduled Tribes (STs) and Scheduled Castes (SCs), persons with disabilities, and gross enrolment in higher education for SC/STs.

Rate of total crime against STs and SCs: These are the most backward class in India. This indicator compares the crime rate against them in the state. Percentage of persons with disabilities of 15 years and above have the highest level of education: The availability of higher education to persons with disabilities is a clear indication of an inclusive system of education. Gross enrolment ratio (GER) in higher education for SC/STs: Gross enrolment ratio is a widely used measure for detecting the status of educational attainment in a country. The enrolment of SC/STs in higher education reflects the efforts undertaken by governments to uplift socially excluded groups, indicating an inclusive society.

6.3.3 Normalisation of data

As mentioned earlier, the main goal of this study is to construct a comprehensive measure of social mobility, called the social mobility index. Considering the identification of variables, we used all the above-mentioned components to construct the SMI. As mentioned earlier, principal components analysis (PCA) was applied to measure the factor loadings and their respective weights. Each component is uncorrelated.

All components were normalized before PCA was applied using the following two formulas:

$$\text{The normalised value for positive components} = \frac{\text{Observed value} - \text{Min value}}{\text{Max value} - \text{Min value}}$$

$$\text{The normalised value for negative components} = \frac{\text{Max value} - \text{Observed value}}{\text{Max value} - \text{Min value}}$$

6.3.4 Assignment of weights to variables

The study adopts a PCA based approach to assign weights to the components as suggested by Kumar et al. (2017). As can be seen in Table 6.1, we selected eight out of 31 components for the assignment of weights to the individual component whose eigenvalue was greater than one and which explained 85 per cent of the variation. The following formula was used to compute the weights for each component:

$$\mathbf{W_i} = \sum | \mathbf{L_{ij}} | \mathbf{E_j}$$

where,

W_i is the weight of i_{th} indicator; E_j is the eigenvalue of the j^{th} factor; L_{ij} is the loading value of the i^{th} state on j^{th} factor; i= 1, 2, 3, ….31 components; j = 1, 2, …n principal components (PCs).

Table 6.1

Factor loadings of related major components

Variabl	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8
Life	0.247	-0.016	0.043	0.194	-0.048	-0.05	0.046	0.168
ADB	0.196	0.081	-0.011	-0.225	0.281	-0.165	-0.029	-0.16
UW	0.245	-0.117	0.148	-0.08	-0.132	0.018	0.122	-0.007
RUSCH	-0.134	-0.035	0.317	-0.203	-0.177	-0.166	0.087	0.042
DRPO	0.159	0.198	-0.033	-0.363	0.129	0.088	-0.07	-0.288
MEDU	0.265	0.132	-0.097	-0.149	0.043	0.125	-0.105	0.074
GEPAR	0.226	0.114	0.182	-0.05	0.103	-0.213	0.228	-0.041
CWSN	-0.095	0.317	-0.055	-0.243	0.077	-0.17	0.339	0.266
PUPM	0.15	-0.382	0.115	-0.045	0.159	-0.094	-0.064	0.02
PUPUP	0.147	-0.308	0.128	-0.092	0.219	-0.066	-0.327	0.102
COMF	0.255	0.135	-0.131	0.177	-0.026	-0.08	-0.018	-0.079
RUREL	0.221	-0.292	-0.125	-0.006	-0.012	-0.079	-0.006	0.011
INTFA	0.277	0.088	0.049	0.031	0.111	-0.119	-0.053	-0.084
ABUIN	0.293	0.087	-0.035	0.077	-0.036	-0.049	-0.066	-0.019
OPCO	0.28	0.078	-0.102	0.102	-0.112	-0.122	-0.051	0.06
VOCT	0.163	0.057	0.138	0.071	-0.196	-0.376	0.221	0.317
UNPG	-0.159	0.171	-0.061	0.39	-0.005	-0.029	-0.103	-0.142
UNRU	-0.065	-0.114	-0.285	0.109	0.385	0.221	0.274	-0.007
FERUR	0.042	-0.342	-0.206	-0.123	0.076	0.217	0.233	0.085
SSB	-0.008	0.149	0.289	0.022	0.019	0.394	-0.153	0.231
HEAIN	0.011	-0.27	-0.184	-0.175	-0.406	-0.005	0.15	0.054
CRST	0.121	0.163	0.143	0.066	-0.358	0.176	-0.017	-0.197
CRSC	0.162	-0.282	0.131	0.248	-0.146	0.075	-0.086	-0.127
DISHI	0.247	0.171	-0.095	0.194	0.115	0.13	-0.091	-0.104
GERH	0.171	-0.006	-0.278	-0.133	-0.227	0.272	-0.059	0.24
GERHT	0.155	0.148	-0.108	-0.329	-0.242	0.279	0.057	-0.125
WORM	0.131	-0.039	-0.16	0.155	0.075	-0.044	0.496	-0.269
WPAIL	0.137	-0.005	0.265	0.244	0.023	0.318	0.269	0.226
WJOC	0.005	0.001	0.355	0.052	0.085	0.266	0.302	-0.17
TAXPA	-0.018	0.144	-0.331	0.211	0.001	-0.025	-0.055	0.364
AVGW	0.137	0.073	0.147	-0.121	0.303	0.121	-0.03	0.384

***Source**: Computed by authors*

6.3.5 Composite Indexing and categorisation

Following the assignment of weight to variables, we use the following formula to construct the SMI:

$$I_{State} = \frac{\sum_{i=1} X_i W_i}{\sum_i W_i}$$

where,

I is the index of each state; X_i is the normalised value of i^{th} indicator; W_i is the weight of i_{th} indicator.

After computing the index for each state, all states were divided into three categories based on SMI scores. The three categories are as follows: states with high social mobility having a value of 0.561 and above in the 75th percentile and above, and states with moderate social mobility having a value between 0.260 and 0.561, which is between the 25th and 75th percentile, and value of low social mobility is below 0.260 and the 25th percentile.

6.4 Constructing SMI

Using the above methodology, the SMI was constructed for the 22 Indian states. It can be seen in Table 6.2, which presents the score of SMI, category of social mobility, and ranking for the Indian states, that the minimum and maximum scores of SMI range between 0.195 and 0.853. While Chhattisgarh reports the lowest SMI score, Delhi has the highest score of SMI. A careful examination of the SMI scores of different states shows that there are considerable variations in the SMI score across Indian states. Moreover, five Indian states –Delhi, Himachal Pradesh, J and K, Kerala, and Uttarakhand- fall under the category of high social mobility.

To draw a meaningful analysis, the sample states are grouped into six regions: northern, north-eastern, eastern, central, western, and southern. Region-wise analysis of Indian states shows that almost all eastern states and the majority of central states of India fall under the category of low social mobility. Except for Uttar Pradesh, BIMARU, an acronym coined by Ashish Bose at the beginning of the 1980s to denote the poor demographic status of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, also report low social mobility.

Table 6.2

Social Mobility of India Index Ranking

State	SMI	Category of Social Mobility	Rank	Region
Andhra Pradesh (AP)	0.252	Low	19	Southern
Assam (A)	0.352	Medium	12	North-eastern
Bihar (B)	0.260	Low	17	Eastern
Chhattisgarh (C)	0.195	Low	22	Central
Delhi (D)	0.853	High	1	Northern
Gujarat (G)	0.321	Medium	13	Western
Haryana (H)	0.548	Medium	6	Northern
Himachal Pradesh (HP)	0.642	High	3	Northern
J and K (J&K)	0.602	High	5	Northern
Jharkhand (J)	0.282	Low	14	Eastern
Karnataka (Ka)	0.360	Medium	11	Southern
Kerala (K)	0.746	High	2	Southern
Madhya Pradesh (MP)	0.213	Low	20	Central
Maharashtra (M)	0.513	Medium	8	Western
Odisha (O)	0.211	Low	21	Eastern
Punjab (P)	0.522	Medium	7	Northern
Rajasthan (R)	0.260	Low	16	Northern
Tamil Nadu (TN)	0.450	Medium	9	Southern
Telangana (T)	0.403	Medium	10	Southern
Uttar Pradesh (UP)	0.275	Medium	15	Central
Uttarakhand (U)	0.633	High	4	Central
West Bengal (WB)	0.255	Low	18	Eastern

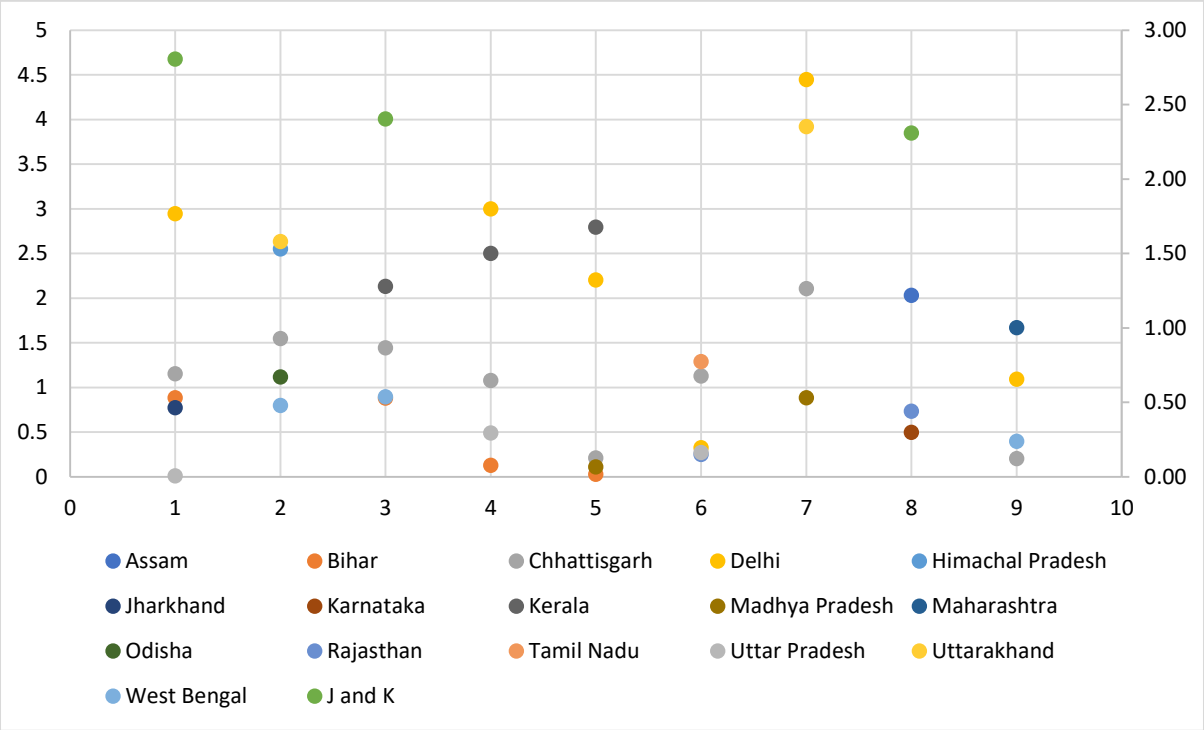
***Source**: Author's calculation*

Based on the PC factor loading value, we observed that health, access to education, quality and equity have the highest weightage in the index. Hence focusing on these parameters seems more crucial at the aggregate level to improve social mobility in India. Data also suggest that all the states with high social mobility perform well in these areas, as illustrated in Figure 6.3. In line with the findings of Andrews and Leigh (2009), we also observe that there is a positive relationship between economic development and social mobility. For instance, states with high social mobility fall under the category of highly developed and medium developed. Social mobility is low in all the less developed states.

A close examination of all the components at the state level indicates that health, lifelong learning, and inclusive institutions are key components for improving social mobility in moderately developed states. Access to technology is found to be an additional factor required for less developed states. Social protection and working conditions are the two essential components to improve social mobility.

Figure 6.3

Area wise scores of best and worst-performing states



***Source**: Author's calculation*

***Note**: Vertical axis represents scores of indicators whereas horizontal axis shows: 1-Health, 2-Education Access, 3-Education Quality and Equity, 4- Technology Access, 5-Lifelong Learning, 6-Social Protection, 7-Inclusive Institutions, 8-Working Conditions, 9-Fair Income Distribution.*

We attempt to identify factors explaining low social mobility in Indian states. We found that the states with a high density of population coupled with poor economic conditions tend to report a high adolescent birth rate. For instance, the states such as Assam, Bihar and West Bengal present high adolescent birth rates. As noted by Otoo-Oyortey and Pobi (2003), Paul (2019), the existence of poverty is the most responsible factor for early marriage, which in turn is a major driver of teenage pregnancies in India. It hinders the growth and health of women. Moreover, as a result of maternal malnutrition, these states report a higher percentage of stunted, wasted children under five. As a policy response, India has recently initiated the

POSHAN Abhiyaan scheme, which aims to resolve the problem of malnutrition among children, pregnant women and lactating mothers. To achieve food security and better nutritional levels, the scheme was initiated in 2017 in line with the UN-mandated Sustainable Development Goals (SDGs). In addition, West Bengal, Rajasthan and Madhya Pradesh perform very poorly in the area of inclusive institutions.

However, we noticed that even the developed states are lacking in some areas. Interestingly, the states with low social mobility tend to perform better. As mentioned earlier, the states with low social mobility such as West Bengal, Chhattisgarh and Madhya Pradesh, report relatively more female labour force participation and employment rates than other states, hence performing well in the field of work opportunities. Similarly, Andhra Pradesh and Chhattisgarh have a higher percentage of families covered by health insurance. While analyzing the overall performance in the health sector, the performance of these states is not satisfactory. The findings indicate that having health insurance does not guarantee better health facilities. Moreover, it also has the highest percentage of employees without social security benefits (SSB). Uttar Pradesh and Punjab, which have low and moderate social mobility respectively, have lower dropout rates than other states. Similarly, Bihar has low social mobility although there has been an improvement in the access to schools in the rural sector, which accounts for almost 90 per cent of the population.

On the other hand, Kerala with high social mobility has a relatively low percentage of schools in rural areas and higher dropouts than other states. Interestingly, Odisha has a high dropout rate along with high access to schools. These findings indicate that high enrollment and access to schools do not manifest in the quality of education, resulting in fewer people completing their education and consequently fewer total average years of education. This is clear evidence of disparities between the Indian states with respect to social mobility. In the following section, we examine the relationship between inequality and social mobility in the country.

6.5 A trade-off between inequality and social mobility

Many scholars have noted that income inequality in developing economies, particularly India, has been rising coupled with the expansion of economic activities (Dreze & Sen, 2012; Chancel & Piketty, 2019; Atkinson & Morelli, 2014). A major impact of rising inequality is that it tends

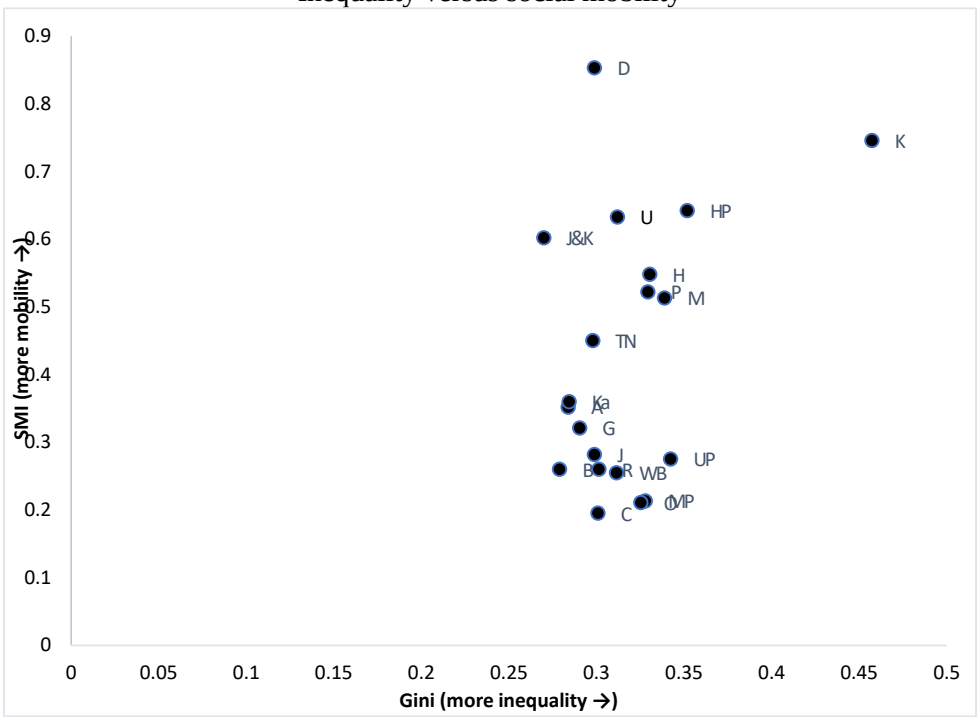
to reduce opportunities available for future generations. Empirically, evidence of a strong relationship between inequality and intergenerational mobility has already been established in the economics literature (Krueger 2012; Corak 2013a). If a country has a high degree of economic inequality, it is likely to have lower levels of intergenerational mobility. This relationship is commonly illustrated as the Great Gatsby Curve (GGC).

The GGC plots Gini Coefficient on the horizontal axis and intergenerational income elasticity, which measures the elasticity between paternal income and his son's adult income (Corak 2013a), on the vertical axis. If intergenerational income elasticity is high, the social mobility tends to be low, and vice versa. It is to be noted that the GGC curve is an upward-sloping line, indicating that greater inequality impedes social mobility by unequally distributing opportunities for economic progress among future generations (Ferreira, 2001). Therefore, it is argued that low social mobility is both a cause and a consequence of rising inequalities and has serious implications for social cohesion and inclusive growth (Corak, 2013b).

Taking insights from the analysis of the Great Gatsby Curve, this chapter examines whether social mobility is associated with inequality, which is measured by the Gini coefficient. As shown in Figure 6.4, the plot of inequality and social mobility indices shows no evidence of the relationship between economic inequality and social mobility in the context of Indian states. Although the degree of social mobility differs considerably across Indian states, inequality alone does not account for the social mobility in Indian states.

Figure 6.4

Inequality versus social mobility



Source: The Gini coefficient of consumption expenditure distribution is derived from the estimates of the Planning Commission, Government of India using the 66th round of NSS. We consider below 0.30 as low-income inequality and above as high-income inequality.

In this chapter, we hardly provide any empirical evidence to support the relationship between inequality and social mobility. Therefore, we attempt to examine the uncertain relationship between these two variables existing in the different Indian states. It can be seen in Table 6.3, India has all kinds of scenarios, suggesting that high social mobility coexists with both low and high inequality. For instance, while Delhi with low inequality reports high social mobility, the states such as Himachal Pradesh, Kerala, and Uttarakhand show high social mobility coupled with higher inequality.

Taking insights from Andrews and Leigh (2009), a state with more inequality, combined with a high degree of social mobility, is commonly acceptable from a society's perspective. Thus, this finding emphasizes the conclusion that inequality and social mobility is a local phenomenon that needs to be studied at a regional level (Shroder, 2001). Further, greater

social mobility in the most unequal regions can be associated with inequality due to rapid expansion of the upper quartile of the income distribution, which needs to be further investigated. Apart from this, we believe that other factors such as the complex caste structure and its association with income opportunities account for creating such mixed scenarios. Such factors play an important role when a state lags in terms of human development and social reforms. It is interesting to note that BIMARU states show relatively low social mobility in conjunction with high economic inequality.

Table 6.3

Different scenarios existing between social mobility and economic inequality

Basis	**States**
• High social mobility and low inequality	Delhi, J&K
• High social mobility and higher inequality	Himachal Pradesh, Kerala, Uttarakhand
• Medium social mobility and low inequality	Assam, Gujarat, Jharkhand, Karnataka, Tamil Nadu
• Medium social mobility and high inequality	Haryana, Maharashtra, Punjab, Uttar Pradesh
• Social immobility and less inequality	Bihar, Chhattisgarh
• Social immobility and higher inequality	Madhya Pradesh, Odisha, Rajasthan, West Bengal

***Source**: Author's calculation*

6.6 Concluding remarks

In this chapter, an attempt was made to construct a comprehensive measure of social mobility by considering a wide range of factors explaining the status of economic development. For this, we considered 22 major Indian states based on the size of the population and geographical area. Similar to the human development index (HDI), each state was given an index value to examine the status of social mobility.

The application of the PCA-based approach validated the socio-demographic and economic indicators used in the construction of this index. The indicators were sourced from the recently published Global Social Mobility Report by the World Economic Forum. Taking insights from this report, we used 10 following components: health, access to education, education quality and equity, lifelong learning, social protection, access to technology, work

opportunities, fair wages, working conditions, and efficient and inclusive institutions. An examination of the SMI across Indian states shows that Delhi ranks first in terms of social mobility, followed by Kerala (2nd), Himachal Pradesh (3rd), Uttarakhand (4th) and Jammu and Kashmir (5th). These findings indicate that the top-ranked states are quite sound in terms of providing opportunities to grow irrespective of one's social background. An attempt to examine the relationship between economic inequality and social mobility shows that there is no definite relationship between these two. Indeed, future research may explore the various reasons accounting for the absence of a relationship between these two variables.

Among the 10 components, we found that health, access to education, education quality and equality are the major factors improving social mobility. As suggested by several economists, the investment in human capital is of great importance in improving social mobility and development. Considering India's potential economic growth offered its 'demographic dividend', improving social mobility through facilitating equal opportunities in the society is key to achieving inclusive growth.

To accelerate the degree of social mobility, we need to focus on small and medium enterprises (SMEs), which account for a major source of employment generation in the country, and skill development. At present, SMEs employ about 40 per cent of India's workforce and a majority of them fall under the informal sector. These are the sectors that are mostly inefficient, less skilled, and rural-based. Improving the skills and productivity of informal workers will help in bringing the unorganized sector into the organized sector and thereby provide job security and social security benefits to the employees. At the same time, the fact is that a great deal of disparity in socio-economic conditions, including the capacity to invest in human capital, leads to a greater parity between parent and child. This situation calls for active intervention by the government in promoting welfare programmes.

CHAPTER 7

Summary, Conclusion, and Policy Implications

7.1 Summary of the thesis

If a child is born into a poor family, what is the probability that the child will attain a higher economic status regardless of the child's socio-economic background? The capability to move from one economic position to another between two generations is a matter of serious concern. Why is it a matter of concern here? It is because an improvement in the economic status of one generation to higher economic status in another generation has a considerable impact on poverty, the standard of living, and income inequality. If mobility is stagnant, achieving equitable and inclusive economic growth is difficult. Importantly, it leads to a situation in which people benefit substantially from their parents' wealth. An examination of several empirical studies in this field showed that mobility is limited or constrained in developing economies as compared to developed countries. Mobility is limited in developing countries mainly due to socio-economic factors such as caste and income.

The concept of intergenerational mobility and its relationship with income inequality has been debated and discussed extensively in the economics literature. The analysis of this thesis was dedicated to explaining the persistence of intergenerational mobility and the nexus between social mobility and inequality by drawing insights from the existing literature. The theoretical and empirical studies were drawn from the field of economics and sociology. Apart from the nexus, it includes an explanation of the different types of mobility: income, educational and occupational, and its relationship with economic growth and inequality.

7.2 Conclusions emerging from the analysis

This chapter presents the conclusions of all the chapters of the thesis. The thesis begins with a discussion on the role of human capital as well as its importance in determining the level of social mobility. One of the central issues addressed in the first chapter is that despite the impressive economic performance, why the country reported a sharp increase in income inequality. For instance, evidence suggests that the proportion of the top 10 per cent income group in national income has gone up and the proportion of the middle 40 per cent and bottom 50 per cent income groups has decreased. From a policy perspective, this is a major concern.

Equally important is that wage inequality in the Indian labour market has also increased from the 1970s to the 1990s. It is interesting to note that the rise in wage inequality is recorded despite reporting impressive economic growth in India during the same period.

As discussed earlier, the central issue that remains a puzzle for economists and sociologists is why the increase in GDP per capita is accompanied by a rising inequality? The increase in income inequality with the increase in GDP per capita has been attributed to the degree of intergenerational income mobility (IGIM). IGIM is measured through Intergenerational Earning Elasticity (IGE). It represents the ability of a generation to climb the ladder higher than its previous generation. However, in India we found evidence of occupational stagnation, indicating that the occupation of children is primarily determined by the occupation of their parents. Income stagnation occurs when the growth of income becomes concentrated in the hands of a few. Thus, the persistence of income stagnation is likely to accelerate the level of inequality by undermining equality of opportunity. Therefore, it can be safely concluded that low social mobility may be considered both a cause and consequence of growing income inequalities and hurts social cohesion and inclusive growth. On the other hand, equality of opportunity in the country has the power to drive mobility and inclusive growth in the country.

The second chapter contains a review of the existing literature on intergenerational mobility. It covered literature from both developed and developing countries. Internationally, there is a good amount of literature on income, although most of the literature exists in the domain of education and occupation mobility due to the non-availability of suitable data in the Indian context. Researchers have mainly used regression, transition metrics, and ranking methods to calculate mobility in Western countries. Whereas, transition and regression have been used in most of the studies in India. From the literature, it is observed that Scandinavian countries have high mobility and low inequality whereas developed countries like US and UK have higher inequality, which is also the case in developing countries as well. Researchers discuss the process of transmission of wealth from parents to children, how this transmission allows inequality to continue and how it limits the role of government intervention. The strong relationship between parent and child earnings may result from unequal opportunities available to different strata of society.

The family plays an important role in shaping income inequality, which has long been discussed by economists. The current focus has shifted from quantifying intergenerational mobility to examining its causes and factors affecting mobility in a country. Although several studies have examined the association between economic growth and inequality in the context of developing countries, the results are largely inconclusive. Despite the steady increase in economic growth, the inconclusive results and poor living standards draw wide scholarly attention to various aspects of inequality. Economists and sociologists try to provide several explanations for the coexistence between high income inequality and rapid economic growth, with low social mobility being one of the causes and outcomes.

The third chapter discussed the data sources and variables used in the present study. The overarching objective of the study was not only to determine intergenerational mobility but also to understand the strength of the relationship between different kinds of mobility and to discover the factors that are important for improving mobility in the country. In the literature, we discussed the various methods used by researchers. It is found that most researchers used regression and transition metrics to measure mobility among social groups and compared it to other periods. It describes the data sources and their measurement issues in computing intergenerational mobility. In this, we also explain the characteristics of NSS data and the paucity of other available sources of data available in the country. The present study used the 43rd, 61st and 68th EUS rounds of NSS data to determine intergenerational mobility and the strength of association between different kinds of mobility. The 43rd, 61st and 68th were held in 1987-88, 2004-05 and 2011-12 respectively. The reports from central ministries to get information about the components of social mobility are used to create the Social Mobility Index, which helped us find out the important social mobility indicators for the country.

Although there are few studies on intergenerational mobility in the Indian context, there are hardly any studies that explain the relationship between different types of mobility. Moreover, the study of mobility in Indian states was missing earlier along with the study of social groups. We used the Gini coefficient to measure income inequality and we used independent samples to measure father and son income at the state level. While choosing this data set, we identified the characteristics that can be connected between these two periods. Similar to many empirical studies in the field, intergenerational mobility was also studied from a working sample of co-resident households. In this, the records of father and son are selected from the same sample data. To calculate relative intergenerational mobility, the bivariate

conditional and unconditional probability method was used, whereas to measure absolute mobility across states within social groups, we compared the real values of father and son income when both were of the same age.

The main rationale for using this dataset is that it contains information about income, education and occupation. Education information is classified into various groups, starting from illiterate to undergraduate and above. Similarly, occupational levels are also classified as per the standard procedures laid down in the National Classification of Occupations (NCO-2004). There is a distinction between economic activities and occupation. While teaching is an activity, the teacher is an occupation. In the same way, we classify unskilled, semi-skilled, and skilled occupations. Typically, the unskilled occupation covers all those workers who are engaged in the production of primary products, particularly agriculture and fisheries, and mining and construction activities. At the same time, running an agribusiness requires market-oriented skills. The next two categories, namely skilled and semi-skilled occupations cover a range of jobs. For instance, sales employees, office assistants, service workers, workers engaged in trade, workers related to crafts, plant and machine operation, and assemblers. Skilled occupations mostly include the white-collar professions, namely, legislators, and professional managers.

With the help of an extended version of the Row-Column (RC) association models, we extend the extant literature on intergenerational educational and occupation mobility. This is the main contribution of this research. It is observed that the application of the extended version of the RC association model has hardly been used in the area. The use of econometric techniques such as the probit regression, on the one hand, does not consider the distance between father's and son's occupations. What the probit model explains is that it gives the probability of a person (son) leaving the occupation held by his father. The application of the transition matrix in the field of mobility presents only the distribution pattern. In this context, it is important to mention that the interaction parameters in the RC model are not influenced by the marginal distribution. Therefore, it does not necessarily require the standardization of the mobility tables in order to make uniform occupational distributions. In addition, the use of RC models in this area through the use of mobility tables has been more recent.

In the fourth chapter, the main aim was to investigate the relationship between intergenerational income mobility and inequality across social groups. Three EUS rounds for this purpose: 43rd, 61st, and 68th rounds were used. This chapter showed that intergenerational income mobility is low in India. At the same time, there exists high income inequality. The co-existence of low intergenerational mobility with high income inequality is a critical question.

The estimates of the model showed that if the father is poor, the probability of the son being poor is 73 per cent. What is surprising is that, given that the father is rich, the probability of the son being rich is 39 per cent. The study also showed an improvement or reduction in the absolute income level for different social groups, as has been observed at the national level. It is interesting to note that a few regions need special attention and concerted efforts should be made to reduce the gap between social groups. An analysis of social groups in India showed that the highest proportion of poor as well as well-to-do fathers and sons are among STs. Also, the highest percentage of well-to-do sons among STs coincides with the proportion of well-to-do sons among non-ST/SCs (Others). The conditional probability presents the evidence that STs have a very high probability to become poor if their father is poor. The estimated probability is 81.9 per cent. At the same time, non-ST/SCs are more likely to be rich from a rich father. Additionally, the likelihood for ST/SCs to move from lower-middle status to an upper-middle status is lesser than non-ST/SCs.

In the analysis, one generation before the new economic reforms and one generation after the new economic reform are selected. The second generation was selected after twenty years of reforms. A close examination of the pre and post-reform analysis of intergenerational mobility shows that there is not much improvement in the average income level of individuals from different states. On the one hand, a state-level analysis shows that Tamil Nadu, among all other states, reports the highest margin of improvement in income for almost all social groups. On the other hand, the state of Rajasthan, the largest Indian state in terms of geographical area, records immobility for non-ST/SCs and high inequality for them.

It is also observed income mobility for ST/SCs in the state with relatively low inequality. This leads to the general assertion that there is a positive relationship between income inequality and income mobility. Overall, we can conclude that barring states such as Tamil Nadu, all other states hardly report any significant improvement in absolute between the two generations we considered for analysis. It implies that low-income mobility is coupled with high inequality. In addition, the improvement or reduction in the absolute income levels

for ST/SC does not significantly deviate from the non-ST/SCs. Based on this evidence, it can be safely concluded that the existence of a high degree of income inequality and low intergenerational mobility in an emerging economy sheds light on the fact that economic growth is largely unequal and possibly unsustainable.

An in-depth analysis of intergenerational mobility across regions shows that highly unequal regions tend to report low mobility. This general observation does not hold for India strictly. It is also observed that there exists a high degree of income inequality with income mobility in a few Indian states, leading to draw an important conclusion that inequality and intergenerational mobility is regional-specific, which is a crucial aspect of intergenerational mobility that has not been explored yet. In addition, a greater degree of intergenerational mobility in the most unequal regions may be associated with inequality, which in turn is due to the rapid expansion of upper quartiles.

The fifth chapter investigates intergeneration social mobility in India by using the 68th round of NSS data. The findings show that there is a moderate association between the occupation of a father and the educational attainment of his son. The result points out that because of the present government policies, together with family efforts, the sons coming from a modest background have over 50 per cent chances to reach, at least, secondary education. Unfortunately, it is also found that the association between son education and son occupation is moderate, implying that education is not the main factor that determines occupation and, thus, social position. This finding is confirmed by the fact that the association between father and son occupation is much stronger than those passing through education. This means that other factors play an important role in determining one's occupation apart from education.

Overall, the study suggests that the role of social background in deciding one's education is only moderate while the role of the same social background is quite strong in deciding one's occupation. The strong dependence of occupation on social background suggests that India is still not an open society and especially work opportunities are not quite well distributed. We believe that there are three important interpretations for the above paradigms of social mobility in India.

First, India's social structure evolved from a rigid caste structure and still there exist restrictions in society, especially at the lower level, which do not allow certain groups to grow and take advantage of development. Second, the limited role of education in determining one's occupation also exists due to the unsatisfactory quality of education in the country. This is

proved by the fact that, despite several initiatives taken by the government at the lower level of education, only 9 out of 28 states have shown improvement in the School Education Quality Index (SEQI, 2019), while for 9 states it has gone down and the rest show no change as per National Institution for Transforming India.

An examination of the position in advanced education by country, which is captured from the Social Progress Index (SPI 2020), shows that India's score is 56.42. Not surprisingly, this score is one of India's lowest component scores. However, if we look at the component score for the quality of education of Scandinavian countries, it is quite higher than many countries in the world. Overall, their ranking in the Global Social Mobility Index 2020 and SPI 2020 is quite high. Moreover, the fact is that the rate of inequality is very low in these countries. Thus, it is possible to say that social mobility, which has been seen as an important tool to bring long term equality, has a clear link with fair education and occupational opportunities in the country. Other important factors, such as health, infrastructure and technology, are currently underdeveloped in the country. Because of diverse resources and requirements for resources in the country, the construction of a state-level index on social mobility could help identify the lack of components at the national level. What is more important is a concerted effort to demonstrate the need for immediate improvement at the regional level to facilitate social mobility. Thus, the study explored the possibility of constructing social mobility index at the state level.

In the sixth chapter, an attempt was to construct a comprehensive measure of social mobility by considering a wide range of factors explaining the status of economic development. Based on the size of the population and geographical area, 22 major Indian states were considered to construct this index. Similar to the human development index (HDI), each state was given an index value to examine the status of social mobility. The application of the PCA-based approach validated the socio-demographic and economic indicators used in the construction of this index. The indicators were sourced from the recently published Global Social Mobility Report by the World Economic Forum. Taking insights from this report, we used 10 following components: health, access to education, education quality and equity, lifelong learning, social protection, access to technology, work opportunities, fair wages, working conditions, and efficient and inclusive institutions.

An examination of the SMI across Indian states shows that Delhi ranks first in terms of social mobility, followed by Kerala (2^{nd}), Himachal Pradesh (3^{rd}), Uttarakhand (4^{th}) and Jammu

and Kashmir (5^{th}). These findings indicate that the top-ranked states are quite sound in terms of providing opportunities to grow irrespective of one's social background. More importantly, the relationship between economic inequality and social mobility does not present conclusive results.

Among the 10 components, it is found that health, access to education, education quality and equality are the major factors improving social mobility. As argued by several economists, the investment in human capital is of great importance in improving social mobility and development. Considering India's potential economic growth offered its 'demographic dividend', improving social mobility through facilitating equal opportunities in the society is key to achieving inclusive growth. In order to accelerate the degree of social mobility, we need to focus on small and medium enterprises (SMEs), which account for a major source of employment generation in the country, and skill development. At present, SMEs employ about 40 per cent of India's workforce and a majority of them fall under the informal sector. These are the sectors that are mostly inefficient, less skilled, and rural-based. Improving the skills and productivity of informal workers will help in bringing the unorganized sector into the organized sector and thereby provide job security and social security benefits to the employees. At the same time, the fact is that a great deal of disparity in socio-economic conditions, including the capacity to invest in human capital, leads to a greater parity between parent and child. This situation calls for active intervention by the government in promoting welfare programmes.

7.3 Policy Implications

The study on intergenerational mobility provides wider policy implications. One of the key lessons from this research is that it is essential to invest in small and medium industries to bridge the income gap in the country. This study recommends small and medium industries because it provides employment opportunities to a large number of Indian residents, in addition to contributing to national growth. Along with the investment in small and medium industries, there should be a focus on promoting vocational and skill-based education. This will be an effective intervention to enhance the growth prospects. As we know that India is the second-largest populous country in the country, with the largest youth population. This research and other existing studies in the literature conclude that more than education mobility, growth in occupation mobility and income mobility are major concerns. Also, given the country's long-standing problem of unemployment, it is imperative to focus on occupation mobility in the country.

At the same time, a restriction still exists in India, especially at the lower levels of society. Usually, the lower groups of income distribution find it difficult to grow and take advantage of economic progress. As discussed above, education is key to economic development. Therefore, it is possible to reduce the socio-economic barriers by providing education in every corner of the country. Subsequently, due to the unsatisfactory quality of education in the country, there exists a limited role of education in determining one's occupation. This is proved by the fact that despite several initiatives taken by the government to improve the level of education, only 9 out of 28 states have shown improvement in the School Education Quality Index (SEQI, 2019), whereas for 9 states it has shown improvement has gone below and rest show no change as per National Institution for Transforming India.

Furthermore, if we look at India's position in advanced education, its score is 56.42 which is one of the lowest component scores of India in the Social Progress Index (SPI 2020). Also, Scandinavian countries have a much higher score for the quality of education than most other countries in the world. Overall, their ranking in the Global Social Mobility Index 2020 and SPI 2020 is very high and the rate of inequality is also very low in these countries. Thus, it has been seen that creating opportunities in education and business mobility, which is an integral part of social mobility, is also an important tool for bringing about long-term equity. Other important factors like health, infrastructure and technology, which are also the components of social mobility, are currently in the development stage in the country if improved can directly contribute to the education and social mobility in the country.

In particular, the unorganized sector needs special attention. The unorganized sectors are mostly less skilled and rural-based. Improving their productivity and efficiency will help in bringing the unorganized sector into the organized sector and will provide job security and social security benefits to the employees. Here, the present study again emphasizes small scale industries and skill-based education. This is important because focusing on these youth will not only improve their standard of living but also the future generations. At the same time, the fact that differences in capacity and human capital investment lead to greater parity between parent and child amplifies the role of public provision of these facilities. Although this research provides a comprehensive study of the gaps available in the literature, it has some technical limitations that exist mainly due to the non-availability of data.

7.4 Limitation and Future Scope

This study has some important limitations. This section presents the following three limitations. First, to study intergenerational mobility, the present study was restricted to only those households in which the working man and his father are living together. The study adopted this criterion mainly because the EUS rounds of data do not contain information about the parents if the person is living separately from his family. Moreover, data sets other than ESU rounds do not contain information on both father and son's income, education and occupation. This is particularly important in the context of the present study as one of the objectives of this study was to compare the aggregate income of the father generation from each social group at the state level with that of the son generation. While comparing two generations, the age at which we compare the earnings of fathers and sons should be more or less the same. This was also not possible through the IHDS data set, which has only two round datasets within the close period of 2005 and 2011.

Second, this study zeroed in on male members of a family because married women in India live with their husbands or fathers-in-law and the survey does not provide information about their parents. The entire analysis of this study does not take into account the gender dimension of intergenerational mobility. As discussed in the review of literature, gender plays a critical role in India's economic development. Lastly, a cross-country comparison of intergenerational earnings mobility is omitted due to several reasons. Such an analysis would have been more useful to know India's performance in the global context.

Nonetheless, the idea of intergenerational mobility, be it earning, occupational, or educational, is largely unexplored in the Indian context. There is tremendous scope for expanding this topic in Indian economic literature. The study can be expanded to examine whether a rapid expansion of income and wealth of the upper quartile is the cause of lower mobility in the most unequal regions, as has been observed in a few Indian states. Additionally, it is important to examine the reasons for declining health, education and technology performance need to be investigated. These factors are a vital source of improving mobility and reducing inequality in the country. It is felt that there is a need for an in-depth understanding of the factors affecting the diverse nature of requirements of the Indian states. Moreover, the recently published periodic labour force survey (PLFS) would provide up-to-date results.

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Appendices

Appendix 1

Classification of occupations according to NCO-2004 at three levels

Division-1	**Legislators, Senior Officials and Managers**
Sub-division- 11	Legislators, Senior Officials
Group -111	Legislators
Group -112	Administrative & Executive Officials
Group -113	Traditional Chiefs and Heads of Villages
Group -114	Senior Officials of Special- Interest Organisations
Sub-division- **12**	Corporate Managers
Group -121	Directors and Chief Executives
Group -122	Production and Operations Department Managers
Group -123	Other Department Managers
Sub-division- **13**	General Managers
Group -130	General Managers
Division-2	**Professionals**
Sub-division- **21**	Physical, Mathematical and Engineering Science Professionals
Group -211	Physicists, Chemists and Related Professionals
Group -212	Mathematicians, Statisticians and Rela ted Professionals
Group -213	Computing Professionals
Group -214	Architects, Engineers and Related Professionals
Sub-division- **22**	Life Science And Health Professionals
Group -221	Life Science Professionals
Group -222	Health Professionals (except nursing)
Group -223	Nursing Professionals
Sub-division- **23**	Teaching Professionals
Group -231	College, University and Higher Education Teaching Professionals
Group -232	Secondary Education Teaching Professionals
Group -233	Other Teaching Professionals
Sub-division- **24**	Other Professionals

Group -241	Business Professionals
Group -242	Legal Professionals
Group -243	Archivists, Librarians and Related Information Professionals
Group -244	Social Science and Related Professionals
Group -245	Writers and Creative or Performing Artists
Group -246	Religious Professionals
Division-3	**Technicians and Associate Professionals**
Sub-division- **31**	Physical and Engineering Science Associate Professionals
Group -311	Physical and Engineering Science Technicians
Group -312	Computer Associate Professionals
Group -313	Optical and Electronic Equipment Operators
Group -314	Ship and Aircraft Controllers and Technicians
Group -315	Safety and Quality Inspectors
Sub-division- **32**	Life Science And Health Associate Professionals
Group -321	Life Science Technicians and Related Health Associate Professionals
Group -322	Modern Health Associate Professionals (Except Nursing)
Group -323	Nursing and Midwifery Associate Professionals
Group -324	Traditional Medicine Practitioners and Faith Healers
Sub-division- **33**	Teaching Associate Professionals
Group -331	Middle and Primary Education Teaching Associate Professionals
Group -332	Pre-Primary Education Teaching Associate Professionals
Group -333	Special Education Teaching Associate Professionals
Group -334	Other Teaching Associate Professionals
Sub-division- **34**	Other Associate Professionals
Group -341	Finance and Sales Associate Professionals
Group -342	Business Services Agents and Trade Brokers
Group -343	Administrative Associate Professionals
Group -344	Customs, Tax and Related Govt. Associate Professionals

Group -345	Police Inspectors and Detectives
Group -346	Social Work Associate Professionals
Group -347	Artistic, Entertainment and Sports Associate Professionals
Group -348	Religious Associate Professionals
Division-4	**Clerks**
Sub-division- **41**	Office Clerks
Group -411	Secretaries and Key Board- Operating Clerks
Group -412	Numerical Clerks
Group -413	Material Recording & Transport Clerks
Group -414	Library, Mail and Related Clerks
Group -419	Other Office Clerks
Sub-division- **42**	Customer Services Clerks
Group -421	Cashiers, Tellers and Related Clerks
Group -422	Client Information Clerks
Division-5	**Service Workers and Shop and Market Sales Workers**
Sub-division- **51**	Personal and Protective Services Workers
Group 511	Travel Attendants, Guides and Related Workers
Group 512	House Keeping and Restaurant Services Workers
Group 513	Personal Care Workers
Group 514	Other Personal Services Workers
Group 515	Astrologers, Fortune-Tellers and Related Workers
Group 515	Protective Services Workers
Sub-division- **52**	Models, Salespersons and Demonstrators
Group 521	Fashion and Other Models
Group 522	Shop Salespersons and Demons trators
Group 523	Stall and Market Salespersons
Division-6	**Skilled Agricultural and Fishery Workers**
Sub-division- **61**	Market- Oriented Skilled Agricultural And Fishery Workers
Group 611	Market Gardners & Crop Growers
Group 612	Market –Oriented Animal Producers and Related Workers
Group 613	Market- Oriented Crop and Animal Producers

Group 614	Forestry and Related Workers
Group 615	Fishery Workers, Hunters and Trappers
Sub-division- **62**	Subsistence Agricultural and Fishery Workers
Group 621	Subsistence Agricultural and Fishery Workers
Division-7	**Craft and Related Trades Workers**
Sub-division- **71**	Extraction and Building Trades Workers
Group 711	Miners, Shot firers, Stone Cutters and Carvers
Group 712	Building Frame and Related Trades Workers
Group 713	Building Finishers and Related Trades Workers
Group 714	Painters, Building Structure Cleaners and Related Trades Workers
Sub-division- **72**	Metal, Machinery and Related Trades Workers
Group 721	Metal Moulders, Welders, Sheet Metal Workers, Structural Metal Preparers and Related Trades Workers
Group 722	Blacksmith, Tool Makers and Related Trades Workers
Group 723	Machinery Mechanics and Fitters
Group 724	Electrical and Electronic Equipment Mechanics and Fitters
Sub-division- **73**	Precision, Handicraft, Printing and Related Trades Workers
Group 731	Precision Workers in Metal and Related Materials
Group 732	Potters, Glass Makers and Related Trades Workers
Group 733	Handicraft Workers in Wood, Textile, Leather and Related Materials
Group 734	Printing and Related Trades Workers
Sub-division- **74**	Other Craft and Related Trades Workers
Group 741	Food Processing and Related Trades Workers
Group 742	Wood Treaters, Cabinet Makers and Related Trades Workers
Group 743	Textile, Garment and Related Trades Workers
Group 744	Pelt, Leather and Shoe Making Trades Workers
Division-8	**Plant and Machine Operators And Assemblers**
Sub-division- **81**	Stationary-Plant and Related Operators
Group 811	Mining and Mineral Processing Plant Operators
Group 812	Metal Processing Plant Operators

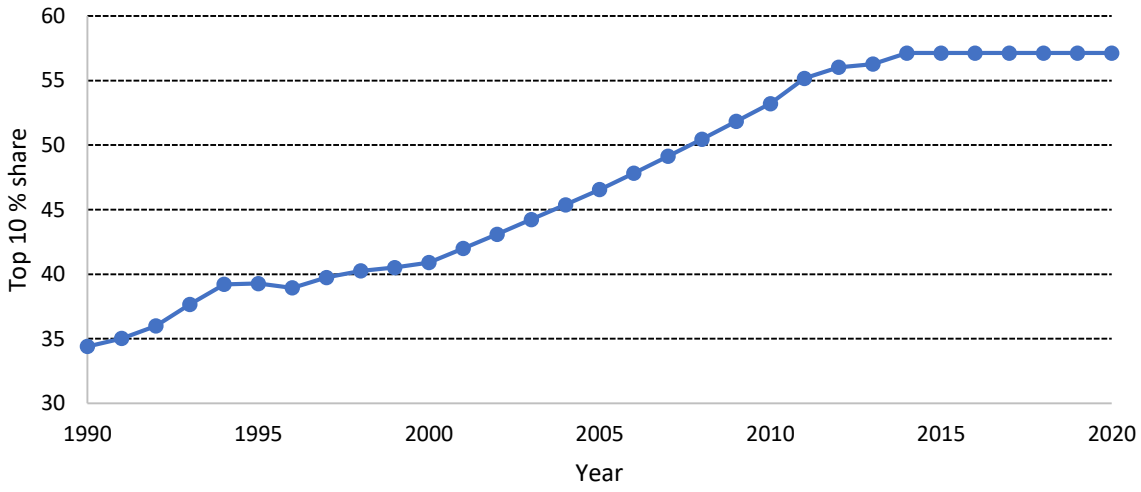
Group 813	Glass, Ceramics and Related Plant Operators
Group 814	Wood Processing and Paper Making Plant Operators
Group 815	Chemical- Processing- Plant Operators
Group 816	Power Production and Related Plant Operators
Group 817	Automated Assembly Line and Industrial Robot Operators
Sub-division- **82**	Machine Operators and Assemblers
Group 821	Metal and Mineral Products Machine Operators
Group 822	Chemical Products Machine Operators
Group 823	Rubber and Plastic Products Machine Operators
Group 824	Wood Products Machine Operators
Group 825	Printing, Binding and Paper Products Machine Operators
Group 826	Textiles, Fur and Leather Products Machine Operators
Group 827	Food and Related Products Machine Operators
Group 828	Assemblers
Group 829	Other Machine Operators and Assemblers
Sub-division- **83**	Drivers and Mobile Plant Operators
Group 831	Locomotive Engine Drivers and Related Workers
Group 831	Motor Vehicle Drivers
Group 831	Agricultural and Other Mobile Plant Operators
Group 831	Ships' Deck Crews and Related Workers
Division-9	**Elementary Occupations**
Sub-division- **91**	Sales and Service Elementary Occupations
Group 911	Street Vendors and Related Workers
Group 911	Shoe Cleaning and Other Street Services Elementary Occupations
Group 911	Domestic and Related Helpers, Cleaners and Launderers
Group 911	Building Caretakers, Window and Related Cleaners
Group 911	Messengers, Porters, Door Keepers and Related Workers
Group 911	Garbage Collectors and Related Labourers
Sub-division- **92**	Agricultural, Fishery and Related Labourers
Group 921	Agricultural, Fishery and Related Labourers

Sub-division- **93**	Labourers in Mining, Construction, Manufacturing and Transport
	Mining and Construction Labourers
	Manufacturing Labourers
	Transport Labourers and Freight Handlers
Division-X	**Workers not Classified by Occupations**
Sub-division- **X0**	New Workers Seeking Employment
Group X00	New Workers Seeking Employment
Sub-division- **X1**	Workers Reporting Occupations Unidentifiable or Inadequately Described
Group X10	Workers Reporting Occupations Unidentifiable or Inadequately Described
Sub-division- **X9**	Workers Not Reporting Any Occupations
Group X99	Workers Not Reporting Any Occupations

Source: *Ministry of Labour and Employment*

Appendix 2

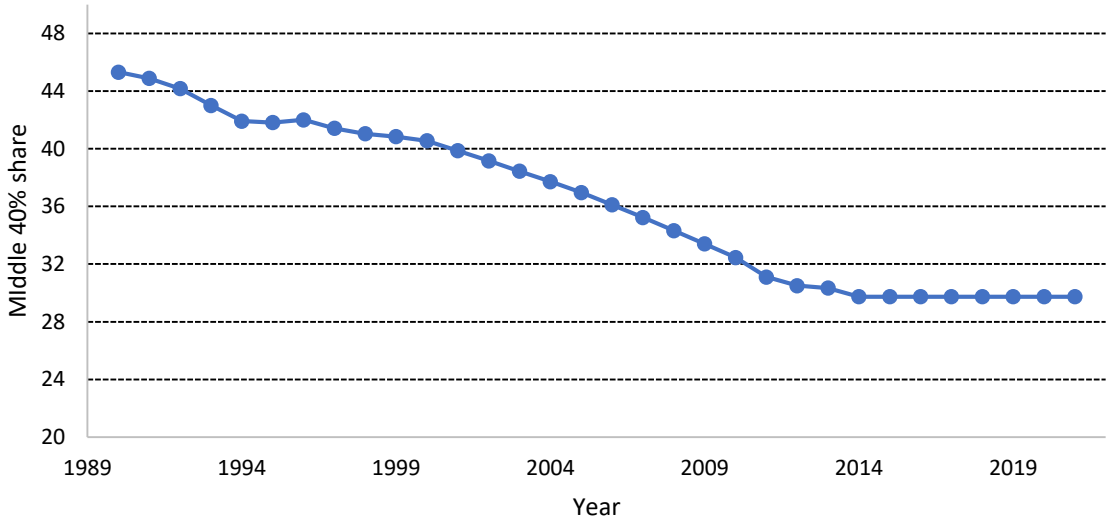
Top 10 % share in India's national income



Source: *Chancel and Piketty (2017)*

Appendix 3

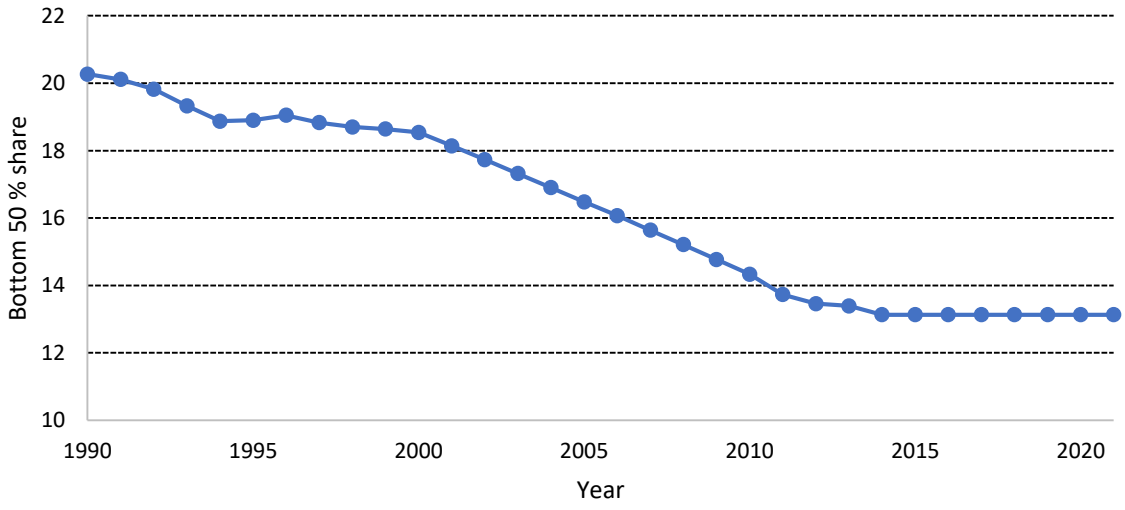
Middle 40 % share in India's national income



Source: *Chancel and Piketty (2017)*

Appendix 4

Bottom 50 % share in India's national income



Source: *Chancel and Piketty (2017)*

Appendix 5

State-wise Religious Population by Residence in India

States/UTs	Religious Communities	Total		
		Persons	Male	Female
Andaman and Nicobar Islands	All Religions	380581	202871	177710
	Hindus	264296	142277	122019
	Muslims	32413	17301	15112
	Christians	80984	41747	39237
	Sikhs	1286	701	585
	Buddhists	338	188	150
	Jains	31	14	17
	Others	564	317	247
	Religion not stated	669	326	343
Andhra Pradesh	All Religions	49386799	24738068	24648731
	Hindus	44875698	22485595	22390103
	Muslims	3617713	1818399	1799314
	Christians	682660	328827	353833
	Sikhs	9904	5504	4400
	Buddhists	4139	2190	1949
	Jains	27159	13958	13201
	Others	4125	2035	2090
	Religion not stated	165401	81560	83841
Andhra Pradesh (Undivided)	All Religions	84580777	42442146	42138631
	Hindus	74824149	37537084	37287065
	Muslims	8082412	4085913	3996499
	Christians	1129784	548753	581031
	Sikhs	40244	21534	18710
	Buddhists	36692	18812	17880
	Jains	53849	27473	26376
	Others	9547	4815	4732
	Religion not stated	404100	197762	206338
Arunachal Pradesh	All Religions	1383727	713912	669815
	Hindus	401876	225172	176704
	Muslims	27045	15553	11492
	Christians	418732	205796	212936
	Sikhs	3287	2800	487
	Buddhists	162815	80988	81827
	Jains	771	371	400
	Others	362553	180044	182509
	Religion not stated	6648	3188	3460
Assam	All Religions	31205576	15939443	15266133
	Hindus	19180759	9796805	9383954

	Muslims	10679345	5463393	5215952
	Christians	1165867	587196	578671
	Sikhs	20672	11815	8857
	Buddhists	54993	28089	26904
	Jains	25949	13543	12406
	Others	27118	13699	13419
	Religion not stated	50873	24903	25970
Bihar	All Religions	104099452	54278157	49821295
	Hindus	86078686	44994505	41084181
	Muslims	17557809	9044086	8513723
	Christians	129247	66115	63132
	Sikhs	23779	12457	11322
	Buddhists	25453	13490	11963
	Jains	18914	9743	9171
	Others	13437	6833	6604
	Religion not stated	252127	130928	121199
Chandigarh	All Religions	1055450	580663	474787
	Hindus	852574	472769	379805
	Muslims	51447	29889	21558
	Christians	8720	4463	4257
	Sikhs	138329	71300	67029
	Buddhists	1160	593	567
	Jains	1960	997	963
	Others	246	152	94
	Religion not stated	1014	500	514
Chhattisgarh	All Religions	25545198	12832895	12712303
	Hindus	23819789	11968245	11851544
	Muslims	514998	263834	251164
	Christians	490542	241799	248743
	Sikhs	70036	36750	33286
	Buddhists	70467	34947	35520
	Jains	61510	31592	29918
	Others	494594	244162	250432
	Religion not stated	23262	11566	11696
Dadra and Nagar Haveli	All Religions	343709	193760	149949
	Hindus	322857	181976	140881
	Muslims	12922	7701	5221
	Christians	5113	2555	2558
	Sikhs	217	132	85
	Buddhists	634	356	278
	Jains	1186	632	554
	Others	293	130	163
	Religion not stated	487	278	209
Daman and Diu	All Religions	243247	150301	92946

	Hindus	220150	136968	83182
	Muslims	19277	11347	7930
	Christians	2820	1425	1395
	Sikhs	172	95	77
	Buddhists	217	121	96
	Jains	287	147	140
	Others	79	42	37
	Religion not stated	245	156	89
Goa	All Religions	1458545	739140	719405
	Hindus	963877	499587	464290
	Muslims	121564	63814	57750
	Christians	366130	171964	194166
	Sikhs	1473	863	610
	Buddhists	1095	574	521
	Jains	1109	580	529
	Others	258	143	115
	Religion not stated	3039	1615	1424
Gujarat	All Religions	60439692	31491260	28948432
	Hindus	53533988	27941177	25592811
	Muslims	5846761	3007221	2839540
	Christians	316178	159759	156419
	Sikhs	58246	32069	26177
	Buddhists	30483	16220	14263
	Jains	579654	294911	284743
	Others	16480	8362	8118
	Religion not stated	57902	31541	26361
Haryana	All Religions	25351462	13494734	11856728
	Hindus	22171128	11821082	10350046
	Muslims	1781342	940027	841315
	Christians	50353	26165	24188
	Sikhs	1243752	653468	590284
	Buddhists	7514	4099	3415
	Jains	52613	27358	25255
	Others	2548	1111	1437
	Religion not stated	42212	21424	20788
Himachal Pradesh	All Religions	6864602	3481873	3382729
	Hindus	6532765	3306995	3225770
	Muslims	149881	80763	69118
	Christians	12646	6844	5802
	Sikhs	79896	41494	38402
	Buddhists	78659	40233	38426
	Jains	1805	945	860
	Others	856	461	395
	Religion not stated	8094	4138	3956

Jammu and Kashmir	All Religions	12541302	6640662	5900640
	Hindus	3566674	1987021	1579653
	Muslims	8567485	4428774	4138711
	Christians	35631	21523	14108
	Sikhs	234848	132897	101951
	Buddhists	112584	56442	56142
	Jains	2490	1310	1180
	Others	1508	802	706
	Religion not stated	20082	11893	8189
Jharkhand	All Religions	32988134	16930315	16057819
	Hindus	22376051	11563951	10812100
	Muslims	4793994	2467219	2326775
	Christians	1418608	699902	718706
	Sikhs	71422	38189	33233
	Buddhists	8956	5217	3739
	Jains	14974	7763	7211
	Others	4235786	2113699	2122087
	Religion not stated	68343	34375	33968
Karnataka	All Religions	61095297	30966657	30128640
	Hindus	51317472	26017983	25299489
	Muslims	7893065	4007871	3885194
	Christians	1142647	557436	585211
	Sikhs	28773	15955	12818
	Buddhists	95710	55015	40695
	Jains	440280	225544	214736
	Others	11263	5704	5559
	Religion not stated	166087	81149	84938
Kerala	All Religions	33406061	16027412	17378649
	Hindus	18282492	8803455	9479037
	Muslims	8873472	4176255	4697217
	Christians	6141269	2993781	3147488
	Sikhs	3814	2173	1641
	Buddhists	4752	2442	2310
	Jains	4489	2225	2264
	Others	7618	4114	3504
	Religion not stated	88155	42967	45188
Lakshadweep	All Religions	64473	33123	31350
	Hindus	1788	1603	185
	Muslims	62268	31166	31102
	Christians	317	286	31
	Sikhs	8	6	2
	Buddhists	10	9	1
	Jains	11	6	5
	Others	7	6	1

	Religion not stated	64	41	23
Madhya Pradesh	All Religions	72626809	37612306	35014503
	Hindus	66007121	34225297	31781824
	Muslims	4774695	2454832	2319863
	Christians	213282	105297	107985
	Sikhs	151412	80341	71071
	Buddhists	216052	109813	106239
	Jains	567028	291937	275091
	Others	599594	296614	302980
	Religion not stated	97625	48175	49450
Maharashtra	All Religions	112374333	58243056	54131277
	Hindus	89703057	46535862	43167195
	Muslims	12971152	6789127	6182025
	Christians	1080073	531916	548157
	Sikhs	223247	118058	105189
	Buddhists	6531200	3314906	3216294
	Jains	1400349	713157	687192
	Others	178965	89823	89142
	Religion not stated	286290	150207	136083
Manipur	All Religions	2855794	1438586	1417208
	Hindus	1181876	596220	585656
	Muslims	239836	120404	119432
	Christians	1179043	595478	583565
	Sikhs	1527	964	563
	Buddhists	7084	3654	3430
	Jains	1692	862	830
	Others	233767	115715	118052
	Religion not stated	10969	5289	5680
Meghalaya	All Religions	2966889	1491832	1475057
	Hindus	342078	183622	158456
	Muslims	130399	67827	62572
	Christians	2213027	1100492	1112535
	Sikhs	3045	1640	1405
	Buddhists	9864	5144	4720
	Jains	627	342	285
	Others	258271	127983	130288
	Religion not stated	9578	4782	4796
Mizoram	All Religions	1097206	555339	541867
	Hindus	30136	20013	10123
	Muslims	14832	9550	5282
	Christians	956331	476464	479867
	Sikhs	286	216	70
	Buddhists	93411	47970	45441
	Jains	376	208	168

	Others	808	402	406
	Religion not stated	1026	516	510
Nagaland	All Religions	1978502	1024649	953853
	Hindus	173054	104851	68203
	Muslims	48963	28527	20436
	Christians	1739651	881927	857724
	Sikhs	1890	1531	359
	Buddhists	6759	3513	3246
	Jains	2655	1373	1282
	Others	3214	1620	1594
	Religion not stated	2316	1307	1009
NCT of Delhi	All Religions	16787941	8987326	7800615
	Hindus	13712100	7353594	6358506
	Muslims	2158684	1163934	994750
	Christians	146093	71438	74655
	Sikhs	570581	294403	276178
	Buddhists	18449	9606	8843
	Jains	166231	85605	80626
	Others	2197	1148	1049
	Religion not stated	13606	7598	6008
Odisha	All Religions	41974218	21212136	20762082
	Hindus	39300341	19877014	19423327
	Muslims	911670	465992	445678
	Christians	1161708	570979	590729
	Sikhs	21991	11561	10430
	Buddhists	13852	7216	6636
	Jains	9420	4885	4535
	Others	478317	235607	242710
	Religion not stated	76919	38882	38037
Puducherry	All Religions	1247953	612511	635442
	Hindus	1089409	536701	552708
	Muslims	75556	36450	39106
	Christians	78550	37157	41393
	Sikhs	297	156	141
	Buddhists	451	250	201
	Jains	1400	702	698
	Others	168	88	80
	Religion not stated	2122	1007	1115
Punjab	All Religions	27743338	14639465	13103873
	Hindus	10678138	5683894	4994244
	Muslims	535489	287534	247955
	Christians	348230	182041	166189
	Sikhs	16004754	8395797	7608957
	Buddhists	33237	17176	16061

	Jains	45040	23560	21480
	Others	10886	5735	5151
	Religion not stated	87564	43728	43836
Rajasthan	All Religions	68548437	35550997	32997440
	Hindus	60657103	31485832	29171271
	Muslims	6215377	3193530	3021847
	Christians	96430	48887	47543
	Sikhs	872930	459406	413524
	Buddhists	12185	6382	5803
	Jains	622023	317614	304409
	Others	4676	2399	2277
	Religion not stated	67713	36947	30766
Sikkim	All Religions	610577	323070	287507
	Hindus	352662	189972	162690
	Muslims	9867	6536	3331
	Christians	60522	30290	30232
	Sikhs	1868	1592	276
	Buddhists	167216	85302	81914
	Jains	314	181	133
	Others	16300	8323	7977
	Religion not stated	1828	874	954
Tamil Nadu	All Religions	72147030	36137975	36009055
	Hindus	63188168	31715046	31473122
	Muslims	4229479	2099182	2130297
	Christians	4418331	2171413	2246918
	Sikhs	14601	8088	6513
	Buddhists	11186	5976	5210
	Jains	89265	45605	43660
	Others	7414	3781	3633
	Religion not stated	188586	88884	99702
Telangana	All Religions	35193978	17704078	17489900
	Hindus	29948451	15051489	14896962
	Muslims	4464699	2267514	2197185
	Christians	447124	219926	227198
	Sikhs	30340	16030	14310
	Buddhists	32553	16622	15931
	Jains	26690	13515	13175
	Others	5422	2780	2642
	Religion not stated	238699	116202	122497
Tripura	All Religions	3673917	1874376	1799541
	Hindus	3063903	1563730	1500173
	Muslims	316042	160930	155112
	Christians	159882	81480	78402
	Sikhs	1070	782	288

	Buddhists	125385	63545	61840
	Jains	860	453	407
	Others	1514	791	723
	Religion not stated	5261	2665	2596
Uttar Pradesh	All Religions	199812341	104480510	95331831
	Hindus	159312654	83555724	75756930
	Muslims	38483967	19867314	18616653
	Christians	356448	182838	173610
	Sikhs	643500	341451	302049
	Buddhists	206285	107424	98861
	Jains	213267	110994	102273
	Others	13598	7070	6528
	Religion not stated	582622	307695	274927
Uttarakhand	All Religions	10086292	5137773	4948519
	Hindus	8368636	4234384	4134252
	Muslims	1406825	740057	666768
	Christians	37781	19439	18342
	Sikhs	236340	123579	112761
	Buddhists	14926	8910	6016
	Jains	9183	4747	4436
	Others	993	504	489
	Religion not stated	11608	6153	5455
West Bengal	All Religions	91276115	46809027	44467088
	Hindus	64385546	33046557	31338989
	Muslims	24654825	12640092	12014733
	Christians	658618	325986	332632
	Sikhs	63523	34168	29355
	Buddhists	282898	141388	141510
	Jains	60141	30718	29423
	Others	942297	469865	472432
	Religion not stated	228267	120253	108014
India	**All Religions**	**1210854977**	**623270258**	**587584719**
	Hindus (%)	79.8	80.0	79.6
	Muslims (%)	14.2	14.2	14.3
	Christians (%)	2.3	2.2	2.4
	Sikhs (%)	1.7	1.8	1.7
	Buddhists (%)	0.7	0.7	0.7
	Jains (%)	0.4	0.4	0.4
	Others (%)	0.7	0.6	0.7
	Religion not stated (%)	0.2	0.2	0.2

Source: *Office of the Registrar General and Census Commissioner, India.*

Appendix 6

Total Population, Population of Scheduled Castes and Scheduled Tribes and their proportions to the total population

State / UT	Population			Proportion of SC Population	Proportion of ST Population
	Total Population	Scheduled Castes (SC) Population	Scheduled Tribes (ST) Population		
India@	**1,028,737,436**	**166,635,700**	**84,326,240**	**16.2**	**8.2**
Jammu & Kashmir	10,143,700	770,155	1,105,979	7.6	10.9
Himachal Pradesh	6,077,900	1,502,170	244,587	24.7	4.0
Punjab	24,358,999	7,028,723	-	28.9	0.0
Chandigarh	900,635	157,597	-	17.5	0.0
Uttaranchal	8,489,349	1,517,186	256,129	17.9	3.0
Haryana	21,144,564	4,091,110	-	19.3	0.0
Delhi	13,850,507	2,343,255	-	16.9	0.0
Rajasthan	56,507,188	9,694,462	7,097,706	17.2	12.6
Uttar Pradesh	166,197,921	35,148,377	107,963	21.1	0.1
Bihar	82,998,509	13,048,608	758,351	15.7	0.9
Sikkim	540,851	27,165	111,405	5.0	20.6
Arunachal Pradesh	1,097,968	6,188	705,158	0.6	64.2
Nagaland	1,990,036	-	1,774,026	0.0	89.1
Manipur[@]	2,166,788	60,037	741,141	2.8	34.2
Mizoram	888,573	272	839,310	0.0	94.5
Tripura	3,199,203	555,724	993,426	17.4	31.1
Meghalaya	2,318,822	11,139	1,992,862	0.5	85.9
Assam	26,655,528	1,825,949	3,308,570	6.9	12.4
West Bengal	80,176,197	18,452,555	4,406,794	23.0	5.5
Jharkhand	26,945,829	3,189,320	7,087,068	11.8	26.3
Orissa	36,804,660	6,082,063	8,145,081	16.5	22.1
Chhattisgarh	20,833,803	2,418,722	6,616,596	11.6	31.8
Madhya Pradesh	60,348,023	9,155,177	12,233,474	15.2	20.3
Gujarat	50,671,017	3,592,715	7,481,160	7.1	14.8
Daman & Diu	158,204	4,838	13,997	3.1	8.8
Dadra & Nagar Haveli	220,490	4,104	137,225	1.9	62.2
Maharashtra	96,878,627	9,881,656	8,577,276	10.2	8.9
Andhra Pradesh	76,210,007	12,339,496	5,024,104	16.2	6.6
Karnataka	52,850,562	8,563,930	3,463,986	16.2	6.6
Goa	1,347,668	23,791	566	1.8	0.0
Lakshadweep	60,650	-	57,321	0.0	94.5
Kerala	31,841,374	3,123,941	364,189	9.8	1.1
Tamil Nadu	62,405,679	11,857,504	651,321	19.0	1.0
Pondicherry	974,345	157,771	-	16.2	0.0
Andaman & Nicobar Islands	356,152	-	29,469	0.0	8.3

Source: *Office of the Registrar General and Census Commissioner, India*

Appendix 7

Quartiles of income of the parent and children across regions (Fig. in Lakhs)

State	Region	Group	25%	50%	75%	Q1-Q3	Increase in the minimum level	Increase in the maximum level
Kerala	Rural	Parent	8.97	13.01	18.59	9.62	0.88	78.66
		Children	11.15	24.66	45.51	34.36		
	Urban	Parent	0.7	1.27	1.92	1.22		
		Children	12.28	22.14	40.39	28.11	0.38	345.28
		Children	7.37	19.77	38.84	31.47	0.66	125.57
Maharashtra	Rural	Parent	10.04	14.13	19.72	9.68	1.25	
		Children	5.06	11.96	39.3	34.24		214.73
	Urban	Parent	1.17	2.21	3.77	2.6		
		Children	15.05	43.5	98.93	83.88	1.02	1466.94
Tamil Nadu	Rural	Parent	7.99	12	19.38	11.39	0.62	
		Children	6.13	16.19	48.29	42.16		352.73
	Urban	Parent	1.24	1.94	3.53	2.29		402.65
		Children	16.52	39.99	74.34	57.82	0.65	
Uttar Pradesh	Rural	Parent	9.87	14.11	19.69	9.82	1.7	
		Children	8.49	18.17	44.82	36.33		7.27
	Urban	Parent	1	1.7	3.1	2.1		
		Children	7.49	18.96	44.06	36.57	0.32	616.31
West Bengal	Rural	Parent	9.46	13.39	18.39	8.93	2.09	
		Children	5.81	17.69	48.3	42.49		445.64
	Urban	Parent	1.09	2.12	3.38	2.29		
		Children	12.38	25.24	57.99	45.61	0.2	1191.05
Rajasthan	Rural	Parent	8.87	13.74	20.74	11.87	0.57	30.5
		Children	11.92	27.57	64.77	52.85		
	Urban	Parent	1.17	2.12	3.45	2.28		4449.44
		Children	7.3	18.52	39.98	32.68	0.76	
Odisha	Rural	Parent	6.18	8.67	12.4	6.22		
		Children	5.27	11.14	24.96	19.69	0.26	76.07
	Urban	Parent	0.68	1.24	2.19	1.51		
		Children	4.34	10.5	28.43	24.09	0.15	193.56

Source: *Computed by the author from the EUS, NSSO*

Appendix 8

Quartiles of income of the parent and children among Non-SC/STs (Fig. in Lakhs)

State	Region	Group	25%	50%	75%	Q1-Q3	Increase in the minimum level	Increase in the maximum level
Kerala	Rural	Parent	9.32	12.3	18.7	9.4	0.88	78.66
		Children	11.2	24.5	44.0	32.79		
	Urban	Parent	0.69	1.24	1.95	1.26		
		Children	12.1	21.9	40.6	28.49	0.38	345.28
		Children	7.78	20.2	38.9	31.21	0.66	121.22
Maharashtra	Rural	Parent	9.92	14.0	20.5	10.63	2.04	
		Children	5.24	12.0	38.9	33.66		214.73
	Urban	Parent	1.17	2.31	4.01	2.84		
		Children	15.8	46.1	98.9	83.18	1.02	1466.94
Tamil Nadu	Rural	Parent	8.02	12.2	20.2	12.2	0.62	
		Children	6.09	15.4	45.3	39.26		352.73
	Urban	Parent	1.27	2.1	3.59	2.32		402.65
		Children	18.5	41.9	75.9	57.35	0.59	
Uttar Pradesh	Rural	Parent	9.99	14.6	20.1	10.11	1.64	
		Children	7.47	17.5	41.8	34.35		46.3
	Urban	Parent	1.03	1.78	3.23	2.2		
		Children	7.81	19.0	46.9	39.13	0.32	616.31
West Bengal	Rural	Parent	9.27	13.4	18.7	9.5	2.52	
		Children	5.76	16.3	45.0	39.27		445.64
	Urban	Parent	1.09	2.21	3.61	2.52		
		Children	13.2	28.6	63.0	49.84	1.36	1191.05
Rajasthan	Rural	Parent	9.45	14.2	21.3	11.91	0.57	30.5
		Children	11.4	27.1	64.8	53.45		
	Urban	Parent	1.24	2.18	3.49	2.25		4449.44
		Children	7.74	18.7	39.2	31.53	0.76	
Odisha	Rural	Parent	5.85	9.06	13.6	7.82		
		Children	5.55	11.4	30.4	24.9	0.45	65.91
	Urban	Parent	0.72	1.26	2.14	1.42		
		Children	4.07	11.0	38.0	33.96	0.93	193.56

Source: *Computed by the author from the EUS, NSSO*

Appendix 9

Quartiles of income of the parent and children among SCs (Fig. in Lakhs)

State	*Region*	*Group*	*25 %*	*50%*	*75%*	*Q1-Q3*	*Increase in the minimum level*	*Increase in the maximum level*
Kerala	Rural	Parent	7.52	14.98	18.21	10.69		
		Children	10.4	29.14	48.12	37.72	0.36	62.6
	Urban	Parent	0.74	1.55	0	NA	NA	NA
		Children	24.2	24.24	24.24	NA	NA	NA
		Children	6.57	18.02	40.09	33.52	0.67	128.63
Maharashtra	Rural	Parent	10.0	13.3	18.05	8	0.55	
		Children	4.33	10.43	31.65	27.32		113.09
	Urban	Parent	1.18	1.72	3.05	1.87		
		Children	12.8	38.18	89.08	76.25	4.42	260.98
Tamil Nadu	Rural	Parent	7.91	11.59	18.48	10.57	1.4	
		Children	6.42	23.53	66.05	59.63		295.66
	Urban	Parent	0.89	1.35	2.37	1.48		
		Children	8.21	19.99	65.03	56.82	0.68	64.78
Uttar Pradesh	Rural	Parent	9.31	13.21	17.97	8.66	3.31	1.63
		Children	9.42	22.17	50.27	40.85		
	Urban	Parent	0.82	1.32	2.31	1.49		
		Children	5.39	14.95	35.46	30.07	0.59	279.07
West Bengal	Rural	Parent	9.92	13.34	17.57	7.65	2.09	
		Children	5.74	19.13	54.64	48.9		253.79
	Urban	Parent	1.08	1.67	2.55	1.47		
		Children	7.1	15.9	29.13	22.03	0.02	81.41
Rajasthan	Rural	Parent	7.46	12.61	17.49	10.03	1.25	
		Children	13.3	30.11	63.97	50.62		176.87
	Urban	Parent	0.88	1.46	3.3	2.42		
		Children	5.64	16.3	45.26	39.62	1.73	200.55
Odisha	Rural	Parent	7.83	9.79	13.9	6.07	3.47	
		Children	4.14	7.99	15.65	11.51		78.07
	Urban	Parent	0.69	0.79	2.39	1.7		
		Children	4.89	8.47	24.84	19.95	1.2	109.81

Source: *Computed by the author from the EUS, NSSO*

Appendix 10

Quartiles of income of the parent and children among STs (Fig. in Lakhs)

State	*Region*	*Group*	*25%*	*50%*	*75%*	*Q1-Q3*	*Increase in the minimum level*	*Increase in the maximum level*
Kerala	Rural	Parent	13.27	20.95	NA	NA	8.68	
		Children	4.59	35.44	NA	NA		75.78
	Urban	Parent	NA	NA	NA	NA	NA	NA
		Children	NA	NA	NA	NA	NA	NA
		Children	NA	NA	NA	NA	NA	NA
Maharashtra	Rural	Parent	10.24	15.23	20.75	10.51	3.26	
		Children	3.93	12.21	44.03	40.1		90.61
	Urban	Parent	0.89	1.52	2.03	1.14		
		Children	6.47	21.92	110.38	103.91	3.23	634.73
Tamil Nadu	Rural	Parent	8.36	10.69	44.46	36.1	NA	
		Children	15.58	36.42	NA	NA	NA	0.8
	Urban	Parent	1.07	1.26	NA	NA	NA	
		Children	16.31	55.3	NA	NA	NA	155.86
Uttar Pradesh	Rural	Parent	9.09	13.57	17.09	8	1.9	
		Children	6.98	37.45	89.74	82.76		57.84
	Urban	Parent	0.69	3.22	5.09	4.4	NA	
		Children	5.5	9	NA	NA	NA	357.28
West Bengal	Rural	Parent	8.7	11.97	15.36	6.66	2.8	
		Children	6.77	18.04	91.65	84.88		170.18
	Urban	Parent	0.81	1.6	3.46	2.65	NA	
		Children	22.46	33.5	NA	NA	NA	40.65
Rajasthan	Rural	Parent	8.4	12.45	21.63	13.23		
		Children	8.99	27.39	67.48	58.49	0.34	111.04
	Urban	Parent	3.24	5.42	NA	NA	NA	
		Children	6.53	20.83	45.4	38.87	NA	65.25
Odisha	Rural	Parent	5.72	7.77	9.19	3.47	1.09	
		Children	5.89	13.08	25.41	19.52		61.13
	Urban	Parent	0.54	1.29	2.28	1.74		
		Children	0.8	12.23	18.45	17.65	0.05	16.63

Source: *Computed by the author from the EUS, NSSO*

Profile of the Supervisor

Krishna M is currently an assistant professor in the Department of Economics and Finance, Birla Institute of Technology and Science, Pilani Campus. He received his PhD from Tata Institute of Social Sciences, Mumbai. His research revolves around labour economics, energy economics, social network analysis, and economic growth and development. He was a visiting researcher at the London School of Economics and Political Science during 2010-11. Currently, he teaches courses including Fundamentals of Finance and Accounting, Principles of Economics, Economic Analysis of Public Policy, and Energy Economics for both undergraduate and master's levels. He has published dozens of papers in both international and national journals of repute such as *Journal of Cleaner Production*, *Journal of the Knowledge Economy*, *Journal of International Women's Studies*, and *World Economics*.

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List of Publications and Papers Presented in Conferences

Papers Published

- Singh, A. and Muniyoor, K. (2022). The Nexus Between Social Mobility and Regional Disparity: Empirical Evidence from India- ***Accepted for publication in Journal of Asian Finance, Economics and Business (JAFEB)*** **for Vol 9, Issue 1, Jan30, 2022 (Ranked in Q2 category of SJR Rankings).**

- Singh, A., Forcina, A. and Muniyoor, K (2021). Intergenerational Educational and Occupational Mobility: Evidence from India- ***Accepted for publication in Indian Journal of Economics and Business (IJEB)*** **for Jul-Dec 2021 Issue (Scopus Indexed Journal).**

- Singh, A. (2022). Income Inequality and Intergenerational Mobility in India- ***Submitted the revised version to Indian Economic Journal*** **(Ranked in 'B' category of ABDC Rankings, Sage Publications).**

Papers presented in Conferences

- Singh, A. (2018). MGNREGA and Short-term Migration. ***National Seminar on "Land, labour and livelihood: Focus on Development of Marginalized Communities and Social Groups"*** organized by ***Indian Statistical Institute, Giridih, India,*** Jan 30-31, 2018.

- Singh, A., Forcina, A. and Muniyoor, K. (2021). Intergenerational Educational and Occupational Mobility: Evidence from India. ***38th EBES Conference*** organized by ***Eurasian Business and Economic Society, Warsaw, Poland,*** Jan 12-14, 2022.

Work-in-progress

- Muniyoor, K., Singh, A. Growth versus Mobility: Intergenerational Mobility in Major Economies (GDIM, 2018: Global Database on Intergenerational Mobility).

- Singh, A. Does a decline in global inequality call for an increase in country-level inequality?