

ASPECTS OF INTERGENERATIONAL MOBILITY IN INDIA

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Abstract

Public policymakers consider three factors while judging the effectiveness of a policy, namely, access, social inclusion and equality of opportunity. As *Sen (1999)* mentioned, one of the main goals of economic development is to increase the opportunities available to an individual in the employment sector. Increased opportunities indicate higher mobility. Therefore, one of the measures of equality of opportunity is intergenerational mobility. The present thesis examines the effectiveness of policies to reduce the degree of inequality of opportunity in the Indian context. Historical data shows that following the adoption of the economic reform policies, there was a shift in the employment structure in India. We have used measures of mobility and Altham Statistic to examine whether such a similar shift was evident across two generations over time. Next, we have used logistic regression analysis to identify the factors that explain the overall mobility of the son. We found that sons of public sector employees are most likely to be employed in a different sector of occupation than that of their fathers. Hence, we used multinomial logit regression analysis to identify the factors that have an impact on the skill level of the son's job sector whose fathers are public sector employees. We found education to be the most important variable that determines whether an individual will be employed in a white-collar job, skilled/semi-skilled or unskilled job. In the second chapter, we examine the effectiveness of job reservation policy adopted by the Indian Constitution since the 1950s in creating opportunities for sons belonging to the backward classes to work in a different sector of occupation than that of their fathers. We also examine whether education of the son and family endowments like education of parents influences overall mobility. Using mobility measures and Altham Statistic, we found that there exists a weak association between father and son's sector of employment for sons belonging to the General Category and Scheduled Tribe. However, this difference was due to the difference in the tendency to inherit the father's sector of employment. There was no significant difference in the degree of association between father and son's sector of employment for sons belonging to the General category and Scheduled Castes. Additionally, two regression analyses were conducted. In the first regression the factors that determine the overall mobility of the son are identified. In the second regression we examined whether caste category along with factors like income of the household and education

influences the likelihood of sons being employed in a different sector than that of fathers who are working in the public sector. The results show that sons belonging to Scheduled castes are more likely to work in a different sector of occupation than that of their fathers compared to sons belonging to the General category. However, Scheduled Tribes show intergenerational persistence if fathers are public sector employee. Increase in the level of education of the son increased the likelihood of being employed in a different sector of occupation than their fathers across all three social groups. Another phenomenon that captures the attention of the policymakers is the “The Great Indian Migration Wave”. According to Census of India 2011, 36.9 percent of the total population comprises of migrants. Like other children, migrant’s children also help in shaping up the social, economic and political structure of an economy. In light of the above, the objective of the third chapter is to examine the intergenerational educational mobility observed among the non-migrant and the migrant sons. To check whether the mobility rate is constant throughout the son’s educational distribution, we have used quantile regression analysis. The results show that without controlling for the socio-economic factors, non-migrant sons are less affected by their parent’s education compared to the migrant sons. We also found that educational mobility is higher between son and mother’s education as compared to the father’s education. However, after controlling for the socio-economic factors, sons belong to the migrant generations are more mobile as compared to the non-migrant sons. Quantile regression shows that at the low end of the son’s educational distribution, parents’ education has more impact on son’s educational attainment compared to those sons who are at the higher end of the distribution. Beyond 80th quantile of son’s educational distribution, we find that there is no association between son and parents’ education.

Chapter 1

Introduction

The present thesis is comprised of three essays on the different aspects of intergenerational mobility in India. Intergenerational mobility is one of the instruments used by economists and sociologists to measure overall social welfare and effectiveness of public policies. One of the main goals of economic development is to increase opportunities for individuals in the employment sector (*Sen, 1999*). Increased opportunity leads to higher mobility. Therefore, in the *first chapter*, we have *primarily* examined whether a shift in employment choice between the private sector and public sector jobs is observed over time across two generations in India; *secondly*, we also identify the skill level of the son's job sector when they are employed in private sector whereas their fathers are public sector employees; *finally*, the socio-economic factors are identified that positively effects the overall mobility of the son and the skill level of the son's job sector. In the *second chapter*, we analyse the effectiveness of job reservation policies adopted by the Indian Constitution since the 1950s in creating opportunities for sons belonging to the backward classes to work in a different sector of occupation than that of their fathers. *Additionally*, we identify the socio-economic factors that influence the son's sectoral choice of employment whose fathers are public sector employees. In the *third chapter*, we examine whether there exists any difference in intergenerational educational mobility among the migrant and non-migrant sons as schooling of a child is one of the factors that determines the child's capacity to succeed in the labour market.

1.1. BACKGROUND

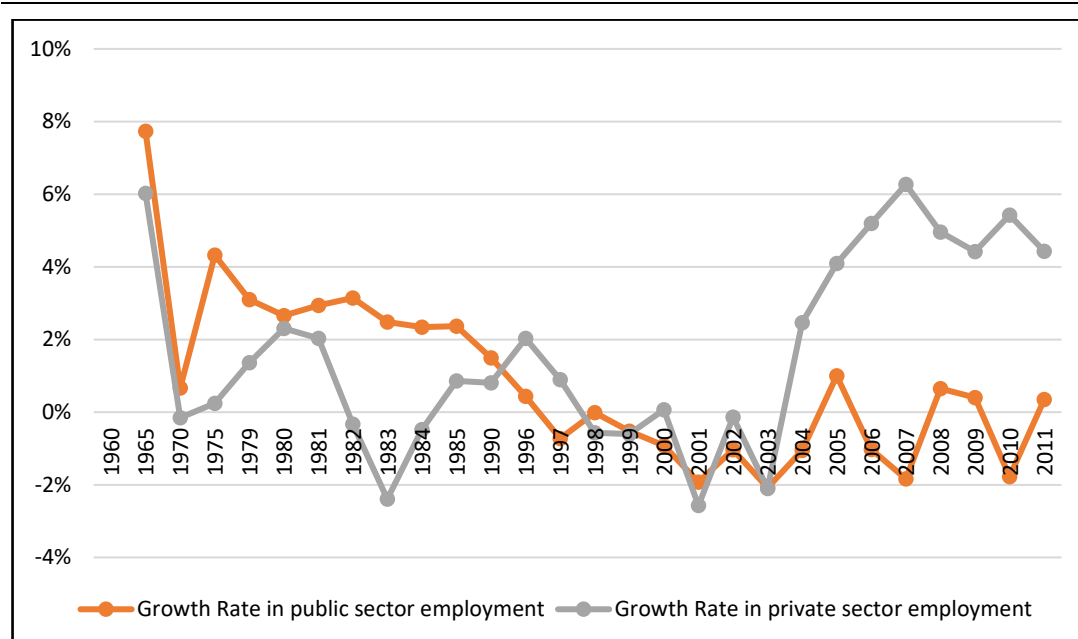
Access, social inclusion, and equality of opportunity are three factors that policy-makers consider to judge the effectiveness of public policies that may influence an individual's life chances and lead to a 'fair' society (Roemer 2004, D'Addio 2007). A society is deemed to be 'fair' if there exists equality of opportunity. Equality of opportunity exists when an individual's life outcomes depend only on his effort and talent rather than on attributes which are beyond his control such as ethnicity and family background. One way to measure equality of opportunity is by examining the degree of intergenerational mobility across two or more generations. A high degree of intergenerational mobility implies that the socio-economic status of parents has less influence on the child's life chances and therefore, it can be said that the child's achievement as an adult is due to its effort and ability rather than inherited traits and socio-economic status of the parents. Most researchers have studied intergenerational mobility for income, educational attainment or occupation as a measure to examine the difference in the position of one generation from another¹. Another set of existing literature has found that there is a positive relationship between intergenerational mobility and economic growth². The decline in the relative importance of parental condition on a child's life chances leads to higher mobility. In a mobile society, individuals with a high level of ability and human capital are capable of finding employment in technologically-advanced sectors which further leads to economic growth and improved standard of living.

¹ Piraino 2015, Azam 2013, Hnatkovska et al 2012, Black & Devereux 2010, Majumdar 2010, Causa and Johansson 2009, Long & Ferrie 2008, Jäntti et al 2006, Becker and Tomes 1978, Blau & Duncan 1967

² Galor and Tsiddon 1997, D'Addio 2007

Before 1991, India was characterised by public sector monopolies. Since the systematic adoption of the economic reform policies in 1991, India witnessed major changes such as opening up of the economy to foreign direct investment, and private participation in key sectors such as banking, retail, communication and hotel. Data provided by the Directorate General of Employment and Training on public sector and organised private sector employment (*Figure 1.1*) shows us that compared to the rate of growth in organised private sector employment, rate of growth in public sector employment has declined over time. During the pre-reform period, the rate of growth in public sector employment was higher than that of private-sector employment. However, the growth rate in private sector employment exceeded that of the public sector since 1996.

Figure 1.1: Rate of Growth in Public and Private Sector Employment in India between 1960-61 and 2010-11

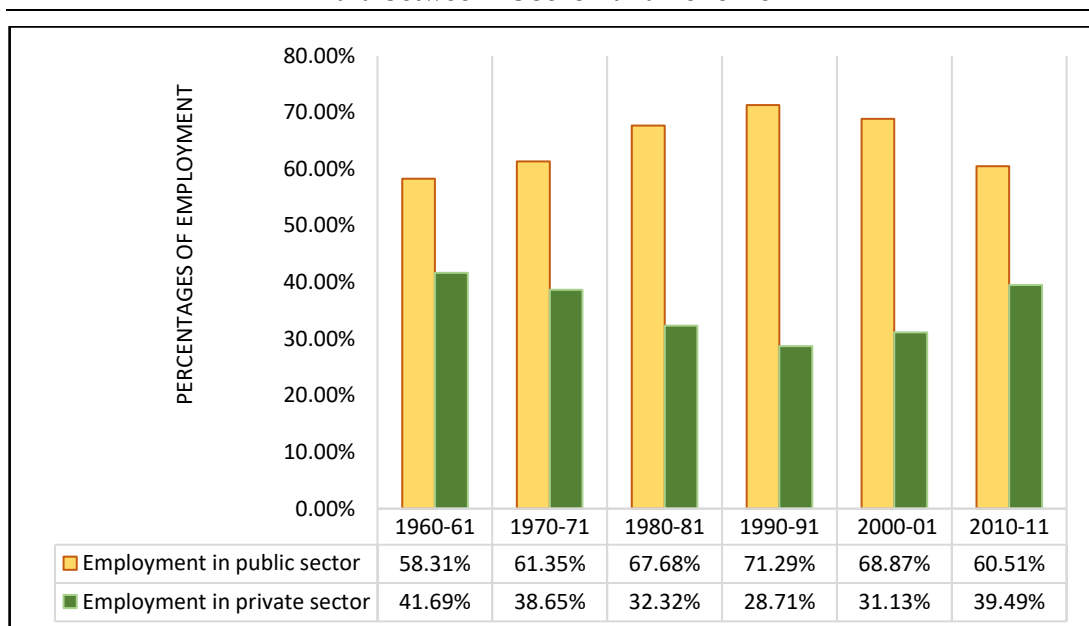


Source: Statistical Year Book, Ministry of Statistics and Programme Implementation, India

Figure 1.2 shows us the percentages of employment in the public and private sector at ten years interval between 1960-61 to 2010-11. We observe that the percentages of

employment in the public sector have increased from 58.3 percentages in 1960-61 to 71.3 percentages in 1990-91; however, this percentages declined to 68.9 in 2000-01 and further declined to 60.5 percentages in 2010-11. On the contrary, employment in the private sector was 41.7 percentages in 1960-61 which decreased to 28.7 percentages in 1990-91. In 2000-01, the employment in the private sector increased to 31.1 percentages and further increased to 39.5 percentages in 2010-11.

Figure 1.2: Percentages of Employment in Public and Organised Private Sector in India between 1960-61 and 2010-2011



Source: Statistical Year Book, Ministry of Statistics and Programme Implementation, India

One possible reason which can explain this shift in employment structure is the adoption of economic reform policies in 1991 which increased availability of jobs in private sectors. Other possible reasons that might explain this shift in employment structure are the difference in public sector & private sector jobs concerning the wages paid to the employees, the difference in the procedure of hiring, advancement opportunities, level of job security, implementation of public policies, geographical

location and skill requirements³. *Bellante and Link (1981)* show that measured risk aversion is significantly related to sectoral choice. Public sector organisation is comparatively less economically pressured and more secured than the private sector organisation. Also, public sector organizations are more likely to be unionised than private-sector organizations. Geographical preferences can also influence sectoral job choice as the distribution of public and private sector jobs varies across geographical regions. Also, they added that the government hires a greater percentage of professionals, service workers, administrative and clerical workers than labourers or sales workers. *Srivastava and Purang (2009)* examined the job satisfaction level of the public sector and private sector bank employees in India. They found that the private sector bank employees report greater satisfaction with pays and benefits aspects of the job as compared to public sector bank employees. The private-sector banks follow performance-related pay structure and from time to time reward their employees through mechanisms like giving them holiday package or a week-off. On the other hand, in the public sector jobs, post-retirement welfare policies are well-defined and well-executed compared to the private sector jobs. Thus, it can be concluded that the sectoral differences in terms of compensation, growth opportunities, social environment and job security play a significant role in influencing employees' choice of the employment sector. Given the backdrop, in our study, in our first chapter, we have examined whether we see a shift over time in the employment structure across two generations. However, our study does not focus on identifying the factors that influence the shift.

Inequality of opportunity is predominant in India in the form of caste-based discrimination (*Rao, 2008*). Indian society is characterised by the historical

³ *Bellante & Link 1981, Srivastava & Purang 2009.*

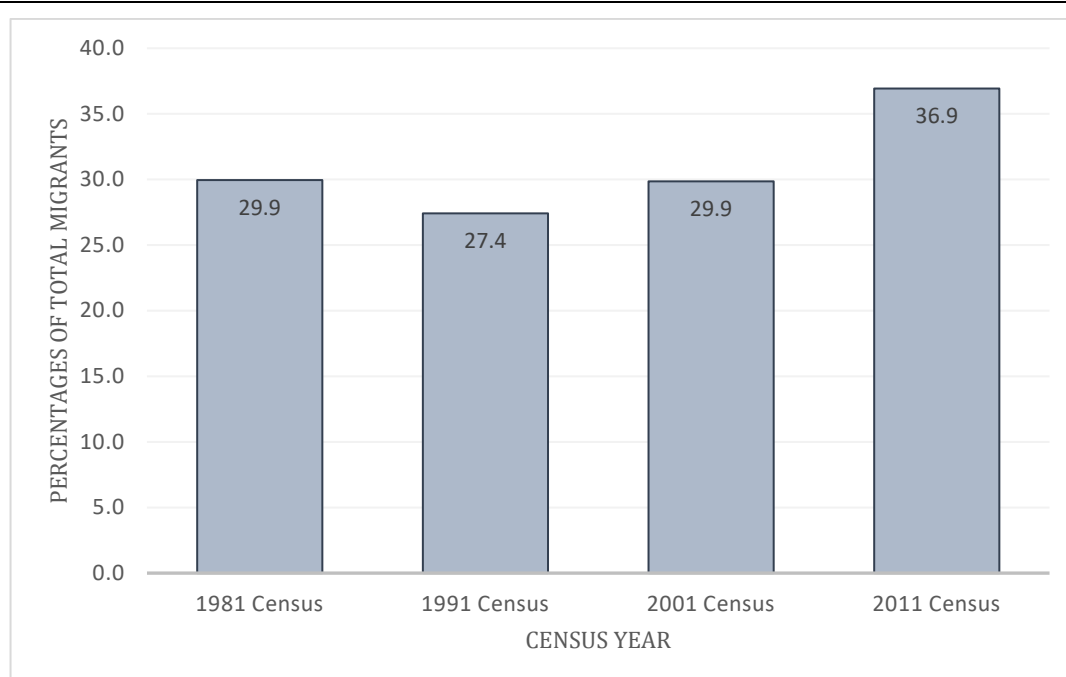
stratification of the Hindu population-based on caste hierarchy. Three of the major socio-economic categories based on an individual's caste affiliation are General Castes (including Brahmins and upper-caste Hindus), Scheduled Castes and Scheduled Tribes, and Other Backward Classes. Among them, *Scheduled castes and Scheduled tribes*, former untouchables, are at the bottom of the caste hierarchy. They are economically backward classes and remained so since the beginning of the formation of the caste system. This hierarchical gradation of society led to social inequality and discrimination. Therefore, if equality of opportunity across caste groups is desired then targeted public policy is needed to give an opportunity to all those individuals who belong to the backward classes (*Deshpande 2005, Basavaraju 2009, Corak 2013*). A study using the 1979 Current Population Survey data for the United States has found that implementation of employment guidelines for the *targeted groups* is effective internally within the public sector than if it is enforced in the private sector (*Blank, 1985*). It was also found that other things equal, government jobs were mostly preferred by the protected groups of veterans, non-whites and women in the States. In the Indian context, the affirmative action program is adopted by the Indian constitution since the 1950s to reduce caste-based discrimination. It was expected that this increase in opportunity will also increase the degree of intergenerational mobility observed among the socially backward classes. In other words, if the reservation policy is effective, then it is more likely that the children belonging to the socially backward classes will be employed in a different sector than that of their fathers who enjoyed the benefit of reservation in public sector jobs. In the second chapter, our objective is to examine how far the choice between the public sector and private sector jobs has changed across two generations for the social groups who have enjoyed the benefits of job reservation policies since the 1950s.

In the last two chapters, we examined the degree of intergenerational mobility for father-son pair over time and across social groups for the movement between the public sector and private sector jobs. Another factor that might influence the degree of intergenerational mobility is the immigration background of a child. Existing literature has suggested that migration of parents can impose both benefits and disadvantages on a child's development⁴. If children are left behind to be taken care of by other family members, money sent to home significantly increases the educational attainment of a child compared to the children of non-migrant households. On the negative side, the reduction in the time allocated for the child's development increases the risk of depression among the children of the migrant parents. However, if the child moves with the parent to the place of destination, the act of migration itself disrupts the continuity of the child's education and negatively affects their daily life, which may adversely affect the child's education.

In the Indian context, migration plays an important role in shaping up the social, economic and political life of the people (*Tumbe, 2018*). According to the Census Data of India, there has been a rise in percentages of the total migrants in the population from 1991 to 2011 (*Figure 1.3*). Total migrants increased from 29.9 percentages of the total population according to the 1981 Census to 36.9 percentages according to the 2011 Census. Inter-district migration was highest, followed by intra-district and inter-state.

⁴ Bakker et al 2009, Jordan & Graham 2011, Resosudarmo & Suryadarma 2011, Antman 2012, Roy et al 2015, Cebotari et al 2016

Figure 1.3: Share of Migrants in total Population



Note: Source of data is Census of India, 1981 – 2011. Each percentage is calculated by taking summation of intra-district, inter-district, inter-state and from abroad migration over total population.

Since, schooling of an immigrant child is important in determining their capacity to succeed in the labour market and to some extent reduces the inequality of opportunity, we found it intriguing to examine whether sons who migrated with their parents exhibit educational mobility compared to the non-migrant sons. Intergenerational educational mobility indicates a weak association between parent's education and child's educational attainment, i.e., education of parents will have less impact on the child's educational attainment. A high degree of intergenerational educational mobility implies equality of opportunity concerning education which positively contributes to social mobility and economic development (*D'Addio, 2007*). Given the backdrop, in our third chapter, we examine how far the degree of intergenerational educational mobility between parents and son's education differ among the migrant households from that of the non-migrant households.

The thesis is organized in the following way. Chapter 2 provides a review of the relevant literature. Chapter 3 study the mobility of employment between the public sector and the private sector over different time points and examines the factors that affect such mobility. Chapter 4 addresses the issue how far the choice between the public sector and private sector jobs has changed across two generations for the social groups who have enjoyed the benefits of the job reservation policy since the 1950s and the factors that have affected such choice. Chapter 5 examines intergenerational educational mobility among migrants as compared to the non-migrants. Chapter 6 concludes.

Chapter 2

Literature Review

Policymakers aim to achieve an economy which is based on human skills and ability; where every individual has equal chances to contribute to economic growth and increase their standard of living⁵. However existing literature shows that a child's achievement as an adult is strongly related to its socio-economic background, investment in the human capital, aspirations and preferences defined by family culture and genetic transmission of abilities and skills⁶. So, in a society, higher mobility both in occupational choice and in educational achievements indicates an independence of choice for the children. In other words, it indicates a social structure where the children are not constrained by their parent's economic back ground in terms of occupation and education.

The present thesis investigates three aspects of intergenerational mobility in the Indian context: intergenerational occupational mobility between public sector and private sector jobs across time periods, intergenerational occupational mobility between public sector and private sector jobs across social groups (Schedule casts, scheduled tribes and general category) and educational mobility across generation among the migrants as compared to the non-migrants. So, our survey of literature is divided into two parts. The first part in section 2.1 explores the literature on occupational mobility

⁵ Roemer 2004, Roemer et al 2003, Galor & Tsiddon, 1997

⁶ Becker and Tomes 1979, Corak 2013, Solon 2004

Section 2.2 explores the literature on educational mobility. Some of the literature are again mentioned in the relevant chapters.

2.1. Literature Survey on Occupational mobility

The literature on occupational mobility can be divided into two parts: the literature on occupation mobility in the international context and the literature in the Indian context. Section 2.1.1 discusses the international literature while section 2.1.2 discusses the literature focused on India. As the thesis also attempts to identify the factors that affect intergenerational mobility both across time as well as across social groups, section 2.1.3 discusses the literature on factors affecting intergenerational mobility.

2.1.1. International Studies on Intergenerational Mobility

One of the earliest studies on intergenerational mobility in western countries was by *Lenski (1958)*. The study aimed to examine the trend in upward and downward occupational mobility within American society. Using the 1952 presidential election data, the author found intergenerational persistence in white-collar jobs and also found that the relative chance of getting a white-collar job by a farmer's son was lower than that of a son whose father was in blue-collar or a white-collar job. Another study by *Dearden et al. (1997)* examined the degree of intergenerational earning mobility in Britain using data from the National Child Development Survey, 1958 and found strong intergenerational persistence. About 52 percentages of sons remain in the top quartile of the earning distribution as that of their fathers. They also measured the direction of mobility and found that the upward mobility from the bottom of the earnings distribution is more likely than the downward mobility from the top. *Goyder and Curtis (1975)* studied the trend in intergenerational occupational inheritance in the United States. They found strong occupational inheritance between fathers with that

of the grandfathers which slightly declined between the respondent and his father. *DeJong et al. (1971)* compared the intergenerational occupational mobility trend observed among females within the American occupational structure with that of the already known occupational mobility patterns of male and found strong intergenerational inheritance among the females. Our study on occupational mobility is greatly influenced by Long and Ferrie (2007 & 2013), who *studied* the comparative pattern of historical mobility between Britain and the USA to examine which country exhibits higher mobility. *Javed and Irfan (2014)* used the data from Pakistan Panel Household Survey 2010 and found evidence of higher intergenerational occupational persistence between co-resident pair of son and father reporting positive income.

2.1.2. Studies on Intergenerational Mobility in Indian context

There exists a vast literature on the inequality of opportunity in India⁷. One of the measures of inequality of opportunity is the study of intergenerational mobility. *Reddy (2015)* using NSSO data from 1983 to 2011 studied inequality of opportunity by examining intergenerational occupational mobility of adult males in India. He found a decline in mobility over time, more severely among the most disadvantaged caste groups, Scheduled Castes and Scheduled Tribes. Another study by *Motiram and Singh (2012)* examines intergenerational occupational mobility among adult males using IHDS 2004-2005 data. They found a considerable amount of intergenerational persistence particularly at the lower end of the occupational ladder. For instance, more than 50 percentages of sons belonging to agricultural labour are employed as agricultural labour. A similar analysis was done by *Iversen, Krishna and Sen (2017)* using IHDS 2011-2012 data. They found that the prospect for downward mobility in

⁷ *Asadullah & Yalonzky 2012, Motiram & Singh 2012, Reddy 2012, Iversen et al (2017)*

India is large among the rural households and the Scheduled castes and Scheduled tribes. Following the methodology used by *Altham and Ferrie (2013)*, *Azam (2013)* studied occupational mobility in the Indian context. He used the Indian Human Development Survey (2005) data to examine the intergenerational occupational mobility in India among men born during 1945-85. He defined the occupational categories as: white collar jobs, skilled/semi-skilled jobs, unskilled jobs and farmers. *Hnatkovska, Lahiri and Paul (2012)* have used NSSO data to examine the intergenerational mobility rates to understand the extent of lack of mobility of the historically disadvantaged groups with the rest of the workforce in terms of occupation.

2.1.3 Factors affecting Intergenerational Mobility

Roemer (2004) assumed that a child's achievement is influenced by his parents through these four channels: social connections, the formation of beliefs and skills in children through human capital investment and family culture, the genetic transmission of abilities and formation of aspirations in children. Parental education rather than income is a better proxy for measuring the influence of the family upon the preferences and aspirations of the children. *Dearden et al (1997)* showed in their study that both parents' education has a strong impact on the education of their children; however, the father's education is more important for sons than mothers' education. Fathers' socio-economic status remains the most important determinant of the economic position of the son (*Javed & Irfan, 2014*).

D'Addio (2007) has identified the two most important family background characteristics that are responsible for a child's educational achievement: Occupational status of the parents and the migration status. Using the *PISA (2003)* database, she has found that native children score better than the first-generation and the second-generation children

If the development of a migrant's child is compromised and they fail to reach their potential, then they become an economic and social drag. Thus, the impact of migration on child's development is an important area of research. Researchers have shown that higher education is associated with higher earnings, better health and higher economic outcomes; it also promotes social mobility⁸. Children of highly educated parents tend to have more education and better life chances compared to the children of poorly educated parents. *Ahsan and Chatterjee (2015)* have used the 55th round of NSS data to examine the relationship between trade liberalisation and intergenerational occupational mobility in India. The results suggest that the change in the distribution of occupation due to trade liberalisation has led to greater intergenerational occupational mobility among the adult males in India. Additionally, the findings also suggest that the impact of trade on occupational mobility was driven by the changes in the share of high-skill occupations led by trade-induced innovation. *Singh (2012)* uses IHDS 2004-05 data, to examine inequality of opportunity in earnings and consumption expenditure for adult males. Using the parametric approach, he found that inequality of opportunities in earnings for individuals results from several factors, such as, discrimination based on social class, the social connection of parents and role of family background in the formation of aspirations, beliefs and attitudes during childhood, which later influence their earnings. For urban males, father's education and caste are two most important circumstance variables that influence the earning opportunities; and for rural males, the factors are father's education, caste and geographical region.

⁸ *Hertz et al. 2007, Clark & Nguyen 2010, Black & Devereux 2011, Kishan 2018*

2.1. *Studies on Intergeneration Educational Mobility*

In the present section, we discuss the literature on intergenerational educational mobility with a special emphasize on migrants/immigrants and non-migrants. Following the pattern of the previous section, Section 2.2.1. contains the literature in the international context and section 2.2.2 contains the literature in the Indian context. Needless to mention that we will discuss the literature in the relevant chapter again.

2.2.1. *Studies on Intergenerational Mobility in international context*

There exists a large international literature that examined how the degree of intergenerational mobility differs between sons with immigration background and sons born to non-migrant parents. Most of the studies have used education to measure intergenerational mobility since the schooling of an immigrant child is important in determining his capacity to succeed in the labour market⁹. *Aydemir et al (2013)* examined Canadian immigrants and found a weak association between the education levels of the parent and the child if the child belongs to the immigrant households compared to the child belonging to the non-migrant parents. *Bakker et al (2009)* have examined the impact of migration on children in the Caribbean and found that migrant children face difficulties in terms of education and health as well as various psychological problems. *Borjas (1993)* gave the *melting pot metaphor* to state that it takes ‘two or three generations for immigrants to match with the native population. Thus, it is interesting to examine which generation in the migrant household exhibit weak association between parents and child education.

⁹ *Aydemir 2013, Bakker et al 2009, Borjas (1993)*

2.2.2. Studies on Intergenerational Educational Mobility in India

Literature shows that higher education is associated with higher earnings, better health and other economic outcomes¹⁰. A recent study by *Kishan (2018)* uses the IHDS 2011-12 data to examine whether intergenerational educational mobility has materialised in India, using controls for caste, religion and state. The study found a high degree of intergenerational persistence in education, although it decreased steadily overtime during the post-independence period. Another study by *Ray & Majumder (2010)*, uses the NSSO data (55th and 61st round) and also found strong intergenerational persistence in educational attainment among the Scheduled castes and Scheduled tribes. *Azam (2016)* uses IHDS 2011-2012 data to study the educational transmission between either of the parents and daughter in India. The results suggest that educational persistence among daughters and parent has declined over time and it has declined further with the increase in the education of parent. However, the gap between the upper Hindu caste and backward classes does not show any sign of decline. In another study, *Azam and Bhatt (2015)* used the IHDS (2005) data to examine intergenerational educational mobility in India over time. Over time, they found an increase in educational mobility across social groups. Among the states, West Bengal and Tamil Nadu did not exhibit much improvement in educational mobility compared to the states of Orissa, Maharashtra and Rajasthan. Additionally, they also found upward mobility among sons of less-educated fathers as compared to the sons of highly-educated fathers.

Based on the existing literature, we address the following questions that have not been addressed at least in the Indian context.

¹⁰ *Black & Devereux 2011, Hertz et al 2007, Ganzeboom et al 1991*

2.3 Research Questions

In the first chapter, our *primary* goal is to examine whether there is movement between the private sector and public sector employment in India over time. *Secondly*, we extend the analysis to understand the skill level of the son's sector of employment whose fathers are public sector employees. *Thirdly*, we identified the factors that determine the overall mobility of the son and the skill level of the sector where the son is employed.

In our second chapter, *firstly* we examine whether there is movement between the private sector and public sector employment across different social groups; *secondly*, we extend the analysis to understand whether this movement can help us to understand the effectiveness of the job reservation policy; *thirdly*, we identify the factors that contribute to the overall mobility of the son and the mobility of the sons whose fathers are public sector workers.

In our third chapter, our *first* objective is to examine the degree of intergenerational educational mobility among the migrant sons and non-migrant sons. *Additionally*, we also checked whether the degree of association between parents and son's education remains constant across the son's educational distribution for both migrant and non-migrant sons. *Finally*, we identify the socio-economic factors which have an impact on the years of schooling of sons for both groups of sons.

Chapter 3

Dynamics of Intergenerational Occupational Mobility in India

3.1. INTRODUCTION

As pointed out by *Sen (1999)*, one of the main goals of economic development is to expand the opportunities available to individuals for employment. As mentioned earlier in *Chapter Two*, existing literature has examined the intergenerational occupational mobility between fathers and sons where occupation was classified according to the skill level of the individual i.e., across white-collar, skilled/semi-skilled, farmers and unskilled jobs. We are interested in examining the intergenerational mobility across sector-based occupational distribution i.e., between the public sector and private sector jobs. With increasing opportunities, we expect sons to be employed in a different sector of occupation than that of their fathers (greater mobility). Historical data on India provides few interesting facts: between 1993-94 and 2010-11, the average annual growth rate of private sector's contribution to GDP (Gross Domestic Product at current prices) has increased from 76.14 percent to 79.10 percent whereas the public sector's contribution declined from 31.42 per cent to 26.43 percent (*Data Source: Statistical Abstract, India*). Similarly, employment in the private sector and public sector observed over a longer period (1970-71 to 2011-12) shows that overall, there is a high percentage of annual growth in the private sector employment as compared to public sector employment¹¹. This chapter examines whether a similar

¹¹ Figures in Chapter I.

shift is observable across two generations when compared between two time periods and how much of the difference can be explained by the changes in the occupational structure of the Indian economy, referred to as prevalence, caused either by a policy change or an external shock. The structure of employment can differ even in the absence of difference in occupational distribution, if there is a difference in the degree of impediments to mobility present in the economy, referred to as interaction (*Hauser, 1980*), between two time periods. For example, access to better education, social networks of fathers, aspirations and preferences set by family (*Roemer 2004, Black & Devereux 2010*) might facilitate easier movement into a particular sector of occupation. This advantage may vary between two time periods. India experienced a structural change following the adoption of economic reform policy in 1991 when the government approved of a more open economy, a larger role for the private sector including foreign investments and redefined the role of the government (*Ahluwalia, 2002*). Comparing the job-stress level between the private and public sector, *Irudhaya* (2016) found that the employees in the health sector and manufacturing sector experienced high job-stress level while the public sector employees reported comparatively lower job-stress level. In addition to the structural change, the global financial crisis of 2008 affected the Indian economy. The employment across sectors such as textiles, automobiles, metals, mining, transport, BPO/IT sectors declined from 16.2 million to 15.7 million at the end of 2008 (*Walia, 2012*). Thus, given the backdrop, it is expected that the employment structure in the Indian economy might have changed in the post-2008 period. Therefore, for comparison, we classify the sons and their fathers into three groups according to the sons' job entry period; sons entering the job market before 1991, between 1992 and 2007 and between 2008 and 2012.

We aim to study the mobility of employment between the public sector and the private sector. However, the private sector employment can be of two types: the individual can be employed as an employee or can work as an entrepreneur (own business) which is also a private sector. Hence, the employment sector is classified into three categories for analysis: public sector, private sector and business sector. Business sector includes all those individuals who are either employed in organised business or small business.

3.2 LITERATURE REVIEW

There exists a considerable amount of literature on intergenerational occupational mobility, primarily on American occupational structure¹². *Goyder and Curtis (1975)* studied the trend in intergenerational occupational inheritance in the United States. The study employed pearsonian correlation and regression measure to analyse the three-generational occupational inheritance from fathers to the respondent and from paternal grandfathers to fathers. They found strong occupational inheritance between fathers with that of the grandfathers which slightly declined between the respondent and his father. Another study, *DeJong et al. (1971)* compared the intergenerational occupational mobility trend observed among females within the American occupational structure with that of the already known occupational mobility patterns of male and found strong intergenerational inheritance among the females. The study concluded that there is no difference between the mobility pattern observed among males and working females. *Long and Ferrie (2007 & 2013)* studied the comparative pattern of historical mobility between Britain and the USA to examine which country exhibits higher mobility. After controlling for the differences in the occupational

¹² *Lenski, 1958; Goyder and Curtis, 1975; DeJong, Brawer and Robin, 1971; Long & Ferrie, 2013; Javed & Irfan, 2014;*

structure, they find that the nineteenth-century US exhibited substantially more occupational mobility across generations than observed in nineteenth-century Britain or the twentieth-century US. Studies on intergenerational mobility are limited to developing countries. One reason is the lack of suitable data for intergenerational studies. *Javed and Irfan (2014)* used the data from Pakistan Panel Household Survey 2010 and found evidence of higher intergenerational occupational persistence between co-resident pair of son and father reporting positive income.

However, the study of intergenerational occupational mobility in the Indian context is limited due to lack of suitable data. *Iversen, Krishna and Sen (2016)* used finer-grained categorisation of occupation according to similar nature of the work done (white collar, skilled and semi-skilled, unskilled and farmers) and compared mobility matrices to find that vast differences in the upward and downward mobility between urban and rural residents and between upper-caste Hindus and Scheduled Castes and Scheduled Tribes exist. Another study by *Motiram and Singh (2012)* used different types of mobility measures and found that there was considerable intergenerational occupational persistence across all occupation categories with relatively higher persistence level for low-paid/low-skilled jobs. They too have classified occupation according to nature of the skill required. *Hnatkovska et al. (2012)* have used 5 rounds of NSS data (1983 – 2005) to study the intergenerational occupational mobility rates by contrasting the historically disadvantaged scheduled castes and tribes (SC/ST) in India with the rest of the workforce in terms of their occupation choices. They found no change in the difference in mobility for non-SC/STs and SC/STs between 1983 and 2004-05.

Following the methodology used by *Altham and Ferrie (2013)*, *Azam (2013)* were the first to use Altham Statistics in the Indian context. He used the Indian Human

Development Survey (2005) data to examine the intergenerational occupational mobility in India among men born during 1945-85. The author classified occupation into four categories: white collar, skilled/semi-skilled, unskilled and farmers. The findings show that there exists a difference in mobility between the 1965-74 and 1975-84 birth cohorts. The later cohort was found to be more mobile than the earlier cohort. *Reddy (2015)* also used Altham Statistics to examine intergenerational occupational mobility in the context of India and found higher immobility in the lowest-ranked occupation. Their paper suggests considerable inequality of opportunity in India. Their findings are similar to those of *Motiram and Singh (2012)*.

Our research work differs from the literature in several ways. First, the objective is to examine whether there is movement between the private sector and public sector employment; literature has focussed on the skill-based classification of occupational distribution but none have examined the sector-based classification. With the adoption of economic reform policies and the external shock of the financial crisis of 2008, it is expected that a change will be observed in the intergenerational occupational mobility between the public sector and private sector jobs. secondly, we identify the skill levels of the sons' sector of employment; we are interested to examine whether the movement of son into the private sector jobs when the father is a public sector employee is an improvement of skill level. and thirdly; we identified the factors that determine the overall mobility of the son and the skill level of the sons' jobs.

3.2 DATA AND METHODOLOGY

Data

The entire thesis is based on the data from the India Human Development Survey-II, 2011-12, a nationally representative, a multi-topic survey conducted by the University of Maryland and the National Council of Applied Economic Research (NCAER) in 2011-12. This dataset is more accurate when used for studying intergenerational mobility as a direct intergenerational link can be established between parent and child by exploiting the *Relationship code* and *Id of father* and *Id of mother* information for each child.

Here it should be mentioned that there are two limitations of this database in India. *Firstly*, IHDS-II (2011-12) contains information on co-resident individuals only. Thus, for our analysis, we have considered only the co-resident fathers' and sons' data. *Secondly*, this dataset does not give us the required information on married women who are staying elsewhere. To avoid any bias, we have excluded daughters from our study. Thus, this thesis explores the intergenerational mobility between fathers' and sons' living in the same household.

This chapter has considered only those individuals whose principal occupation is one of the following: salaried, small business, organized business, professional and retired person. Employment in small business and organized business has been clubbed together as business sector employment. Rest of the individuals is classified as a private sector employee or public sector employee. We have excluded all the casual workers from the data set. Due to the lack of data on married women staying elsewhere, daughters were also excluded. The age group of sons included in the dataset is between 15 years to 62 years (working population age group definition by OECD is between 15 and 64 years). Although the dataset contains 42,156 households, our sample size is

small (1874 households) compared to the overall size of the dataset. However, since the data can distinctly identify the father-son pair from each household, we can say that the results are dependable. Also, there is no observation in the cohort 2008-2012 for sons employed in the public sector when the father is a private sector employee, so the origin is shifted from 0 to 1 by adding one to each of the elements in all the contingency tables, which should not affect the overall results.

Methodology

We used the methodology used in *Long and Ferrie (2007, 2013)* and *Altham & Ferrie (2008)* to compare the dynamics of the employment structure of fathers and sons between two time periods. Three contingency tables are used to represent the cross-classification of fathers' and sons' sector of employment across the three identified job market entry periods of the son: *before 1991*, *between 1992-2007* and *between 2008-2012*. First, a simple measure of mobility, M , (proportion of the individuals in the off-diagonal cells to the total observed frequency) is used to determine which cohort shows higher mobility. Now, this difference in mobility can be a result of the difference in the occupational distribution (e.g., more jobs are available in the private sector *between 1992-2007* as compared to the cohort *before-1991*, therefore more sons are employed in the private sector), termed as 'prevalence' or due to lowering of impediments to mobility, which increases the elasticity of labour supply (e.g., education and training, degree of openness of the economy, et cetera), termed as 'interaction'. Thus, by adjusting the marginal frequencies of one contingency table to match that of another and then calculating mobility using the same formula, we derive M' , the adjusted measure of mobility. M and M' together help us to identify how much of the difference is due to prevalence and how much results from the interaction effect. Secondly, we

use the Altham Statistic¹³ as a measure to identify how the interaction component is changing from one period to another.

The Altham Statistic is of the following form:

$$d(P, Q) = \left[\sum_{i=1}^r \sum_{j=1}^s \sum_{l=1}^r \sum_{m=1}^s \left| \log \left(\frac{p_{ij} p_{lm} q_{im} q_{lj}}{p_{im} p_{lj} q_{ij} q_{lm}} \right)^2 \right| \right]^{\frac{1}{2}} \dots\dots\dots (3.1)$$

Altham Statistic remains unaffected by the differences in marginal frequencies. The value of the statistic can range from zero to infinity. A simple likelihood ratio chi-square statistic G^2 with $(r - 1)(s - 1)$ degrees of freedom is used to test the significance of Altham Statistics. If the null hypothesis is rejected, then it can be inferred that the degree of underlying association between fathers and son's sectoral choice of employment is significantly different across two time periods. But the statistic does not tell us which period exhibits a stronger association (or immobility). That can be determined by calculating $d(P, I)$ & $d(Q, I)$ where matrix I represent perfect mobility, implying the fathers' occupation has no predictive power of sons' choice of the sector of employment. Hence, if $d(P, Q) > 0$ and $d(P, I) > d(Q, I)$, we can conclude that mobility is greater in table Q because the distance between the table of perfect mobility and that of Table Q is less than that with Table P. Since the diagonal cells in a contingency table exhibit immobility across generations, we calculate an additional measure $d_i(P, Q)$ that examines only the off-diagonal cells and the underlying association between fathers' and sons' occupational sector choice. To summarise, Altham Statistic is used to examine whether there exists any difference in the degree of association between fathers' and sons' sectoral choice across two time period; if yes, then which group exhibit higher mobility.

¹³ The methodology of Altham Statistic is explained in Appendix A.3.3

Next, we use a logistic regression analysis to identify the factors that determine the overall mobility of the sons. Finally, multinomial logit regression analysis is used to check to what extent mobility and other factors affect the skill level of the sons' sector of employment, whose fathers are working in the public sector.

3.4 RESULTS

3.4.1 Summary of Contingency Tables, Measures of Mobility and Altham Statistic

Table A3.2 displays the sector-wise distribution of employment for sons and fathers across the three identified periods of entry into the job market: *Before 1991 (Panel 1)*, *between 1992 – 2007 (Panel 2)* and *between 2008 and 2012 (Panel 3)*. If the father is a private sector employee, 63.2 percentages of sons who entered the job market before 1991 end up in private sector jobs. This percentage increased to 80.8 percentages for sons entering the job market between 1992 and 2007 and slightly declined to 77.8 percentages for the most recent cohort 2008-2012. Over time, we observe that there is a rise in private sector employment among the sons. In contrast, the percentages of sons working in the public sector or business sector when the father has a private-sector job declined over time.

Among sons born to fathers who are public sector employees, percentages of sons staying in public sector jobs has declined during the period 1992-2007 but again the percentages increased among sons belonging to the *cohort 2008-2012*. However, across all three time periods the percentages of sons in public sector employment when the father is also a public sector employee declined. Over time we find that higher percentages of sons are working in the private sector when the father is in public sector employment. But the movement towards the business sector declined for sons whose fathers are in the public sector.

If the father is employed in the business sector, the percentages of sons who are also employed in the business sector have declined over time. The movement towards private sector employment increased and movement towards public sector employment declined for sons whose fathers are in the business sector.

To summarise, we find private-sector employment has increased and public sector employment has decreased for sons irrespective of where the father is employed. Interestingly, we observe that movement towards the business sector has declined over time.

Next, we will discuss the results of the mobility measures, simple and adjusted, to examine which cohort exhibits higher mobility and how much of this difference is due to the changes in the occupational distribution and how much is due to factors like lowering of impediments to mobility, better education, aspirations of family etc. The results are presented in *Table 3.1 (column 1 and 2)*. Mobility occurs when sons and fathers are working in different sectors of employment. Examining the mobility measures across the two job market entry periods of the sons: *before 1991* and *between 1992 – 2007*, it is observed that the simple and the adjusted measure of mobility are showing different outcomes. According to the simple measure of mobility M (*Table 3.1, Panel 1, Column 1*), sons entering the job market *between 1992-2007* are 8.9 percentage points more mobile compared to the sons entering the job market *before 1991* (29.3 vs. 20.4). After adjusting for marginal frequencies, M' is calculated (*Panel 1, Column 2*). We compare M and M' to understand how much of the observed mobility across the two time periods is due to the difference in the occupational distribution and how much is due to the difference in the existing level of impediments to mobility in the economy. Post-1991, following the adoption of economic reform

policy, the Indian economy went through a structural change. Thus, occupational distribution changed in the post-reform period. To capture the change in the occupational distribution, we adjusted the marginal frequencies of *cohort 1992-2007* to match those of *cohort before-1991* such that the occupation distribution is similar in both the cohorts and calculated the adjusted measure of mobility, M' . According to the value of M' , we observe that sons entering the job market *before 1991* are more mobile than sons entering the job market *between 1992-2007* (*Appendix 3.4*). A similar result is obtained if the marginal frequencies of the *cohort 1992-2007* are imposed on *cohort before-1991* and then the adjusted mobility measure is computed. Thus, it can be concluded that the higher mobility observed in *cohort 1992-2007* using the simple measure of mobility, M , is caused due to the difference in the occupational distribution (*Table 3.1*). However, we still do not know how different is the strength of the underlying association between father and son's sector of occupation in two tables. Therefore, we have discussed the results of the Altham Statistic, which measures whether there exists any significant difference in the degree of association between father and son's sector of employment from one period to another.

Altham Statistic is a comprehensive summary measure of association. This measure is invariant to the change in the occupational distribution. Therefore, degree of association between father and son's sectoral choice of employment can change with the change in the factors that affect the mobility in the labour market like better education and training, better information regarding job availability, degree of openness of the economy, aspirations of the family, socio-economic background etc. The results are presented in *Table 3.1 (column 3 to column 6)*.

Table 3.1: Summary Measures of Mobility

Job Entry Period of Sons	M (1)	M' (2)	$d(P, I)$ (3)	$d(Q, I)$ (4)	$d(P, Q)$ (5)	$d_i(P, Q)$ (6)
Before 1991 (P) vs. 1992-2007 (Q)	20.4 29.3	30.2 19.8	12.7*** (52.8)	13.2*** (620.5)	0.981 (0.995)	0.601 (0.847)
1992-2007 (P) vs. 2008-2012 (Q)	29.3 37.0	35.6 31.4	13.2*** (620.5)	14.0*** (122.8)	4.72 (0.200)	0.667 (0.832)
Before 1991 (P) vs. 2008-2012 (Q)	20.4 37.0	36.6 20.4	12.7*** (52.8)	14.0*** (122.8)	4.35 (0.798)	1.26 (0.756)

Note: M measures total mobility (percent off the main diagonal); M' is the adjusted mobility measure; significance level for the likelihood ratio chi-squared statistic G^2 ($df = 4$) for $d(P, I)$, $d(Q, I)$ and $d(P, Q)$; $df = 1$ for $d_i(P, Q)$. The G^2 are given in the parentheses. *** < 0.01 ** $< .05$ * $< .10$

Let us compare the Altham Statistic measures between sons belonging to cohort before 1991 (Table P) and between 1992 and 2007 (Table Q). There is no significant difference in the underlying association between father's and son's sectoral choice of employment in the two time periods as $d(P, Q)$ is insignificant. Furthermore, this identical association between father and son's sector of employment is observed not solely because there are strong similarities in the tendency of sons to inherit father's occupation across the two time periods but it is also evident when only the off-diagonal elements are considered in each table to measure the degree of association. In other words, there is a strong similarity in the underlying association between father and son's sector of employment in both the cohorts since $d_i(P, Q)$ is insignificant.

The $d(P, I)$ and $d(Q, I)$, both are positive and significant at 1 percent level. Therefore, we can reject the null hypothesis of perfect mobility; there exists some amount of association between father and son's sectoral choice of employment in both the cohorts. Additionally, it can be inferred from the measures that the sons entering the

job market *before 1991* shows marginally higher mobility than the sons entering the job market *between 1992-2007* since $d(P, I) < d(Q, I)$.

Similarly, we explain the mobility measures and Altham Statistics for sons entering the job market *between 1992-2007* and *2008-2012*. The absolute measure of mobility, M (Column 1) shows that the sons entering the job market during the period *2008-2012* are 7.7 percentage points more mobile than sons entering the job market *between 1992-2007*. A similar result is obtained even after adjusting for the difference in occupational distribution, however, the difference in mobility is only by 2.1 (29.3 vs. 31.4) percentage points if the occupation distribution of the cohort *1992 – 2007* is matched with that of the cohort *2008-2012* (M of Table P is compared with M' of Table Q) and by 0.4 (35.6 vs. 37.0) percentage points if the occupation distribution of cohort *2008-2012* is matched with the occupation distribution of the cohort *1992 – 2007* (M of Table Q is compared with M' of Table P). Thus, we observe higher mobility among sons belonging to the job entry period *1992 – 2007* compared to the sons entering the job market *before 1991* and this the higher mobility (calculated by mobility measure, M) observed in the later cohort can be explained by the difference in the occupational distribution between the two time periods. The Altham Statistics $d(P, I)$ and $d(Q, I)$ both are significant at 1% level of significance. So, the null hypothesis of perfect mobility is rejected. It also tells us that mobility in the cohort *1992-2007* is higher than observed in cohort *2008-2012* ($14.0 > 13.2$). Thus, although higher mobility is observed in the cohort *2008-2012* due to difference in the occupation distribution as compared to cohort *1992-2007*, in the absence of change in occupation distribution, it is the cohort *1992-2007* which is more mobile (weak association between fathers' and sons' sector of employment). Both $d(P, Q)$ & $d_i(P, Q)$ (column 5 and 6, panel 2, Table

3.1) is statistically insignificant i.e., there is no significant difference in the degree of association observed in father and son's sector of employment across two time periods.

To conclude, we find that there is some amount of association between father and son's sectoral choice of employment as they are significantly different from the perfect mobility table irrespective of their job entry period; however, there is no difference over time. In the next section, we identify the factors that determine whether the son will be in a different sector of occupation than that of their fathers. Further, we also identify the factors that explain the sons' likelihood of belonging to a specific skill level.

3.4.2 Econometric Analysis

To identify the factors that determine sons' job market mobility, we have used logistic regression analysis. The dependent variable, *Mobility* (MOB) is binary. The variable takes the value one if the father and the son are in different sectors; otherwise, zero.

The Logit model is of the following form:

$$L_i = \ln \left(\frac{P_i}{1-P_i} \right) = \beta_1 + \beta_2 SC_i + \beta_3 ST_i + \beta_4 Father_G_i + \beta_5 Father_B_i + \beta_6 Edu_F_i + \beta_7 Edu_M_i + \beta_8 Med_i + \beta_9 Grad_i + \beta_{10} Post_Sec_i + \beta_{11} Before_Sec_i + \beta_{12} Jobentry92_i + \beta_{13} Jobentry08_i + u_i \quad (3.2)$$

L_i measures the ratio of the probability that a son will be in a different sector of occupation than that of their fathers to the probability that both father and son will be in the same occupational sector. Exponentials of the estimated Logit coefficients gives the odds ratios of each predictor. The set of explanatory variables that are included in the regression analysis are explained below.

The caste categories are included in the model to check whether the caste affiliation of an individual has any impact on the mobility decision of the son. The caste dummies are defined as: *SC* takes the value one if the household belongs to Scheduled caste community, zero otherwise; *ST* takes the value one if the household belongs to Scheduled tribe community, zero otherwise. The reference category is General Category including Other Backward Classes.

Given the results obtained from Altham Statistics measures, we expect that over time, mobility will reduce. The time dummies are defined as follows: *Jobentry92_i* is the dummy variable which takes the value one if the son enters the job market between 1992 and 2007, zero otherwise; *Jobentry08_i* is the dummy for the recent cohort which takes the value one if the son enters the job market in the period 2008-2012; zero otherwise. The reference category includes those sons who entered the job market in the *before-1991* period.

We wanted to check whether fathers' sector of employment influences sons' sectoral choice, i.e., whether the son's mobility depends on the sector in which the father is employed. Some literature shows that parents have the highest influence on young people's career choices (*Ulrich, Frey and Ruppert, 2018*). Thus, the job sector dummies of the father are defined as follows: *Father_G_i* takes the value one if the father is a public sector employee, zero otherwise; *Father_B_i* takes the value one if the father is in the business sector; zero otherwise. The reference category includes those fathers who are employed in the private sector.

Parents' education affects sons' educational aspirations (*Sewell & Shah, 1968*). So, we include the parents' education dummies: *Edu_F_i* = years of schooling of the father; *Edu_M_i* = years of schooling of the mother. Education variable for the son has been constructed to capture the type of education received by the son. *Lentz and Laband*

(1989) showed in their paper that children of doctors are 14 percent more likely to be admitted in medical school than children of fathers working in non-medical fields. Technical education like Bachelor of Engineering, Bachelor of Technology etc. is expected to increase the likelihood of sons in finding employment in a different sector than that of their fathers compared to fields like medical, law and finance (*Friedman and Laurison, 2016*). Thus, the type of education received by the son is an important determinant of whether sons are employed in a different sector than that of their fathers. The education dummies are defined in the following way: Med_i is the dummy for the i^{th} son which takes the value one if the son has an education in medicine, law, finance and PhD, zero otherwise; $Grad_i$ is one if the i^{th} son has a graduation degree in Arts, Science or Commerce, zero otherwise; $Post_Sec_i$ is one if the i^{th} son has completed higher secondary education or has done 2 years of education after secondary, zero otherwise; $Below_Sec_i$ is one if the i^{th} son has education below secondary, zero otherwise. The dummies are compared to the reference category which includes sons who have completed BE, Btech and Diploma.

Table 3.2 reports the result of the logistic regression. We have reported variables which are significant at 1 percent and 5 percent level of significance. Two factors which significantly determines whether there exists job mobility among sons are employment sector of father and education of son. If the father is a public sector employee rather than private-sector employee, the log of odds in favour of mobility goes up by 2.7 units i.e., it is significantly more likely that the sons will be employed in a different sector of occupation than that of their fathers. Better pay opportunities and higher chances of growth might have motivated the sons to find employment elsewhere. The sons who obtained education in technical fields like engineering and technology are significantly more likely to be employed in a different sector of occupation than that of their fathers

compared to the sons who obtained education in the field of Medicine, Law and Finance or completed higher education & below. Thus, we can conclude that technical education widens the opportunity for the son to find jobs in varied fields. There is no significant difference in mobility between sons whose fathers are employed in the private sector as compared to the sons whose fathers are employed in the business sector. Caste, education of parents and job entry period of the son cannot explain whether or not sons will be in a different sector of occupation.

More interesting interpretation can be made if we consider the marginal effects as shown in the fourth column of *Table 3.2*. The marginal effect for a dummy variable is the difference between $Pr(Y_i = 1 | X, Father_{G_i} = 1)$ and $Pr(Y_i = 1 | X, Father_{G_i} = 0)$. If the father is a public sector employee, it increases the average probability of sons' being employed in a different sector than that of their fathers by 0.513. On the other hand, obtaining education in Medicine, Law or Finance decreases the average probability of sons being employed in a different sector than that of their fathers by 0.452. Overall, it is found that education of the son and father's sector of employment are two significant determinants of sons' overall mobility. *Table 3.2* is provided in the next page.

Table 3.2: Odds Ratios and Marginal effects of Logistic Regression

Variables	Coefficients	Odds Ratios	Marginal Effects $\left(\frac{\partial P}{\partial X_i}\right)$
Scheduled Caste (Ref: General Category)	0.338 (0.188)	1.402	0.068
Scheduled Tribe (Ref: General Category)	-.136 (0.640)	0.8727	- .024
Son's Job Entry Period 1992-2007 (Ref: Before 1991)	0.454 (0.158)	1.575	0.077
Son's Job Entry Period 2008-2012 (Ref: Before 1991)	0.532 (0.152)	1.702	0.093
Father in public sector	2.701*** (0.224)	14.904***	0.513***
Father in business sector	- .237 (0.226)	0.789	0.045
Years of Schooling of Father	- .0005 (0.019)	0.9995	- .00009
Years of Schooling of Mother	- .0133 (0.498)	0.987	- .0025
Son's Education (Medicine)	-1.98 (1.05)	0.137	- .452**
Son's Education (Graduates)	- 2.95** (1.35)	0.0053**	- .573***
Son's Education (Post-secondary but not Graduate)	- 1.81 (0.988)	0.164	- .420**
Son's Education (Below Secondary)	- 1.55 (0.981)	0.213**	- .368
Constant	- .689 (1.06)	0.933	-

Note: Logistic regression number of observations: 1549; Wald $\chi^2(12) = 337.49$; Prob > $\chi^2 = 0.0000$; Log pseudo likelihood = -705.59, Pseudo $R^2 = 0.2374$; The dependent variable is defined as $\text{Logit} = \ln\left(\frac{P_i}{1-P_i}\right)$, where, $P_i = E(Y_i = 1(MOB = 1)|X_i)$. Values in parentheses represent SE (Robust); ** and *** represent 5% and 1% level of significance.

Next, our objective is to check whether there was an improvement in skill-based employment when the son is working in a private-sector job while the father is a public sector employee. Additionally, those factors are also identified which determines the probability of sons being employed in a job with a particular skill level. From the previous regression analysis, we found that the sons belonging to fathers who are working in the public sector are more likely to be employed in a different sector of occupation. Hence, for the second regression analysis, we consider only those households where the father is a public sector employee. The sons can be employed either in the public sector or the private sector¹⁴. Skill is defined as the ability or competence present in an individual to perform a task¹⁵. *SKILL* variable is constructed using the National Classification of Occupation-1968 code¹⁶. The dependent variable for the regression analysis is the skill level (*SKILL*) of the son's sector of employment. It takes the value of one for white collar jobs, two for skilled/semi-skilled and three for unskilled. *Appendix 4* shows how we constructed three groups of the 2-digit occupation codes (*Hnatkovska, Lahiri and Paul, 2012*). Our objective is to identify the various factors that increase or decrease the chances for sons to belong to a particular skill level. We have used Multinomial Logit Regression. Skilled and semi-skilled occupations are considered as the reference group and all the coefficients are explained relative to the reference group. The coefficients corresponding to the independent variables measure the multinomial log-odds of choosing white collar jobs or unskilled

¹⁴ Business sector is excluded from the second regression as measurement of skill of the business sector is beyond the scope of this research.

¹⁵ There is no formal definition for skill till now.

¹⁶ Note that the NCO-1968 tries to group workers based on the similarities of tasks they perform.

jobs to skilled and semi-skilled jobs while holding all other variables in the model constant.

The multinomial Logit model¹⁷ is of the following form:

$$L_i = \ln \left(\frac{\pi_j(x_i)}{\pi_k(x_i)} \right) = \beta_1 + \beta_2 SC_i + \beta_3 ST_i + \beta_4 SKILL_FW_i + \beta_5 SKILL_FU_i + \beta_6 EDU_F_i + \beta_7 EDU_M_i + \beta_8 EDU_i + \beta_9 MOB_i + \beta_{10} Jobentry92_i + \beta_{11} Jobentry08_i + u_i \dots \quad (3.3)$$

where L_i is the ratio of odds of sons being employed in *white collar jobs* or *unskilled jobs* [$\pi_j(x_i)$] to the odds of being employed in *skilled/semi-skilled jobs* [$\pi_k(x_i)$]. x_i represents the set of explanatory variables and β_m are the coefficients.

Some literature shows that child's occupational status is significantly influenced by the parent's occupation (Azam, 2013; Majumdar, 2010). Thus, the skill level of the fathers' sector of employment is an interesting variable. The dummies for the skill of the fathers' job sector are defined as follows: $SKILL_FW_i$ takes the value one if the father of i^{th} son is employed in white collar jobs; otherwise, zero, $SKILL_FU_i$ takes the value one if the father of i^{th} son is employed in unskilled jobs; otherwise, zero. Fathers in skilled and semi-skilled jobs are taken as the reference group. The education variable, EDU_S_i , is measured by the years of schooling completed by the i^{th} son and not by the type of education, i.e., whether education obtained by the son is technical or non-technical (like it has been considered in the previous regression analysis) because the objective here is to examine whether, in general, increase in the years of schooling of the son also increases his chances of finding employment in high-skilled

¹⁷We have used Multinomial logit regression instead of ordered logit regression because comparing the various NCO—1968 codes, it can be clearly distinguished between unskilled jobs and skilled jobs. However, the same cannot be done between white collar and skilled and semi-skilled jobs. Therefore, ranking the three in order is not possible.

jobs. Thus, technical / non-technical education is not the variable of interest in the current regression analysis. Most literature on intergenerational mobility has used years of schooling as a measure of skill obtained by the son. Rest of the explanatory variables are the same as used in the previous regression analysis.

The model that estimates the likelihood of sons choosing white collar jobs over skilled and semi-skilled jobs shows that only three variables are significantly affecting the skill level of a sons' sector of employment; whether the father is employed in white collar occupation, the education of the son and job entry period of the son. The marginal effects give a clearer picture of the regression analysis.

Firstly, the probability that sons will be employed in white collar jobs rather than skilled/semi-skilled jobs increases by 0.220 if the father is also employed in white collar jobs. *Secondly*, an increase in the years of schooling of son increases the probability of being employed in white collar jobs rather than skilled or semi-skilled by 5.6 percentage points. The probability of working in white collar jobs rather than skilled/semi-skilled jobs increases by 0.291 and 0.234 if son enters the job market *between 1992 and 2007* and *between 2008-2012* respectively when compared to the sons who entered the job market in the before1991. In the post-reform period, more sons are employed in white collar jobs rather than skilled jobs. Thus, an overall improvement in the skill level of the sons' job sector is observed which might be a result of an increase in the educational attainment of the son over time. The mobility variable cannot explain whether the son will be in white collar jobs or skilled/semi-skilled jobs. Caste and parent's education have no significant role in determining whether sons will be employed in white collar jobs rather than skilled and semi-skilled jobs.

Similarly, *Table 3.3* shows that the probability of working in a skilled or semi-skilled job rather than unskilled job increases by 14 percentage points for sons who are employed in the private sector while fathers are employed in the public sector. Sons belonging to the scheduled castes and scheduled tribes are 12 and 23 percentage points respectively more likely to work in the unskilled sector rather than the skilled sector as compared to the sons belonging to the General category. The result indicates that affirmative action policies are somewhat failing to lift the socioeconomic status of the reserved categories. Reservation of seats in the field of education, job and parliament are one of the many actions taken by the government of the nation to change the fate of those who are historically exploited and discriminated against based on caste (*Borooah, Dubey and Iyer, 2007*). Increase in the years of schooling of son reduces the probability of working in unskilled jobs by 1.3 percentage points. The result is self-explanatory. As the years of schooling is taken as a proxy variable to measure the skill level of the son, which measures employability, increase in the years of schooling completed will increase his chances of finding employment in skilled or semi-skilled jobs. The skill level of the father's job also plays a significant role in determining the skill level for the son's job. It is 9.4 percentage points more likely that if fathers are doing unskilled jobs, sons will also find employment in unskilled jobs rather than skilled or semi-skilled jobs. The reason is probably that unskilled father will have less resource to invest in sons' future hindering his education. The period of entry in the job market, education of parent and whether the father is employed in white collar jobs cannot explain whether sons will be employed in skilled and semi-skilled jobs or unskilled jobs.

To summarise, the sons whose fathers are employed in public sector jobs show movement towards private-sector jobs when they find employment in a skilled sector

rather than the unskilled sector. Thus, we can conclude that mobile sons are also skilled. This is supported by the variable, EDU_S which measures the education of the son. Increase in the years of schooling completed by the son also increases his probability of being employed in high skilled jobs. Another factor that explains the higher probability of sons being employed in unskilled jobs rather than skilled jobs is the job sector of the father.

Table 3.3: Coefficients and Marginal effects of Multinomial Logit Regression

	Son in White Collar Job rather than Skilled/Semi-skilled Job		Son in Unskilled Job rather than Skilled/Semi-skilled Job	
Variables	Coefficients	Marginal effects $\left(\frac{\partial P}{\partial X_i}\right)$	Coefficients	Marginal Effects $\left(\frac{\partial P}{\partial X_i}\right)$
Father and Son are employed in Different Sector	-.532 (0.419)	-.046	-1.69*** (0.584)	-.136***
Scheduled Castes	-.198 (0.453)	-.053	1.25** (0.522)	.120**
Scheduled Tribes	-.359 (1.13)	-.977	1.98*** (0.759)	.234**
Son's Job Entry Period 1992-2007	13.1*** (0.851)	0.291***	1.45 (1.29)	.072
Son's Job Entry Period 2008-2012	12.7*** (0.921)	0.234***	1.85 (1.40)	.115
Father is in White Collar Job	1.58*** (0.484)	0.220***	0.271 (0.761)	-.004
Father is in Unskilled Job	-.718 (0.621)	-.119	0.961 (0.537)	.095**
Education of Father	-.003 (0.065)	0.002	-.115 (0.064)	-.010
Education of Mother	-.095 (0.052)	-.014	0.012 (0.069)	.003
Education of Son	0.385 (0.086)	0.056***	-.076 (0.068)	-.013**
Constant	-18.25 (972.1)	-	-1.21 (1.17)	-

Note: The Multinomial Logit Model number of observations = 212; Wald $\chi^2(20) = 371.73$, $\text{Prob} > \chi^2 = 0.0000$; Log likelihood = -148.172; Pseudo $R^2 = 0.2494$; The dependent variable is defined as p_{ij} : $\text{Pr}(y_j = 1 | \text{White collar jobs} = 1 | X_i) = 2(\text{unskilled jobs} = 1 | X_i)$; (skilled and semi-skilled as reference category); Values in parentheses represent SE (Robust); ** and *** represent 5% and 1% level of significance.

3.5. CONCLUSION

In this chapter, we have addressed three interrelated issues of intergenerational occupational mobility. Altham Statistic (*Long and Ferrie, 2013, 2007 and Ferrie, 2005*) which is an important measure of mobility is used to measure the degree of association between fathers' and sons' sector of employment. There is no significant difference in the degree of association between fathers' and sons' sector of employment in India among sons who entered the job market before 1991, between 1992 and 2007 and between 2008 and 2012. Over time, there is a decline in business sector employment. Secondly, the factors that increase or decrease the chances of the sons to work in different sectors from that of their fathers are identified. The odds of working in a different sector than that of the fathers is higher among sons whose fathers are employed in the public sector rather than in the private sector or business sector. Education of the son is another factor that increases the odds of working in a different sector. Sons with education in technical fields are more likely to be employed in a different sector than sons with education in non-technical fields. Furthermore, a lower level of education leads to immobility across sectors of employment among the sons. Thirdly, we check the level of skill achieved by a son when he moves away from his father's sector of employment. Sons who moved towards the private sector when fathers are employed in the public sector are more likely to be employed in skilled and semi-skilled jobs rather than unskilled jobs. However, this movement cannot explain whether sons will be white collar occupation or skilled and semi-skilled occupation. Although it is found that over time there is no significant difference in sectoral mobility between fathers and sons, it is evident that sons who entered the job market in the post-reform period are more likely to be employed in white collar jobs rather than skilled or unskilled sector, irrespective of the public sector or private sector. Increase in the

years of schooling of sons increases the level of skill acquisition by the son and therefore increases his chances of working in white collar jobs or skilled and semi-skilled jobs rather than unskilled jobs. Sons of fathers employed in unskilled jobs are more likely to remain in unskilled jobs. This shows that the lower the ability of the father to fund his son's career, the lower is his chance to move to a skilled/white-collar job rather than remain stuck with an unskilled job. Thus, the skill level of the fathers' sector of employment plays an important role in determining sons' skill level of the sector of employment. Furthermore, the implementation of reservation policy to widen the opportunities available to the scheduled castes and scheduled tribes is ineffective in placing the sons in skilled and semi-skilled occupations. Instead, sons belonging to the reserved category are more likely to work in unskilled jobs. The results suggest there is scope for some policy interventions. Education increases the chances of the sons to be employed in white collar jobs. Additionally, technical education widens the opportunity for the son to find employment in a different sector rather than remain in the father's sector of employment. Therefore, proper intervention in the education sector and the introduction of vocational or technical education is likely to play an important role in both increasing mobility and skill acquisition. Secondly, more affirmative actions are required to improve the skill acquisition among the reserved category; reservation in its present form itself doesn't seem to be sufficient. However, our study did not include income as a dimension which might affect mobility. Also, we did not measure how much of the mobility is due to the shrinkage in the public sector in the post-reform period. Both of these limitations can be incorporated into future research.

In our next chapter, we will examine the intergenerational occupational mobility across different social groups. To provide equal opportunities to the backward classes,

affirmative action programs are implemented in the public sector jobs (*Deshpande, 2005*). We are interested to examine whether adoption of such policies have increased the mobility in the backward classes compared to the General category.

APPENDIX A3

Table A3.1: Construction of the father-son sample

Total number of individuals surveyed in 2011 IHDS	204,569
<i>Father-son</i> : Total number of father-son pair in households where Father= Head	3175
<i>Son-Father Sample</i> : Total number of father-son pair in households where Son= Head and father's information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	60
<i>Brother-Nephew Sample</i> : Total number of father-son pair in households where information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	15
<i>Son-Grandchild Sample</i> : Total number of father-son pair in households where information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	85
Total Number of father-son pair	3335
Only Son	1874

Table A3.2: Distribution of Occupational Sector Between Father and Son Across Different Job Market Entry Period of Son

Panel 1: Son's job entry cohort: Before 1991

Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row %
Private Sector	63.2	29.4	7.9	16.7
Public Sector	10.5	41.2	4.8	9.3
Business	26.3	29.4	87.3	74.1
Column %	11.7	10.5	77.8	100

Note: the numbers are percentages of column sum

Panel 2: Son's job entry cohort: 1992-2007

Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row %
Private Sector	80.8	53.9	12.7	31.3
Public Sector	3.3	19.5	2.5	6.1
Business	16.0	26.6	84.8	62.5
Column %	14.8	20.7	64.5	100

Note: the numbers are percentages of column sum

Panel 3: Son's job entry cohort: 2008-2012

Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row %
Private Sector	77.8	51.2	21.5	38.3
Public Sector	2.2	29.1	2.3	9.9
Business	20.0	19.8	76.2	51.8
Column %	14.9	28.4	56.8	100

Note: the numbers are percentages of column sum

Appendix 3.3 Altham Statistic Measure

The fundamental measure of association between rows and columns in a mobility table is the cross-product ratios. In case of a 2 X 2 mobility table, an odds ratio or cross-product ratio measures the association between father's and son's sectoral choice of employment. Odds ratios not influenced by differences in marginal frequencies.

$$\begin{bmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{bmatrix} : \text{the odds ratio can be written as } \frac{P_{11}/P_{12}}{P_{21}/P_{22}}$$

However, for a table with more than two rows or columns, there is a large number of odds ratios and so to compare associations systematically between two tables, we use Altham Statistic (*Long & Ferrie 2013, Altham 1970 Altham & Ferrie 2008*). Altham Statistic takes account of all possible odds ratios and provides a comprehensive summary measure of association. Long and Ferrie (2013, p. 12) define Altham Statistic as “the sum of squares of differences between the logs of the cross-product ratios in two tables”. Altham Statistic is not affected by the differences in the marginal frequencies.

$$d(P, Q) = \left[\sum_{i=1}^r \sum_{j=1}^s \sum_{l=1}^r \sum_{m=1}^s \left| \log \left(\frac{p_{ij}p_{lm}q_{im}q_{lj}}{p_{im}p_{lj}q_{ij}q_{lm}} \right)^2 \right| \right]^{\frac{1}{2}}$$

Table A3.4: *Mobility Table for sons entering the job market before 1991 and between 1992 and 2007 with matched marginal frequencies (in percentages)*

Before 1991 Job Entry Period (P)					Between 1992-2007 Job Entry Period (Q)				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	63.2	29.4	7.9	16.7	Private Sector	80.8	53.9	12.7	31.3
Public Sector	10.5	41.2	4.8	9.3	Public Sector	3.3	19.5	2.5	6.1
Business	26.3	29.4	87.3	74.1	Business	16.0	26.6	84.8	62.5
Column Sum %	11.7	10.5	77.8	100	Column Sum %	14.8	20.7	64.5	100

Note: The values are percentages of the column sum

Table P with marginal frequencies of Table Q					Table Q with marginal frequencies of Table P				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	78.4	51.9	13.9	31.3	Private Sector	68.4	29.4	7.1	16.7
Public Sector	3.8	19.9	2.3	6.1	Public Sector	10.5	41.2	4.8	9.3
Business	17.8	28.3	83.8	62.5	Business	26.3	29.4	88.1	74.1
Column Sum %	14.8	20.7	64.5	100	Column Sum %	11.7	10.5	77.8	100

Note: The values are percentages of the column sum

Table A3.5: *Mobility Table for sons entering the job market before 1991 and between 1992 and 2007 with matched marginal frequencies*

1992-2007 Job Entry Period (P)					2008-2012 Job Entry Period (Q)				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	80.8	53.9	12.7	31.3	Private Sector	77.8	51.2	21.5	38.3
Public Sector	3.3	19.5	2.5	6.1	Public Sector	2.2	29.1	2.3	9.9
Business	16.0	26.6	84.8	62.5	Business	20.0	19.8	76.2	51.8
Column Sum %	14.8	20.7	64.5	100	Column Sum %	14.9	28.4	56.8	100

Note: The values are percentages of the column sum

Table P with marginal frequencies of Table Q					Table Q with marginal frequencies of Table P				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	84.4	55.8	17.4	38.3	Private Sector	71.8	49.2	16.3	31.3
Public Sector	4.4	24.4	4.1	9.9	Public Sector	1.9	23.6	1.5	6.1
Business	11.1	18.6	78.5	51.8	Business	26.3	26.9	82.2	62.5
Column Sum %	14.9	28.4	56.8	100	Column Sum %	14.8	20.7	64.5	100

Note: The values are percentages of the column sum

Table A3.6: Classification of occupation categories

Occupation Code (One digit)	Occupation description	Group
0-1	Professional, technical,	White collar
2	Managers	White collar
3	Clerical	Skilled/Semi-skilled
4	Sales	Skilled/Semi-skilled
5	Service and Labourers N.E.C.	Unskilled
7	Production, Transport equipment and labourers, excluding Labourers N.E.C.)	Skilled/Semi-skilled

Table A3.7: Descriptive statistics of the explanatory variables

Variables		Frequency	Percentages
Caste	General category	1516	84.79
	Scheduled caste	228	12.75
	Scheduled tribe	44	2.46
Age cohort (job entry period)	Pre-1991	152	8.47
	1992-2007	1385	77.16
	Post 2008	258	14.37
Sector of employment of father	Public sector	367	20.45
	Private sector	252	14.04
	Business Sector	1176	65.52
Mobility	Father and Son work in a different sector	515	28.69
	Father and Son work in the same sector	1280	71.31

Descriptive statistics for ordinal variables

Variables	Mean	Standard Deviation	Min	Max
Education of the Son	10.6	3.728	0	16
Education of Father	7.75	4.5	0	16
Education of Mother	4.50	4.49	0	16

Note: 0 = None, 1 = class 1 to 16 = above graduates

Chapter 4

Intergenerational Occupational Mobility in India Across Social Groups

4.1 INTRODUCTION

In this present chapter, the main question we address is: how far the choice between the public sector and private sector jobs has changed across two generations for the social groups who have enjoyed the benefits of the job reservation policy since the 1950s¹⁸. Among the various social groups, Scheduled castes and Scheduled tribes, former untouchables, were at the bottom of the caste hierarchy. They are economically backward classes and remained so since the beginning of the formation of the caste system. They are primarily employed in low-skill and low-paid jobs (*Hnatkovska et al, 2012*). One policy response to this problem was to implement an affirmative action program to the disadvantaged groups. If equality of opportunity across caste groups is desired then affirmative action is needed to give an opportunity to all the individuals belonging to the Scheduled Castes and Scheduled Tribes (*Deshpande, 2005*). It was hoped that such a program will in the longer term reduce the caste-based inequality thereby improving the standard of living of the disadvantaged groups. This program initially included special provisions to those who belonged to the Scheduled caste and Scheduled Tribe categories which include seat reservation in educational institutions,

¹⁸ Article 16(4) states that “Nothing in this article shall prevent the State from making any provision for the reservation of appointments or posts in favour of any backward class of citizens which, in the opinion of the State, is not adequately represented in the services under the State”

government jobs and several seat reservations at each level of the government. Thus, the Indian Government implemented reservation policy since 1950, originally intended for 10 years and had to be extended beyond 60 years. In the meantime, employment growth of India observed over the period 1970-71 to 2011-12 shows that there has been a high percentage of annual growth in the private sector employment as compared to the public sector employment (*Appendix 4.1*). If reservation policy is effective then it is expected that there will be a similar shift in the employment structure across social groups, that is, sons of fathers who are public sector employees will be employed in a different sector of occupation, irrespective of their castes. Our objective is to examine whether there is any difference in employment structure between different social groups and how much of this difference can be explained by *prevalence* and how much can be attributed to *interaction* (Hauser, 1980)¹⁹. It is expected that fluidity in the labour market will increase if reservation policy is serving its purpose.

We aim to study mobility between public and private sector jobs. Therefore, following the previous chapter, the mobility trend across three sectors of the economy is examined, namely, the private sector, public sector and business sector.

Another group of individuals who were brought under the purview of affirmative action programs since 1991 (recommended by Mandal Commission) are socially and educationally backward, known as the “*Other Backward Classes*”²⁰; however, the non-

¹⁹ The definition of prevalence and interaction is given in Chapter 3

²⁰ Mandal commission was established to examine the situation other sub-caste groups who are not included in Scheduled castes and Scheduled Tribes but are socially and educationally backward classes other than Scheduled Castes and Scheduled Tribes, who are socially and educationally backward classes known as Other Backward Classes (OBC). The Commission submitted a report recommending 27 percent of all posts in central government be reserved for these categories in addition to the already existing 22.5 percent quota for SC/ST categories. But it was not until 1990s that the recommendations of the Commission were implemented in Government jobs.

creamy layer is excluded from the benefits of the reservation policy. The group of beneficiaries is state-specific and they started receiving the benefits of the reservation policy only after the 1990s. Hence, *Other Backward Classes* have been combined with the *Forward Hindu, Brahmins and Other Castes* to form the *General category*. Therefore, for comparison, the sons and fathers are classified into three groups according to their castes: *General category* (includes Brahmins, Forward Hindus excluding Brahmins, Other Backward Classes and Others), *Scheduled Castes* and *Scheduled Tribes*. *Firstly*, we calculate the simple and adjusted measures of mobility to understand which social group exhibits higher mobility. *Secondly*, we use the Altham Statistic to identify whether there is any significant difference in the degree of association between son's and fathers' sectoral choice of occupation across the three social groups. *Thirdly*, there are several factors which affect the occupation decision of a son among which family endowment like parent's education & income of the household contributes largely in the determination of the future of the children (Ribeiro, 2017). Logistic Regression Analysis is used to examine whether such factors can explain the overall mobility observed in the son. Since the primary focus is to study the effectiveness of job reservation policy, multinomial regression analysis is used to examine the extent by which caste category along with other control variables can explain the likelihood of sons being employed in a different sector than that of their fathers who are employed in the public sector.

4.2.LITERATURE REVIEW

There exists a considerable amount of literature on social groups and reservation policy studies in the Indian context. *Deshpande (2005)* explains the rationale behind the reservation policy in her paper. The author also emphasises on proper policing of implementation of such policies. *Suresh Raj & Gokulraja (2015) & Rao (2000)*

discussed the merits and demerits of the reservation policy in their paper. Both believe that the reservation policy initially intended to be implemented only for ten years after independence is still active and no one has taken any step to change it or amend it because of the voting rights of the Scheduled caste and Scheduled tribes (nearly 33%). Any changes made to the policy will cost a lot for the politicians. *Rao (2000)* stated in his study that if reservation policy is continued indefinitely, it will promote caste consciousness among all castes and create a vested interest in remaining backward. Another study on reservation policy by *Rao (2008)* concluded that whatever be the outcomes of the policy measure, it will continue until the backward classes feel confident. It is the responsibility of the advanced sections to instil confidence among the oppressed. This was supported by *Borooah (2010)* in his paper where he established confidence multiplier based on the Keynesian theory of multiplier. He found that social exclusion adversely affects their productivity as class-consciousness lowers their confidence to perform. On the contrary, *Thorat (2005)* speaks in the support of anti-discriminatory policies and said that it is necessary to remove constraints imposed by caste discrimination on the labour market to improve efficiency and economic growth. Among the several other empirical studies on the effectiveness of reservation policy, worth-mentioning is the paper by *Prakash (2009)*. The author has used regression analysis on nationally representative household (NSSO) data to estimate the effects of the employment-based affirmative action policy for minorities on their labour market participation and found that the policy benefitted the Scheduled castes more than the Scheduled tribes by increasing their probability of acquiring salaried jobs.

Given the findings of the existing literature, our goal is to examine whether reservation policy has been effective across two generations. Few studies examined the

intergenerational occupational mobility across social groups in India. Worth mentioning is *Azam (2013)*, who used the IHDS (2005) data to compute Altham Statistic (*Altham and Ferrie, 2008*) and examined the intergenerational occupational mobility in India among sons who were born during the period 1945 to 1985. The author found that mobility is higher among sons who belonged to SC/ST categories and born during the period 1965 to 1984 when compared with the entire birth cohort from 1965 to 1984. Intuitively, these results assert that SC/STs were beneficiaries of the reservation policy; however, the paper has not made any attempt to prove it. The occupation was classified into four categories: white collar, skilled/semi-skilled, unskilled and farmers. *Reddy (2015)* also used the Altham Statistic to measure intergenerational occupational mobility in India. He concluded that even after adjusting for the change in occupational structure across the years (1983-2012), it is observed that there is a decline in the intergenerational occupational mobility over the years and the decline was sharper for the Scheduled Castes and Scheduled Tribes as compared to the non-SC/STs. With a similar classification of occupational category and with the help of transition matrices and mobility measures for the SC/STs and non-SC/STs, *Motiram and Singh (2012)* also concluded in the same line. They observed a considerable amount of intergenerational occupational persistence across all occupation categories with relatively higher persistence level for low-paid/low-skilled jobs. Furthermore, for SC/STs they observed downward mobility and higher intergenerational persistence. Their analysis used IHDS (2005) data. Another study by *Ray and Majumdar (2010)* has used NSSO rounds and found that mobility among the excluded castes is lower than that of the advanced castes indicating greater intergenerational persistence. However, *Hnatkovska, Lahiri and Paul (2012)* have used NSSO data to examine the intergenerational mobility rates to understand the

extent of lack of mobility of the historically disadvantaged groups with the rest of the workforce in terms of occupation and found that the sons of the SC/ST households have been switching occupations relative to their parents at an increasing rate and converging with the rates of the non-SC/STs in the process.

Our research work differs from the literature on intergenerational mobility studies in several ways. *Firstly*, existing literature has examined the intergenerational occupational mobility between father and son where an occupation has been classified according to the skill level, namely, white collar jobs, skilled/semi-skilled jobs, farmers and unskilled jobs. We are looking at the sector-wise classification of occupation. Our objective is to examine whether there is movement between the private sector and public sector employment for all three social groups; *secondly*, whether this movement can help to understand the effectiveness of the job reservation policy; *thirdly*, we identify the factors that contribute to the overall mobility of the son and the mobility of the sons whose fathers are public sector workers.

Section two explains the dataset that has been used for the analysis; section three discusses the empirical methodology; section four presents the results of Altham Statistics; section five discusses the econometric results and finally, section six gives the conclusion.

4.3. DATA AND METHODOLOGY

Data

We use data from the India Human Development Survey, 2011 (IHDS-II)²¹. The dataset contains individuals whose principal occupation is one of the following: salaried, small business, organised business and professional. Employment in the small business and organized business have been taken together as business sector employment. Rest of the individuals are classified as public sector employee or private sector employee. All casual workers and agricultural individuals are excluded from the data set. Due to the lack of data on married women staying elsewhere, daughters have been excluded. The age group of sons included is between 15 years to 64 years (working population age group definition by OECD is between 15 and 64 years). Separate dataset for different sets of father-son relationships that can be identified from a household was made and finally appended to make one single dataset containing unique information on father-son pair. The detail is provided in *Appendix 4.2*. The dataset contains 1896 identified father-son pair. Also, there is no observation among the Scheduled tribes for sons employed in the public sector when the father is a private sector employee, hence the origin is shifted from zero to one by adding one to each of the elements in all the contingency tables, which should not affect the difference in the degree of association between father and son sectoral choice of occupation across the contingency tables.

²¹ IHDS-II (2011-12) is a nationally representative survey of households jointly organised by the National Council of Applied Economic Research (NCAER), New Delhi and the University of Maryland. The IHDS-II covers 42,152 households in 384 districts, 1420 villages and 1042 urban neighbourhoods located across India.

Methodology

We have used the *Altham Statistic*²² measure to identify whether there exists any difference in the degree of association between father's and son's sector of employment across the three social groups: *Scheduled Castes, Scheduled Tribes and General Category*. Following the methodology of the previous chapter, *firstly*, we measure the simple and absolute measure of mobility. However, we still don't know which social group exhibits higher association between the father's and son's sector of employment, hence, we calculate the Altham Statistic.

$$d(P, Q) = \left[\sum_{i=1}^r \sum_{j=1}^s \sum_{l=1}^r \sum_{m=1}^s \left| \log \left(\frac{p_{ij} p_{lm} q_{im} q_{lj}}{p_{im} p_{lj} q_{ij} q_{lm}} \right)^2 \right| \right]^{\frac{1}{2}} \dots\dots\dots (4.1)$$

To summarise, Altham Statistic is a distance measure which provides two information about the social groups: *firstly*, if $d(P, Q) > 0$ and significant, it can be concluded that there is a significant difference in the degree of association between fathers' and sons' sectoral choice of employment; *secondly*, if $d(P, I)$ is greater than $d(Q, I)$, it is concluded that degree of association between fathers and sons' sectoral choice of occupation is lower in Table P as compared to Table Q, *Table I* represents perfect mobility, as this is a matrix containing ones in every cell indicating zero association between rows and columns.

Secondly, we use logistic regression analysis to identify the factors that increase or decrease the probability of sons being employed in a different sector than that of their fathers. *Thirdly*, we also use multinomial logit regression analysis to examine which

²² Altham statistic measure is explained in Chapter 3.

factors change the probability of sons being employed in the private sector or business sector rather than the public sector when the father is a public sector employee.

4.4 RESULTS

4.4.1. Summary of Contingency Tables, Mobility Measures and Altham Statistic Measure

In Table 4.1 we present the results of the mobility measures and Altham statistic. As mentioned earlier, Altham Statistic helps to identify the difference if any, in the degree of association between fathers and sons' sector of employment caused due to the difference in mobility impediments experienced by each social group.

Table 4.1: Summary Measures of Mobility Across Social Groups

Groups for comparison	M	M'	$d(P, I)$	$d(Q, I)$	$d(P, Q)$	$d_i(P, Q)$
	[1]	[2]	[3]	[4]	[5]	[6]
General Category (P) vs. Scheduled Castes (Q)	26.8	40.7	13.9***	11.01***	6.21	1.75
	44.8	29.9	(668)	(94.1)	(6.86)	(0.509)
General Category (P) vs. Scheduled Tribes (Q)	26.9	32.1	13.9***	7.9**	8.2**	3.05
	45.3	41.1	(668)	(9.5)	(10.6)	(0.565)

Note: Significance levels for the likelihood ratio chi-squared statistic G^2 (d.f. 4 for $d(P, I)$, $d(Q, I)$ and $d(P, Q)$: ***<0.01; **<.05; *<.10. G^2 is given in the parentheses.

Table 4.1 provides the summary results of the Altham Statistic²³. Altham statistic is calculated for scheduled caste and scheduled tribes, both compared to the general category sons because our goal is to examine the effectiveness of affirmative action policies. Therefore, higher mobility observed in scheduled castes and scheduled tribes can be partly attributed to the effectiveness of such policies. Mobility is defined as an

²³ The contingency tables used to compute measures of mobility M, M' and Altham Statistic are provided in Appendix 4.1.

event when fathers and sons are employed in different sectors of employment. Comparing the mobility outcomes between general category and scheduled castes (*Panel 1, Table 4.1*), it is evident from the values of M (*Column 1*) that sons belonging to the Scheduled castes are 18 percentage points more mobile than sons belonging to the General category. However, this difference could be a result of differences in occupational distribution irrespective of the castes. Following the structural change in the Indian economy since 1991, the job opportunities increased in the private sector for the population. Hence, we calculate the adjusted measure of mobility, M' , (*Panel 1, Column 2*) to examine whether the observed difference in M is due to the reduction in the level of impediments to mobility experienced by sons between two social groups. M and M' together give us a comprehensive understanding of the mobility pattern.

Adjusting the marginal frequencies of General category to match those of Scheduled castes, it is found that if the occupation distribution is same for both the groups, the sons of the Scheduled castes are only 4.1 percentage points more likely to be in a different sector of occupation than that of their fathers. Similarly, if the marginal frequencies of Scheduled castes are matched with that of the General category, the difference in mobility reduces to 3.1 percentage points. Thus, it may be concluded that the observed higher mobility among the Scheduled castes is partly due to difference in occupational distributions between general category and scheduled caste and partly due to reduction in impediments that obstruct mobility of son. However, M' fails to measure the significance of such a difference.

Next, it is examined whether the degree of association between fathers' and sons' sector of employment significantly differ across two social groups. Degree of association can change with the change in the factors that affect the mobility in the

labour market like better education, better information, reservation policies for the backward classes, degree of openness of the economy etc. The value of $d(P, Q)$ is positive but not significant at the acceptable range of significance. Therefore, we cannot reject the null hypothesis that there is no difference in the degree of association between father and son's sectoral choice of employment between the general category and scheduled caste. The two other Altham Statistics measures, $d(P, I)$ and $d(Q, I)$ are calculated. Both $d(P, I)$ and $d(Q, I)$ are significant at 1 percent level. Thus, we can say that there exists some amount of association between father and sons' sectoral choice of employment in both the social groups compared to a perfect mobility matrix. Additionally, the sons belonging to the scheduled caste category exhibit higher mobility than the sons belonging to the general category since the distance from the perfect mobility matrix is less for the former group. However, since $d(P, Q)$ is insignificant, we conclude that there is no significant difference in the underlying association between father and son's sector of employment across General Category and Scheduled Castes.

Comparing between sons belonging to the general category and scheduled tribe, the absolute measure of mobility, M (Table 4.1, Panel 2, Column 1) shows that the sons belonging to the Scheduled tribes are 18.4 times more mobile than sons belonging to the General category. In the absence of change in occupational distribution, this adjusted measure of mobility shows that this difference range between 14.4 (26.9 vs. 41.1) to 15.1 (32.1 vs. 45.3). Thus, even after adjusting for differences in occupational distributions between the two social groups, it is found that the Scheduled tribes are more mobile than the sons who belong to the general category. The Altham Statistics $d(P, I)$ and $d(Q, I)$ are both significant at 1% level of significance and $d(P, I)$ is greater than $d(Q, I)$. The Altham Statistic measure, $d(P, Q)$ (column 5, panel 2, Table

2) is statistically significant at 5 percent level i.e., the degree of association between fathers' and sons' sector of employment is significantly different between the two social groups, general category and scheduled tribes. Thus, we reject the null hypothesis of identical mobility and can conclude that there is a weaker association between the fathers' and sons' sectoral choice of employment among the Scheduled tribes as compared to the sons of General category. This difference in the underlying association is due to the difference in the tendency of sons to inherit fathers' occupation across the two social groups; no such difference is observed when only the off-diagonal elements are considered.

To summarise, there exists some amount of association between the fathers and sons' sectoral choice of employment in all three social groups. The degree of association is significantly different between sons belonging to the general category and the sons belonging to the scheduled tribes. The association is weak among the scheduled tribes as compared to the general category. There was no significant difference between the degree of association between the sons belonging to the general category and the sons belonging to the scheduled castes. However, this statistic doesn't identify the factors for which the difference is observed. Thus, in the next section, the regression analyses are used to identify which factors contribute to the overall mobility of the son. Caste category is also included along with other predictor variables to examine whether the inclusion of control variables change the mobility pattern observed so far.

4.4.2 ECONOMETRIC ANALYSIS

Descriptive Statistics

For an overview of the dataset used for econometric analysis, we explain the descriptive and summary statistics in this section. The dataset contains 1750 individuals with information about their sector of occupation, father's sector of occupation, caste categories, age of the son, years of schooling of the son and parent. We have considered the maximum years of schooling obtained by either of the parents as our proxy variable for parent's education. We did not include the income of the father as a predictor variable since there is no information on the father's income if he is employed in the business sector. One of the primary predictors is the occupational sector of the father. We examine which sons are more likely to work in a different sector of occupation as compared to their fathers' sectoral choice. For the occupational sector of the father, *Father_Govt.* is a dummy variable which takes the value one if the father is employed in Public/Government sector; zero otherwise. *Father_Private* is the dummy which takes the value one if the father is employed in the private sector; zero otherwise. The effect of the father's employment sector dummies on mobility are in comparison to those fathers who are in the business Sector. Secondly, caste is another primary variable as it examines the effectiveness of reservation policy on the probability of mobility among sons. For caste categories, the dummy variable *Scheduled Castes* takes the value one if the son belongs to the Scheduled Castes; zero otherwise and *Scheduled Tribes* takes the value one if son belongs to Scheduled Tribes; zero otherwise. The effect of belonging to these castes is explained in comparison to the sons belonging to the *General category*. The sons' choice of employment also depends on his socio-economic background which might influence the career decisions of the sons (Ribeiro, 2017; Erola, Jalonen and Lehti, 2016) like education

of father and occupation of the father. Both are included as predictors in the model. Both education of parent (*educ_parent*) and education of son (*YRS_SCHL*) are continuous variables and years of schooling of the individual is used as a proxy to measure education level. For the education of parent, the maximum of completed years of schooling between fathers and mothers is considered. The *Age* variable is a continuous variable which is used to examine the change in mobility trend with an increase in the age of the son. It is expected that younger sons will be more likely to work in a different sector than that of their fathers as compared to the older sons.

For the categorical variables, graphs have been used (*Appendix 4.4*) to get an overview of the distribution of mobility across caste and fathers' occupational sector. *Figure A4.4(a)* shows that highest percentage of mobility is observed among the sons belonging to the Scheduled Castes (43 percent), followed by Scheduled Tribes (39 percent) and least mobile are the sons who belong to the General Castes (26 percent). *Figure A4.4(b)* shows that percentages of sons employed in a different sector than that of their fathers are highest among sons whose fathers are in the public sector (80 percent), followed by sons of fathers who are employed in the private sector (19 percent) and business sector (16 percent). In other words, the highest mobility is observed among the sons whose fathers are public sector employees. We found a similar result in *Chapter 3*.

Table 4.2 shows the summary statistics for all the continuous predictor variables. It is observed that the mean years of schooling for sons who are employed in a different sector than that of their fathers is higher than those sons who are employed in the same sector like their fathers by 1.4 years. The education of parent is also higher by 1 year for those sons who are employed in a different sector as compared to the sons who are working in the same sector as that of their fathers. The mean age of a son who is in a

different sector of employment than that of their fathers is 26.7 years which is lower than the sons who are working in the same sector (27.4 years).

Table 4.2: Summary Statistics of the continuous predictors across mobility groups

Variable	Mobility	N	Mean	Standard Deviation	Min	Max
Years of Schooling of Son	Yes	493	11.37728	3.28826	0	16
	No	1257	10.09785	3.798357	0	16
Education of Parent	Yes	493	8.608519	4.189477	0	16
	No	1257	7.631663	4.377532	0	16
Age of Son	Yes	493	26.714	5.387933	15	53
	No	1257	27.42482	6.459153	15	60

Econometric Analysis

To identify which factors significantly affect the mobility of a son, we use logistic regression analysis. The dependent variable, *Mobility* is a binary variable. It takes the value one if the father and the son are in different sectors of occupation; otherwise, zero.

The Logit model is of the following form:

$$L_i = \ln L_i = \ln \left(\frac{P_i}{1-P_i} \right) = \beta_1 + \beta_2 SC_i + \beta_3 ST_i + \beta_4 Father_Govt_i + \beta_5 Father_Private_i + \beta_6 educ_parent_i + \beta_7 YRS_SCHL_i + \beta_8 Age_i + u_i \dots \dots \quad (4.2)$$

where L_i measures the ratio of the probability that a son will be in a different sector of occupation than that of their fathers to the probability that both father and son will be in the same occupational sector. Exponentials of the estimated Logit coefficients gives the odds ratios of each predictor.

Table 4.3 displays the marginal effects of variables that significantly affect the mobility of the son. We report only those variables which are significant at 1 percent and 5 percent level of significance. The factors which positively affect the overall mobility of the son are father's sector of employment, caste category of the son and education of son. However, the age of the son negatively affects their mobility. The likelihood of sons being employed in a different sector is on average 61.6 percentage points higher among sons whose fathers are in the public sector as compared to the sons whose fathers are in the Business sector. The result is significant at 1 percent level. Better pay opportunities and job security enjoyed by the fathers might encourage the sons to find employment elsewhere and try out new avenues. However, there is no significant difference between sons whose fathers are private-sector employees and sons whose fathers are in the Business sector.

*Table 4.3: Odds Ratios and Marginal Effects of Logistic Regression
(Response variable: Overall Mobility)*

Logistic Regression		
Dependent variable: Mobility = 1 if father and son are employed in different sectors; otherwise, 0		
Variables		Marginal Effects
Occupation sector of father (Ref: Business Sector)	Government Sector	0.616*** (0.028)
	Private sector	0.024 (0.026)
Caste (Ref: General category)	Scheduled castes	0.059** (0.030)
	Scheduled Tribes	- 0.027 (0.055)
Education of Son		0.010*** (0.003)
Age of the Son		-0.004** (0.0016)

Note: ***: 1% level of significance; **: 5% level of significance; Number of observations: 1750;
LR Chi2(7) = 500.7; Prob.>Chi2= 0.000; Pseudo R² = 0.2406

Similarly, the likelihood of sons and fathers working in the different sector is 5.94 percentage points higher among sons who belong to the Scheduled castes relative to the sons who are in General Category and the result is significant at 5 percent level. However, there is no significant difference in the overall mobility between sons belonging to the Scheduled tribes and General category. This result partially asserts the effectiveness of the job reservation policy in favour of the Scheduled caste category as the likelihood of sons not following fathers into the same occupational sector is higher among the Scheduled castes rather than among the sons who belong to the General category. If the sons acquire more education, they are significantly more likely to be employed in a different sector of occupation than that of their fathers as compared to the sons with lower levels of education. On the contrary, as the age of the son increases, the likelihood of being employed in a different sector than that of their father reduces. We have displayed this negative relationship with the help of margins plot in *Appendix A4.5*. There is no significant difference in mobility if the education of father increases.

Next, the objective is to examine whether caste-based reservation policy implemented while recruiting in public sector jobs is effective or not. From the above logistic regression analysis, it was found that sons belonging to fathers who are working in the public sector are significantly more likely to be employed in a different sector of occupation as compared to sons whose fathers are in the Business sector. It is expected that if the affirmative action policies are effective, then sons belonging to Scheduled castes or Scheduled tribes will find employment in a non-government sector, unlike fathers. Hence, for the second regression analysis, only those sons have been considered whose fathers are public sector employees. The sons are employed either in the government sector, business sector or private sector. Additionally, the model

also identifies which factors, other than caste category, can explain the mobility observed among the sons of fathers who are working in the public sector. Multinomial Logit Regression is used. The predictors are considered significant at 1 percent and 5 percent level of significance. The marginal effects are discussed in this section.

The multinomial Logit model is of the following form:

$$L_i = \ln \left(\frac{\pi_j(x_i)}{\pi_k(x_i)} \right) = \alpha_1 + \alpha_2 SC_i + \alpha_3 ST_i + educ_parent_i + \alpha_8 YRS_SCHL_i + \alpha_9 Age_i + u_i \quad \dots \dots \dots (4.3)$$

where L_i is the ratio of odds of sons being employed in the private sector or business sector $[\pi_j(x_i)]$ to the odds of being employed in the public sector like their fathers $[\pi_k(x_i)]$. Most of the explanatory variables used for this model are same as the logistic regression model in *Table 4.3*. Fathers' sector of employment is excluded since we have restricted our sample data to those fathers who are working in the public sector. The predictors which are significant at 1 percent and 5 percent level of significance are reported.

Table 4.4 shows that the relative log odds of being employed in the private sector rather than public sector significantly reduces by 2.25 units if the son belongs to the scheduled tribe category. However, there is no significant effect of education of son, education of parent and age of the son in explaining the relative log odds of the son being employed in the private sector rather than the public sector. Similarly, the relative log odds of sons being employed in the business sector rather than the public sector significantly decreases if the son belongs to the Scheduled Tribes category. A unit increase in the years of schooling of son reduces the relative log odds of being employed in the business sector rather than the public sector by 0.203 units. Since

public sector jobs are mainly administrative or clerical, higher education will encourage sons to seek employment in public sector rather than business sector. Similarly, the relative log odds of being employed in the business sector rather than the public sector reduces by 0.07 units for the older sons compared to the younger sons.

Table 4.4: Coefficients of Multinomial Logit Regression

VARIABLES		<i>Son in Private Sector</i>	<i>Son in Small Business</i>	<i>Son in Organised Business</i>
		Coefficients	Coefficients	Coefficients
Caste Categories (Ref: General Caste)	Scheduled Castes	0.506 (0.404)	0.09 (0.473)	0.827 (0.93)
	Scheduled Tribes	- 2.27*** (0.693)	- 2.1*** (0.819)	- 0.066 (1.2)
Age of Son		- 0.059 (0.034)	- 0.068** (0.040)	- 0.114 (0.09)
Education of Parent		- 0.051 (0.045)	0.008 (0.052)	0.400*** (0.005)
Education of Son		- 0.033 (0.057)	- 0.199*** (0.064)	- 0.247** (0.04)
Constant		3.5*** (1.17)	4.4*** (1.29)	- 0.78 (3.1)
Observations		323	323	323

Note: ***: 1% level of significance; **: 5% level of significance; Number of observations: 323; LR chi2(10): 55.54; Prob>Chi2: 0.000; Pseudo R²: 0.0778. Standard errors are given in the parentheses.

The marginal effects of the predictor variables provide further clarity. *Table 4.5(a) – 4.5(d)* display the set of predictor variables which significantly affect the probability of son's choice of employment.

Table 4.5: Marginal Effects of Multinomial Logit Regression

<i>Table 4.5(a): Marginal effects of predictors on the choice of employment: Sons in Private Sector and Fathers in Public Sector</i>		
<i>Variables</i>		<i>Marginal Effects (dy/dx)</i>
Caste (Ref: General category)	Scheduled castes	0.117 (0.06)
	Scheduled Tribes	-0.327*** (0.102)
Education of parent		-0.017** (0.007)
Education of Son		0.020** (0.009)

Table 4.5(a) shows that the average marginal effect of each predictor variable on the likelihood of sons being employed in the private sector when the father is a public sector employee. Caste category and education of parent negatively affects the likelihood of sons being employed in the private sector rather than the public sector. The likelihood of sons being employed in the private sector is 32.7 percentage points lower among those sons who belong to the Scheduled Tribes category as compared to the sons who belong to the General Category and it is significant at 1 percent level. In other words, sons of scheduled tribes are more likely to be in the public sector jobs like their fathers. Education of parent has a positive impact on the with the increase in the years of schooling of the father, the probability of sons being employed in the private sector reduces by 1.7 percentage points. Father's employment in the public sector provides job security and income security for the household. Higher education among fathers might help the son to prepare and aim for public sector jobs which are based on competitive examinations. The only variable which significantly has a positive impact on the choice of employment in the private sector is the education of the son. Increase in the years of Schooling of son increases the probability of son being

employed in the private sector rather than the public sector by 2 percentage points, keeping all other predictors unchanged. Increase in education improves the skill level of the son and hence, increases their opportunity to find employment in alternative career fields. Therefore, they might seek employment in skill-based private-sector jobs. The age of son plays no significant role in explaining whether sons will be employed in private or public sector jobs.

Table 4.5(b) shows the average marginal effects of predictor variables on the likelihood of both father and son being employed in the Public Sector. Only two of the variables, caste category and age of the son have positively affected the likelihood of sons being employed in the public sector like their fathers. If sons belong to the Scheduled Tribes category, then the probability of being employed in the public sector like fathers is 42.9 percentage points higher as compared to the sons who belong to the General category.

Table 4.5(b): Marginal effects of predictors on the choice of employment: Both Fathers and Sons are in Public Sector

Variables		Marginal Effects (dy/dx)
Caste (Ref: General category)	Scheduled castes	- 0.048 (0.049)
	Scheduled Tribes	0.429*** (0.120)
Age of the Son		0.009** (0.005)

Table 4.5(c) shows the average marginal effect of variables which significantly explains the likelihood of sons being employed in the small business sector when the father is a public sector employee. Only the years of schooling of the son has a significant negative impact on the likelihood of sons being employed in small business rather than the public sector. With the increase in the years of schooling of sons, they

are 2.8 percentage points less likely to be in the business sector rather than the public sector. With a higher level of education, they are capable of securing jobs in lower-risk sectors where income flow is more or less stable, unlike small business.

Table 4.5(c): Marginal effects of predictors on the choice of employment: Sons are in Small Business and Fathers are in Public Sector

Variables	Marginal Effects (dy/dx)
Education of Son	-0.0288*** (0.007)

Table 4.5(d) shows the average marginal effect of variables which significantly explains the likelihood of sons being employed in organised business when the father is a public sector employee. In this case, only the education of parent has a significant positive impact on the likelihood of sons being employed in the organised business. Increase in the education of parent is likely to increase the earning of the household. Income earned by the parent might encourage the son and provide financial support to venture out in the organised business sector. More educated parents may also take a more enlightened and hence encouraging view about the son having his own business.

Table 4.5(d): Marginal effects of predictors on the choice of employment: Sons are in Organised Business and Fathers are in Public Sector

Variables	Marginal Effects (dy/dx)
Education of parent	-0.011** (0.016)

To summarise, among all the predictor variables, it was found that the education of son positively affects the probability of sons being employed in the private sector and negatively affects the probability of being employed in the small business sector. We also found that if the son belongs to the scheduled tribe category, then they are more

likely to be employed in the public sector rather than the private sector or small business sector. Lastly, we also found that older sons are more likely compared to the younger sons to be employed in the public sector rather than the private sector.

4.5 CONCLUSION AND POLICY RESPONSES

This chapter explains the various aspects of intergenerational occupational mobility in India, observed among sons who belonged to any one of the three social groups: General category, Scheduled castes or Scheduled tribes. *Firstly*, using *IHDS - II (2011-12)* data, we examine whether there exists any difference in the degree of association between father and son's sectoral choice of employment across social groups; and if it exists how much of the difference is attributed to the change in the occupational distribution irrespective of caste and how much is due to the removal of impediments to mobility like education and training, increased opportunity due to reservation policies and et cetera. Therefore, it identifies which social group exhibits the highest mobility. *Secondly*, we also identify the factors that increase or decrease the chances of the sons to work in different sectors from that of their fathers. *Thirdly*, by using the dataset containing sons whose fathers are employed in the public sector, it was analysed whether mobility can justify the effectiveness of the job reservation policy for the Scheduled castes and Scheduled tribes. If higher mobility is observed among the backward classes relative to the general category, then it can be inferred that the change is partly due to the effectiveness of reservation policy. Using the Altham Statistic measure (*Long and Ferrie, 2013, 2007 and Ferrie, 2005*), it is found that there is no significant difference in the association between father and son's sectoral choice of employment between General category and Scheduled castes. However, significant

difference is observed between the sons belonging to the General category and Scheduled tribes. Also, scheduled tribe sons exhibit higher mobility than the sons belonging to the general category. However, the logistic regression analysis shows that after controlling for socioeconomic variables like education of parent, age of son and education of son, overall mobility is higher among the Scheduled Caste sons as compared to the sons of General category. Note-worthy were the sons of those fathers who are employed in the public sector. They are more likely to work in the private sector or business sector rather than the public sector like their fathers. Using the multinomial logit regression results, we can also infer that sons who belong to the scheduled tribes' category are significantly more likely to remain in public sector employment than the sons of the General category or Scheduled castes. Hence, it can be concluded that the higher mobility observed in Scheduled Tribes using Altham Statistic measure was due to those sons who moved into public sector employment while fathers are employed in the non-public sectors. Increase in the years of schooling of sons increases the overall probability of finding employment in a different sector than that of their fathers. Education also increases the chances of sons of public sector employee to find employment in the organised private sector rather than public sector like their fathers. On the other hand, an increase in the education of son decreases the likelihood of finding employment in the small business sector rather than the public sector. Hence, we can conclude that the implementation of reservation policy to widen the opportunities available to the scheduled castes and scheduled tribes is effective only in case of the Scheduled castes as they are more likely to be employed in a different sector than that of their fathers. To observe a similar trend among the sons who belong to the scheduled tribe category, we might need the reservation policies to be effective for more than two generations. In other words, the results suggest that

although reservation policy has shown some positive results in favour of the Scheduled castes, protection of the Scheduled tribes is required to improve their chances in the labour market. Additionally, education of an individual should be emphasised at all level of the social strata to increase the opportunity to find employment in an alternate sector rather than the public sector. Therefore, proper intervention in the education sector is likely to play an important role. However, our chapter has limitations. We did not look at the income variable and its impact on the sectoral choice of employment due to lack of data on parent's income if he is employed in the business sector. This provides a scope for future research work to incorporate income variable in the study.

In chapters *three* and *four* we have examined intergenerational occupational mobility over time and across social groups. Intergenerational educational mobility is another indicator of equality of opportunity. Migration is an important phenomenon in the Indian context. International studies (discussed in next chapter) on migration and a child's development have shown that children of migrated households are at a disadvantage in many ways (education is one such avenue) when compared to the non-migrant children. Hence, in our next chapter we examine intergenerational educational mobility among the migrant and non-migrant sons.

Table A4.1: Construction of the father-son sample

Total number of individuals surveyed in 2011 IHDS	204,569
<i>Father-son</i> : Total number of father-son pair in households where Father= Head	3175
<i>Son-Father Sample</i> : Total number of father-son pair in households where Son= Head and father's information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	60
<i>Brother-Nephew Sample</i> : Total number of father-son pair in households where information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	17
<i>Son-Grandchild Sample</i> : Total number of father-son pair in households where information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	101
<i>Brother-Father Sample</i> : Total number of father-son pair in households where information is matched exploiting <i>relationship code</i> and <i>ID of Father</i>	21
Total Number of father-son pair	3374
Only Son	1896

Note: This data set has more observations as we could incorporate more father-son pair unlike the dataset if the first chapter.

Table A4.2: Intergenerational Occupational Mobility between sons of General Category and Scheduled Castes

General Category (P)					Scheduled Castes (Q)				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	79.9	51.8	12.9	29.0	Private Sector	78.0	61.5	16.8	45.6
Public Sector	2.2	21.8	2.2	5.6	Public Sector	8.0	15.4	4.7	9.3
Business	17.9	26.4	85.0	65.3	Business	14.0	23.1	78.5	45.2
Column Sum %	13.9	17.6	68.5	100	Column Sum %	20.2	36.7	43.1	100

Note: The values are percentages of the column sum.

Table P with marginal frequencies of Table Q					Table Q with marginal frequencies of Table P				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	84.0	58.2	16.8	45.6	Private Sector	74.1	56.7	12.8	29.0
Public Sector	2.0	20.9	2.8	9.3	Public Sector	7.1	13.4	3.3	5.6
Business	14.0	20.9	80.4	45.2	Business	18.8	29.9	83.9	65.3
Column Sum %	20.2	36.7	43.1	100	Column Sum %	13.9	17.6	68.5	100

Note: The values are percentages of the column sum.

Table A4.3: Intergenerational Occupational Mobility between sons of General Category and Scheduled Tribes

General Category (P)					Scheduled Tribes (Q)				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	79.9	51.8	12.9	29.0	Private Sector	50.0	16.7	26.1	24.5
Public Sector	2.2	21.8	2.2	5.6	Public Sector	16.7	54.2	17.4	34.0
Business	17.9	26.4	85.0	65.3	Business	33.3	29.2	56.5	41.5
Column Sum %	13.9	17.6	68.5	100	Column Sum %	11.3	45.3	43.4	100

Note: The values are percentages of the column sum.

Table P with marginal frequencies of Table Q					Table Q with marginal frequencies of Table P				
Father's Occupation					Father's Occupation				
Son's Occupation	Private Sector	Public Sector	Business	Row Sum %	Son's Occupation	Private Sector	Public Sector	Business	Row Sum %
Private Sector	66.7	25.0	13.0	24.5	Private Sector	51.8	25.4	25.3	29.0
Public Sector	16.7	62.5	13.0	34.0	Public Sector	3.6	16.5	3.3	5.6
Business	16.7	12.5	78.3	41.5	Business	45.1	58.1	71.3	65.3
Column Sum %	11.3	45.3	43.4	100	Column Sum %	13.9	17.6	68.5	100

Note: The values are percentages of the column sum

Figure A4.4 (a): Mobility Distribution across Caste Categories

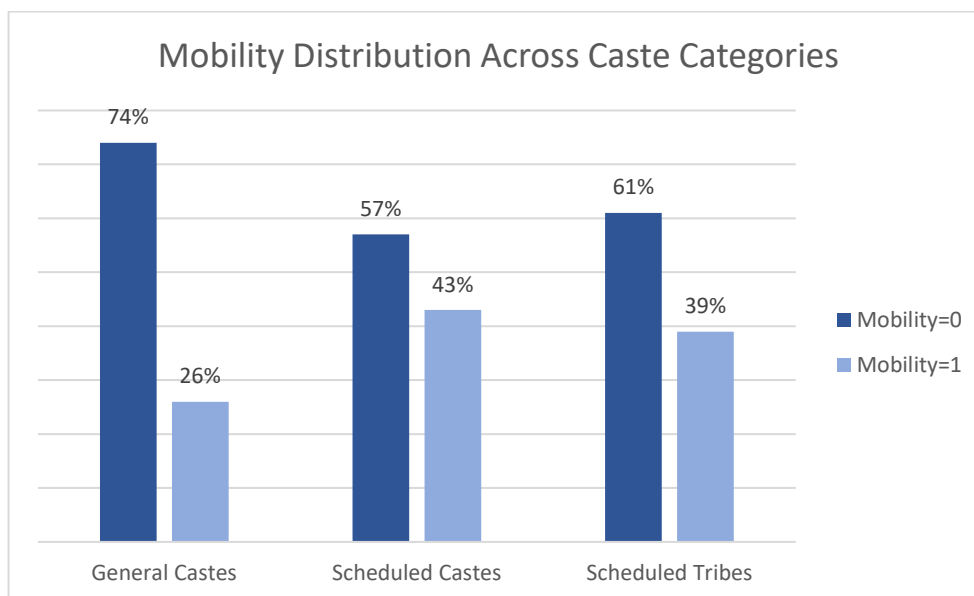


Figure A4.4 (b): Mobility Distribution across Occupation Sector of Father

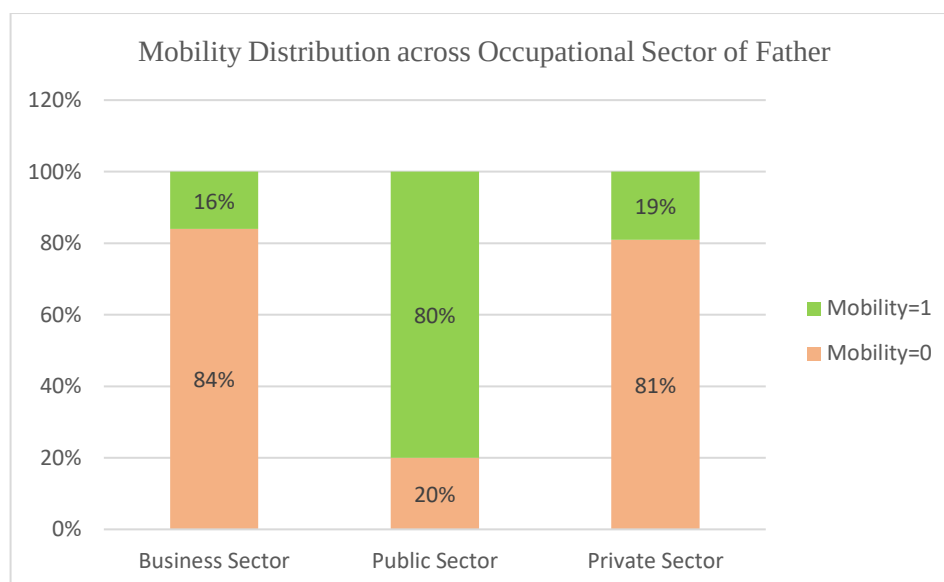
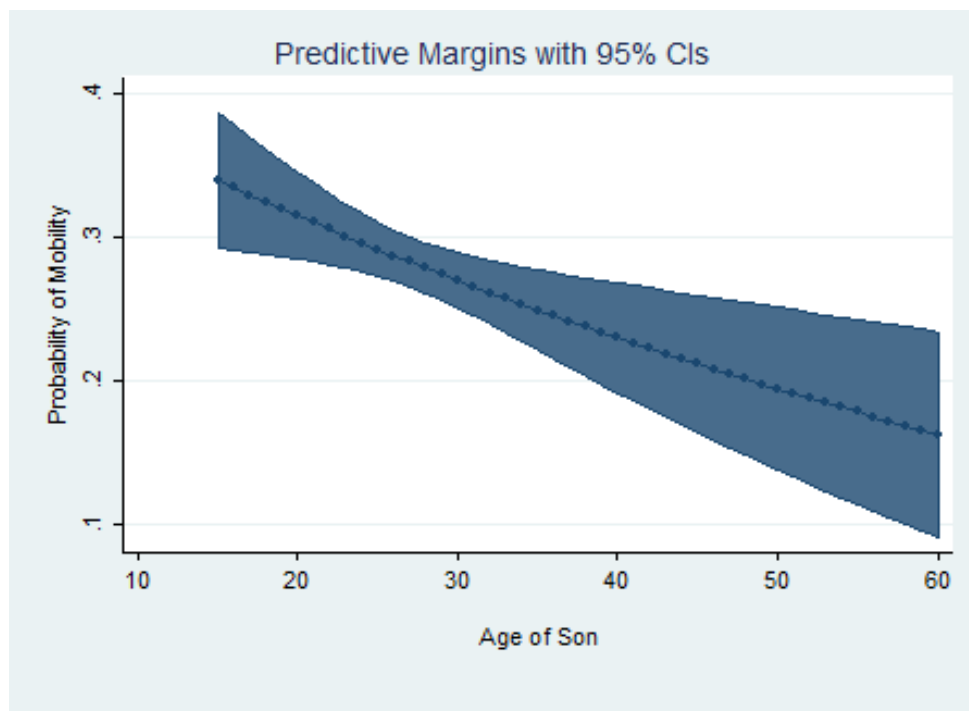


Figure A4.5: Average Marginal effect of age of son on mobility



Chapter 5

Intergenerational Educational Mobility among Migrants and Non-Migrants in India

5.1. INTRODUCTION

This chapter primarily addresses the following question: To what extent does migration history affects intergenerational educational mobility rate for sons? Additionally, we also identify the socio-economic factors that affect the years of schooling for each group of sons classified based on their immigration history. Migration and its impact on the children of the migrants is a broadly discussed topic across the globe. Several works of literature that study the effect of parental migration on the child's development show that migration of parents imposes both benefits and disadvantages on the development of a child (*Cebotari et al 2016, Antman 2012, Kroeger and Anderson 2012, Jordan and Graham 2011, Resosudarmo and Suryadarma 2011 and Bakker et al 2009*). Children either move to the new destination with their parents or they are left behind at the place of origin to be taken care of by other family members. On one hand, if children are left behind, it is observed that remittances sent to the family significantly increase the educational attainment irrespective of their gender compared to the children of non-migrant parents; on the negative side, the parent's absence increases the risk of depression among the children compared to the children of non-migrant parents. On the other hand, if children move with the parent to the place of destination, it disrupts their normal life. The child faces

discrimination against the native-born children and it adversely affects the continuity of education (*Kong & Meng, 2010*). In the Indian context, migration is a historical phenomenon and it plays an important role in shaping up the social, economic and political life of the people (*Tumbe, 2018*). According to the Census Data, there has been a rise in the total migrants from 1991 to 2011 (*Appendix 1*). Total migrant grew at a rate of 3.4 percent per annum between 1991 and 2001 and at 4.6 percent per annum between 2001 and 2011. Inter-district migration was highest, followed by intra-district and inter-state. If the development of a migrant's child is compromised and they fail to reach their potential, then they become an economic and social drag. Thus, the impact of migration on child's development is an important area of research in the Indian context as well.

One way of examining the impact of migration on child's development is through intergenerational mobility studies. It is also a measure of equality in opportunity (*Latif, 2019; Kishan, 2018*). Education is one of the principal avenues through which socio-economic advantages or disadvantages are passed on to the children from their parents. Better-educated parents are more aware of the long-term benefits of education and therefore invest more in the education of their children. Also, parents with more education tend to have higher earnings which makes them financially more able to invest in their children's education compared to the parents with low education and income (*Henderson and Berla, 1994; Desforges & Abouchaar, 2003*). Therefore, we are interested to examine the degree of educational mobility among the sons who migrated with their parents compared to the non-migrant sons.

5.2. LITERATURE REVIEW

There exists a considerable amount of literature on intergenerational educational mobility as education plays an important role in determining individual mobility and life chances (*Liang and Chen, 2005*). *Hertz et al. (2007)* have used the World Bank data to estimate the intergenerational persistence of educational attainment for 42 nations for 50 years and found that across these countries intergenerational persistence has decreased over time. *Latif (2019)* examined the trends in intergenerational educational coefficient in Canada and found that sons with less-educated fathers are more likely to be less-educated. *Kishan (2018)* uses the nationally representative *IHDS (2011-12)* data to study whether intergenerational mobility has materialised in India. He found there is a high degree of intergenerational persistence in education and this persistence has reduced at the higher end of the son's educational distribution. Additionally, comparing across social groups he found that gap in educational mobility has reduced between the upper caste and SC/STs but not with the other backward classes. *Azam and Bhatt (2015)* have also used *IHDS* data to examine how much of the intergenerational educational mobility in India has changed over time. Like *Hertz et al. (2007)*, they too found that over time there is a significant increase in educational mobility. They also measured the mobility rate at different levels of father's educational distribution and found that sons of highly-educated fathers are more likely to achieve less education than that of their fathers and sons of fathers with low education are more likely to achieve greater education. Another study by *Ray & Majumder (2010)* has used *NSSO* data for the years 1993 and 2004 and found upward mobility among the sons in terms of educational attainment; however, the upward mobility found is lower for the socially backward classes as compared to the advanced classes. To summarise, intergenerational stickiness in education is observed in most

of the literature and this stickiness was higher among sons belonging to backward classes than advanced classes.

Given the findings of the existing literature, we aim to examine whether intergenerational educational mobility differs among non-migrant sons with that of migrant sons. There exists a vast number of international studies. *D'Addio (2007)* pointed out that other than parents' education several other factors can affect a child's educational attainment such as occupational status of the parents and the migration status. The author used *Pisa 2003*²⁴ data and found that non-migrant children score better than the first-generation and the migrant children. *Chiswick and Deb Burman (2004)* have analysed the Population Survey Data, 1995 for the United States to examine the difference in educational attainment across migrant generations. They found second-generation American adults have the highest level of schooling compared to the non-migrant or first-generation adults. *Lan and Liu (2019)* have also found similar trends in Hong-Kong. *Glick et al. (2007)* have studied the US population to examine whether generation status affects early school performance. They found a significant effect of generation status on the child's academic performance. Non-migrant children are more educated than the migrant children and the gap diverges. This finding contradicts the previous results discussed. A similar study by *Clark and Nguyen (2010)* in Australia has found a strong link between parental and youth education within native-born families compared to the children who belonged to migrant families. Another study by *Aydemir et al. (2013)* has used the Canadian Census data for the 2001 and found that the association between parent and child's years of schooling is weaker among migrant households rather than the Canadian-born

²⁴ PISA or the Programme for International Student Assessment is a study by the Organisation for Economic Co-operation and Development (OECD) in member and non-member countries to measure the performance of 15-year-old students on mathematics, science and reading.

children of Canadian-born parents. Our study is different from the rest of the literature as we are first to examine the intergenerational educational mobility among migrant and non-migrant sons in the context of India.

In section two, we explained the data set that has been used for the analysis; in section three the methodology has been discussed; section four presents the results and finally, section five gives the conclusion.

5.3. DATA & METHODOLOGY

Data

We use data from the India Human Development Survey, 2011 (IHDS-II). Since the objective of the study is to examine intergenerational educational mobility for migrant and non-migrant sons, we classify them into three groups based on their immigrant history. *Non-migrant sons* are defined as those sons who are born to non-migrant parents. They are residing at their current place of residence for more than 90 years. We are interested to examine how many generations it takes for a migrant son to exhibit higher educational mobility. Therefore, we classify the migrant sons into two groups: *First-generation* includes those sons who are born outside their current place of residence and migrated after birth. Finally, *second-generation* includes those sons who are born at their current place of residence to migrated²⁵ parents. In our dataset 77.1 percent of the dataset comprises of non-migrant sons, 11.8 percent of the sons belong to the first-generation and remaining 11.1 percent belong to second-generation. Following (Borjas, 1993), we have included sons who are between 25 years and 64

²⁵ According to the Census of India, “migrant is usually defined as a person who has moved from one politically defined area to another similar area. In Indian context, these areas are generally a village in rural and a town in urban. Thus, a person who moves out from one village or town to another village or town is termed as a migrant provided his/her movement is not of purely temporary nature on account of casual leave, visits, tours, etc.”

years. Due to age flooring, only those sons are included who have completed their schooling while the age ceiling prevents the occurrence of selection bias due to the difference in survival rates. The sample consists of 5967 identified father-son pair.

Methodology

Following the literature on intergenerational mobility studies (*Chiswick & DebBurman, 2004; Behrman et al. 2001; Hertz, 2007; Azam 2016*), we use the methodology of regression analysis. As explained in the above section, there are three groups of sons in the dataset based on their migration history: *Non-migrant sons, First-generation sons and Second-generation sons*. *Years of schooling* is taken as a proxy variable for education. IHDS collects completed years of schooling for each individual whereas NSSO collects information about *completed levels of education*. Therefore, the former is a better proxy for education than the latter. The following methodologies are used for our analysis: *firstly*, we regress the years of schooling of a son on the years of schooling of father and mother to calculate the degree of intergenerational educational coefficient for both non-migrant and migrant sons. The regression model is as follows:

$$S_i = \beta_1 + \beta_2 F_i + \beta_3 M_i + \varepsilon_i \quad \dots\dots\dots (5.1)$$

where, S_i denotes the completed years of schooling of i^{th} son; F_i denotes the completed years of schooling of the father of the i^{th} son and M_i denotes the completed years of schooling of the mother of the i^{th} son; and ε_i measures the unobserved factors like the ability of the son. β_2 and β_3 measures the degree of association between father and son's educational achievements. In other words, it measures the change in completed years of schooling of a son due to one-unit change in parents' education.

This is termed as *Intergenerational Education coefficient (IGC)*. A low IGC will denote a weak association between parents' and son's educational attainment. In other words, regardless of the parents' educational background, every son has equal chances to attain high or low levels of schooling. Similarly, a high IGC will denote strong association between parents' and son's educational attainment; that implies, children of highly-educated parents are more likely to be highly educated compared to the children of less-educated parents. Therefore, $(1 - IGC)$ measures the degree of intergenerational educational mobility. A son is considered mobile when parents' education has less impact on the son's educational attainment. The higher the value of IGC, lower will be the degree of education mobility and vice versa. The values of IGC are compared across the three groups to identify whether migrant sons exhibit lower dependence on parents' education compared to the non-migrant sons. Additionally, we examine which generation of migrant sons exhibit greater mobility.

Secondly, to check whether the regression coefficients of father and mother's completed years of schooling overestimate the intergenerational educational coefficients, socio-economic factors like caste, religion and number of siblings in the household are included as control variables. Additionally, the second regression model also identifies the socioeconomic factors other than parents' education which significantly affects the years of schooling completed by the sons for both non-migrant and migrant sons. The dummy variables are defined in *Appendix 5.2*. We use a simple OLS framework for the analysis.

The base regression model is modified as follows:

$$S_i = \beta_1 + \beta_2 F_i + \beta_3 M_i + \beta_4 SC_i + \beta_5 ST_i + \beta_6 OBC_i + \beta_7 Hindu_i + \beta_8 Muslim_i + \beta_9 Siblings_i + \varepsilon_i \quad \dots \quad (5.2)$$

where, β_4 , β_5 and β_6 measure the difference in years of schooling of the son if he belongs to one of the backward classes (*Scheduled Castes, Scheduled Tribes and Other Backward Classes*) rather than General Category; β_7 and β_8 measure the difference in years of schooling of the son if he is a Hindu or a Muslim rather than belongs to other religions like Buddhists, Jains etc. β_9 measures the difference in years of schooling of the son if he has at most two siblings rather than more than two siblings. Therefore, β_4 to β_9 measures the impact of socio-economic factors on the years of schooling of the son. β_2 and β_3 are measures of intergenerational educational coefficient. We check whether the measure of association changes with the inclusion of socio-economic factors.

Thirdly, we use quantile regression to check whether the educational coefficient is constant at all levels of the son's education distribution or it varies at different quantiles (Kishan, 2018). It uses the method of least squares to estimate the conditional median of the dependent variable rather than the conditional mean. It is employed if the one or more assumptions of the linear regression don't hold. Existing literature has shown us that the association between father and son's educational attainment varies at different levels of the educational distribution. We have used two separate regression models. The first quantile regression model is without socio-economic factors as control variables.

The quantile regression model is defined as follows:

$$Q_{\tau}(y_i) = \beta_0(\tau) + \beta_1(\tau)F_i + \beta_2(\tau)M_i + \varepsilon_i \dots\dots\dots (5.3)$$

To check whether the intergenerational education coefficients (β_1 and β_2) are overestimating the association between parents and son's education, we include the

factors like caste, religion and number of siblings along with the education of both parents in the second model.

The quantile regression framework after the addition of the socio-economic variables is as follows:

$$Q_{\tau}(y_i) = \beta_0(\tau) + \beta_1(\tau)F_i + \beta_2(\tau)M_i + \beta_3(\tau)SC_i + \beta_4(\tau)ST_i + \beta_5(\tau)OBC_i + \beta_6(\tau)Hindu_i + \beta_7(\tau)Muslim_i + \beta_8(\tau)Sibling_i + \varepsilon_i \quad \dots\dots\dots (5.4)$$

where τ_i measures the quantiles of the son's education distribution. β_i measures the slope coefficients corresponding to each variable at τ^{th} quantile. For instance, $\beta_1(\tau)$ and $\beta_2(\tau)$ measure the degree of association between father and mother's education with that of son's education for τ^{th} quantile of the son's educational distribution. The results are discussed in the next section.

5.4. RESULTS

5.4.1. Summary Statistics

Table 5.1 displays the summary statistics for the years of schooling of a son and their parents for the overall sample, non-migrant sons and sons belonging to both the migrant generations. The mean-years of schooling for son is higher than his parents irrespective of their migration history. In the overall sample, the mean-years of schooling of a son is 10.7 years. Close to the overall sample, the mean-years of schooling of non-migrant sons is 10.4 years. Sons belonging to both the migrant generations have higher mean years of schooling compared to the non-migrant sons. This might be because parents tend to invest more in education and training of their children post-migration compared to the parents of non-migrant sons to secure a decent standard of living in a new place of residence. Among the migrant generations, first-generation sons have slightly higher mean years of schooling at 11.6 years compared to 11.2 years for sons belonging to second-generations. Similarly, the average education of fathers for both the migrant generation sons are greater than the fathers of non-migrant sons. The mean-years of schooling of father belonging to the first-generation son is slightly higher at 8.8 years whereas it is 8.5 years for the father of a second-generation son. A similar trend is observed in the mean-years of schooling for mothers. The mothers of sons belonging to the migrant generation are more educated than that of the mothers of non-migrant sons.

Table 5.1: Summary Statistics for the Overall Sample, Migrant Generations and Non-Migrant Households

Variables	N	Mean	SD	Min. Value	Max. Value
Sons in the Overall Sample					
Years of Schooling of Son	5967	10.66	3.374	0	16
Education of Father	5967	7.66	3.669	0	16
Education of Mother	5967	3.58	3.961	0	16
First Generation Sons					
Years of Schooling of Son	704	11.55	3.198	2	16
Education of Father	704	8.78	3.715	0	16
Education of Mother	704	4.81	4.294	0	16
Second Generation Sons					
Years of Schooling of Son	662	11.22	3.299	0	16
Education of Father	662	8.46	3.719	0	16
Education of Mother	662	4.92	4.139	0	16
Non-migrant Sons					
Years of Schooling of Son	4601	10.45	3.381	0	16
Education of Father	4601	7.37	3.604	0	16
Education of Mother	4601	3.20	3.799	0	16

Note: N: Number of Observations; SD: Standard Deviation of years of schooling

To summarise, the parents of migrant sons have higher mean years of schooling compared to the parents of non-migrant sons and this advantage is passed on to the next generation; that implies, sons of migrant parents have more years of schooling compared to the non-migrant sons.

5.4.2. Regression Analysis

In this section, the linear regression results are discussed. Following *Equation (5.1)*, years of schooling of a son is regressed on years of schooling of father and mother to check the degree of educational mobility between parents and son for all three groups. *Table 5.2* reports the regression results of the first model.

It is observed that for all sons irrespective of their migration history, the coefficients corresponding to the years of schooling of father and mother are positive; that implies there is a positive relationship between mean years of schooling of a son and that of his parents irrespective of his migrant status. As explained earlier, a lower coefficient (β_i) corresponding to father's and mother's years of schooling implies a weak association between son's educational attainment and parents' educational background. In other words, a lower beta coefficient corresponding to parents' education implies higher intergenerational educational mobility and vice-versa. For simpler interpretation of the results, we have presented the $(1 - \beta_i)$ values in the tables which represent the degree of intergenerational educational mobility.

From table 5.2, we observe that compared to the migrant sons, non-migrant son's cohort exhibit higher intergenerational educational mobility between father and son. In other words, the degree of association between father and son's education is lower among the non-migrant sons compared to the migrant sons. Between the two migrant generations, second-generation migrant sons exhibit marginally weaker association (higher mobility) between father and son's education than that observed in the first-generation migrant cohort.

Table 5.2: Intergenerational Educational Mobility in India
(Dependent Variable – Years of Schooling of Son)

Variables	Non-Migrant		First-Generation		Second-Generation	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.290*** (0.0135)	0.710	0.309*** (0.0304)	0.691	0.299*** (0.0361)	0.701
Education of Mother	0.197*** (0.0123)	0.803	0.147*** (0.0254)	0.853	0.155*** (0.0335)	0.845
Constant	7.688*** (0.104)		8.120*** (0.284)		7.930*** (0.289)	
Observations	4,601		704		662	
R-squared	0.203		0.226		0.217	

Note: Intergenerational mobility in education is measured by $(1 - \beta_i)$. The table displays $(1 - \beta_i)$ values. A low β_i indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility. Years of Schooling as a proxy for the education of father and mother. Robust standard errors in parentheses *** p<0.01, ** p<0.05.

Next, we examine the association between the mother and the son's education. *Firstly*, we observe that relative to paternal education, a son's education is weakly associated with that of the mother's education for all three cohorts²⁶. Therefore, we can infer that a unit increase in mother's education will increase the son's education by lesser units than a unit increase in father's education. *Secondly*, we see that degree of intergenerational mobility between mother and son's educational attainment is higher among the migrant cohorts compared to the non-migrant cohorts.

To check whether the beta coefficients are overestimating the degree of mobility, we present the results of *Equation (5.2)* in *Table 5.3*. Before we discuss the results of the

²⁶ Javed and Irfan (2014) and Paolo et al (2013) has also found in case of Pakistan and Italy respectively that paternal education is strongly attached to the son's education rather than maternal education.

regression analysis, we check the pairwise correlation coefficients to examine whether the control variables are relevant.

5.4.3. Correlation Coefficients

For *non-migrant sons*, caste category of the household is negatively correlated with the years of schooling of son and education of both parents. The coefficients can be interpreted as follows: both fathers and sons belonging to the backward classes are less educated than the sons belonging to the general category. This might be due to intergenerational stickiness in educational attainment and lack of upward mobility among the backward classes as compared to the General classes (*Ray and Majumder, 2010*). It is expected that this negative correlation of caste with both the dependent and independent variables will weaken the relationship between son and parent's education. There is no correlation between the religion and other variables for non-migrant sons. The number of siblings in a household has a positive correlation with the son's education but no correlation with his parent's education.

We observe a similar trend in correlation among sons belonging to migrant generations for caste. Religion has no impact on the second-generation migrant son and their parent's education. However, for the first-generation migrant sons, religion has a negative correlation with the education variable. *Beek and Fleischmann (2020)* have investigated the case of Moroccan and Turkish immigrants in the Netherlands and found similar results. There is negative relationship between religiosity and educational attainment in the first generation which changed to non-significant in the second generation. This might be because the second-generation migrant sons grow up in the host society and from early childhood, they participate in mainstream social settings. Their way of life and opportunities are in various ways similar to the majority than those of the first-generation sons. Therefore, we expect that the inclusion of religion as control

will weaken the intergenerational educational persistence coefficient for the first-generation sons but not for the second-generation sons. The correlation coefficients justify the addition of the control variables. Additionally, the slope coefficients also identify the factors that significantly affect the mean years of schooling of a son for each of the three groups. The sequential addition of controls and its effect on years of schooling of son and IGC are provided in *Appendix 5.4.4*. The regression results are displayed in *Table 5.3*.

5.4.4. Regression Analysis with Control Variables

It can be inferred that the base model without control variables overestimated the IGC values corresponding to both father and mother's education. Addition of caste, religion and number of siblings as control variables significantly lower the IGC coefficients for both the migrant generations and the non-migrant sons. However, they are positive and significant at 1 percent level. Therefore, we can conclude that there exists some amount of positive association between parent and son's education even after the socio-economic factors are taken into consideration.

Firstly, even after controlling for the socio-economic factors, we observe that son's education is strongly associated with paternal education compared to maternal education. In other words, a higher degree of mobility is observed between mother's and son's education as compared to between father's and son's education. One unit increase in mother's education will increase the son's education by lesser units than a unit increase in father's education. *Secondly*, we find that the migrant sons exhibit higher mobility when compared to the non-migrant sons.

The chapter further analyses the effect of various socio-economic factors on years of schooling for non-migrant and migrant sons. Caste significantly effects the years of

schooling for *non-migrant sons*. General category sons are, on average, more educated than the sons belonging to the backward classes. The coefficient is negative and significant at 1 percent level. For *first-generation sons*, being a scheduled caste rather than general category significantly lowers the years of schooling of a son. Similarly, across all three groups, years of schooling of son significantly reduces if he belongs to the Other Backward Classes.

Religion plays a less important role in determining the level of education if the sons belong to migrant households. For *non-migrant sons*, being Hindu rather than belonging to other religious groups increases the son's mean years of schooling by 0.62 years. For *second-generation migrant sons*, this value increases to 0.86 years. This might be because the enrolment rates for children from Hindu community is higher than the backward classes due to factors like difference in income, disincentive to enrol in schools due to the presence of discrimination against the backward classes (Borooah and Iyer, 2007)

Finally, if the number of siblings is less than or equal to two, then mean years of schooling for son significantly increases across all three groups, with the highest increase observed among the second-generation sons. Greater number of children reduces the resources available for education and training, health and development of each child.

Table 5.3: Intergenerational Education Mobility with Controls
(Dependent Variable – Years of Schooling of Son)

Variables		Non-Migrants		First-Generation		Second-Generation	
		Years of Schooling of Son					
		β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father		0.274*** (0.0137)	0.726	0.301*** (0.0304)	0.699	0.266*** (0.0367)	0.734
Education of Mother		0.194*** (0.0124)	0.806	0.119*** (0.026)	0.881	0.144*** (0.034)	0.856
Caste Groups (Reference Category: Upper Caste)	Scheduled Caste	- 0.287** (0.145)		-0.861*** (0.322)		- 0.349 (0.376)	
	Scheduled Tribes	- 0.598*** (0.229)		- 0.926 (0.673)		- 1.14 (0.603)	
	Other Backward Classes	- 0.546*** (0.102)		-0.519** (0.246)		- 0.697*** (0.258)	
Religion (Reference Category: Other Religion like Buddhist, Sikh, Jain etc.)	Hindu	0.624*** (0.168)		0.497 (0.388)		0.855** (0.436)	
	Muslim	0.007 (0.222)		- 0.450 (0.559)		- 0.020 (0.681)	
Less than or Equal to Two Siblings		0.223** (0.116)		0.569** (0.286)		0.861*** (0.314)	
Constant		7.43*** (0.229)		7.85*** (0.531)		7.20*** (0.572)	
Observations		4,601		704		662	
R-squared		0.2132		0.2499		0.2500	

Note: Years of Schooling as a proxy for the education of father and mother. Intergenerational mobility in education is measured by $(1 - \beta_i)$. The table displays $(1 - \beta_i)$ values. A low β_i indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility. Robust standard errors in parentheses *** p<0.01, ** p<0.05.

To summarise, in the base regression model, we observed that the education of parents has less impact on the education of non-migrant sons compared to migrant sons.

However, with the addition of socio-economic factors as control variables, the migrant sons, on average, exhibit lower association with parents' education compared to the non-migrant sons. Overall, if the mother's education increases by one unit, the son's education increases by lesser units than if the father's education increases by one unit. Lastly, on average, non-migrant sons are more affected by their socio-economic factors compared to the migrant sons.

5.4.5. *Intergenerational Educational Mobility across Son's Educational Distribution*

Next, we examine whether the *beta-values* corresponding to the father and mother's education (*intergenerational educational coefficient*) is uniform across the son's educational distribution. In other words, is there any difference in IGC between sons at the low end of the education distribution and sons at the upper end of the distribution? Literature shows that intergenerational educational persistence is at its lowest at the upper end of the educational distribution of the son (Kishan, 2018), it is intriguing to examine the difference in the intergenerational education mobility rate at different quantiles of son's education distribution and identify the difference, if any, between non-migrant and migrant sons. From Table 5.4(a) – 5.4(c), the base model is explained with only fathers' and mothers' education as the predictor variables for various quantiles of the son's education distribution.

Several interesting facts are evident from the tables above. *Firstly*, the intergenerational educational coefficients are not uniform at all levels of a son's educational distribution. For all three groups, at the 10th quantile of son's educational distribution, the measure for intergenerational educational mobility, $(1 - \beta_i(\tau))$ is lower than at the 90th quantile of the son's educational distribution. In other words, we

can say that the degree of association between parents and son's educational attainment is much larger at 10th quantile than at the 90th quantile of the son's education distribution. Thus, we can conclude that there is higher mobility at the upper end of the son's educational distribution compared to the lower end of the distribution.

Secondly, mobility values are higher when we look at the measure of intergenerational educational mobility values $(1 - \beta_i(\tau))$ corresponding to the mother's education. Therefore, we can conclude that one unit increase in the mother's education will have a lesser impact on the son's education than a unit increase in father's education.

Thirdly, comparing between non-migrant and migrant sons, at the 10th quantile of the son's educational distribution, the non-migrant sons exhibit slightly higher mobility than the migrant sons. On the contrary, at the 90th quantile, the migrant sons exhibit higher mobility than the non-migrant sons. Among the two migrant generations, on average, the highest mobility is observed among the second-generation sons. At the 90th quantile of the educational distribution, there is no significant dependence of years of schooling of a second-generation migrant son on the education of the mother.

Fourthly, at 10th quantile of son's educational distribution, the mobility coefficient corresponding to both parents is higher than that we observe in the linear regression model (Table 5.4.2) for all three groups, indicating that at the lower end of the educational distribution, the observed stickiness is higher than the average.

Table 5.4(a): Intergenerational Education Mobility across Educational Distribution for Non-Migrant Sons
(Dependent Variable – Years of Schooling of Son)

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.333*** (0.0321)	0.667	0.323*** (0.0197)	0.677	0.300*** (0.0204)	0.700	0.291*** (0.0231)	0.709	0.111*** (0.0161)	0.889
Education of Mother	0.267*** (0.0264)	0.733	0.194*** (0.0117)	0.806	0.200*** (0.0143)	0.800	0.243*** (0.0212)	0.757	0.044*** (0.0132)	0.956
Constant	3.333*** (0.163)		5.419*** (0.157)		7.500*** (0.113)		9.417*** (0.154)		14*** (0.181)	
Observations	4,601		4,601		4,601		4,601		4,601	

Note: Standard errors are in parentheses. In Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, $F(2,4598) = 31.28$ and $\text{Prob} > F = 0.0000$. Null of constant variance is rejected and Quantile regression is justified. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility.

Table 5.4(b): Intergenerational Education Mobility across Educational Distribution for First-Generation Sons
(Dependent Variable – Years of Schooling of Son)

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.364*** (0.0659)	0.636	0.333*** (0.0592)	0.667	0.355*** (0.0466)	0.645	0.300*** (0.0407)	0.700	0.085*** (0.0194)	0.915
Education of Mother	0.227*** (0.0514)	0.773	0.190*** (0.0359)	0.810	0.151*** (0.0397)	0.849	0.125*** (0.0342)	0.875	0.051*** (0.0193)	0.949
Constant	3.636*** (0.761)		5.714*** (0.547)		7.871*** (0.337)		10.50*** (0.521)		14.32*** (0.205)	
Observations	704		704		704		704		704	

Note: Standard errors are in parentheses. In Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, $F(2,701) = 12.93$ and $\text{Prob}>F=0.0000$. Null of constant variance is rejected and Quantile regression is justified. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility.

Table 5.4(c): Intergenerational Education Coefficients across Educational Distribution for Second-Generation Sons
(Dependent Variable – Years of Schooling of Son)

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.643*** (0.0516)	0.643	0.269*** (0.0418)	0.731	0.419*** (0.0460)	0.581	0.273*** (0.0575)	0.727	0.091*** (0.0305)	0.909
Education of Mother	0.214*** (0.0571)	0.786	0.192*** (0.0460)	0.808	0.140*** (0.0431)	0.860	0.136*** (0.0445)	0.864	0.030 (0.0230)	0.970
Constant	3.571*** (0.422)		6.038*** (0.329)		6.907*** (0.328)		10.36*** (0.506)		14.27*** (0.317)	
Observations	662		662		662		662		662	

Note: Standard errors are in parentheses. In the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, $F(2,659) = 4.47$ and $Prob > F = 0.0118$. Null of constant variance is rejected and Quantile regression is justified. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility

To check whether the mobility coefficients are affected by the socio-economic background of a son, we include the latter as control variables. Results are displayed from *Table 5.5(a) to 5.5(c)*.

By examining the *slope coefficients*, we conclude that the addition of control variables does not bring major changes to the mobility coefficient at different quantiles of the son's educational distribution. Overall, there exists higher educational mobility between mother and son's education as compared to between father and son's education. Among the *second-generation sons*, there is no significant linear dependence of son's years of schooling on both father's and mother's education at the 90th quantile of the educational distribution. Therefore, we can infer that the dependence on father's education at the 90th quantile of son's educational distribution observed in the base model of the quantile regression is due to the omission of socio-economic factors which has a significant impact on son's education.

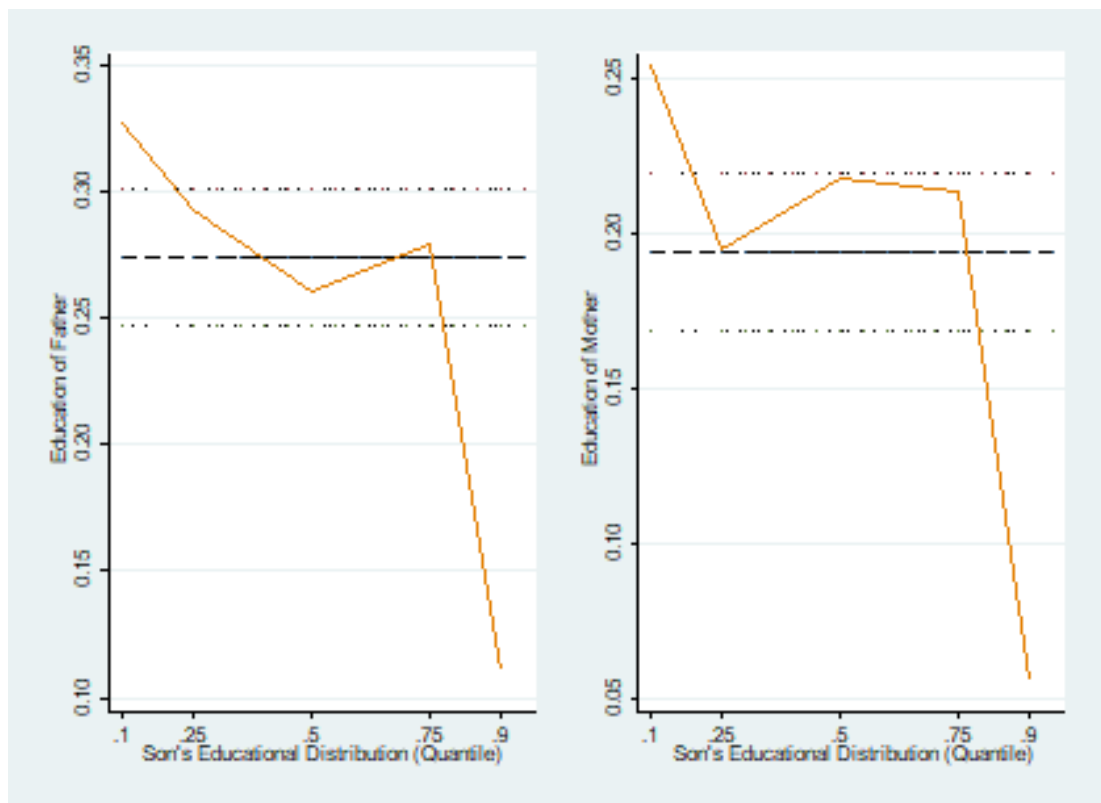
On average, if son belongs to the lower end of educational distribution, parents' education has a greater impact in determining sons' years of schooling compared to those sons who belong to the higher end of educational distribution. This might be because these sons can break away from their family endowment constraints after achieving a certain level of education.

Table 5.5(a): Intergenerational Education Coefficients across Educational Distribution for Non-Migrant Sons with controls

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.327*** (0.024)	0.673	0.293*** (0.025)	0.707	0.261*** (0.017)	0.739	0.279*** (0.022)	0.721	0.111*** (0.016)	0.889
Education of Mother	0.256*** (0.028)	0.744	0.195*** (0.016)	0.805	0.217*** (0.021)	0.783	0.213*** (0.029)	0.787	0.055*** (0.010)	0.945
Caste Controls	Yes		Yes		Yes		Yes		Yes	
Religion Controls	Yes		Yes		Yes		Yes		Yes	
Number of siblings	Yes		Yes		Yes		Yes		Yes	
Constant	3.62*** (0.396)		5.41*** (0.335)		7.52*** (0.327)		9.36*** (0.329)		13.4*** (0.286)	
Observations	4,601		4,601		4,601		4,601		4,601	

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility

Figure 5.1(b): Intergenerational education coefficient at different levels of educational distribution for non-migrant sons



We have graphically represented the quantile regression coefficients of son's years of schooling through *figure 5.1(a) to 5.1(c)*. The quantiles of son's completed years of schooling are on x-axes and coefficient magnitudes corresponding to father and mother are on the y-axes. The confidence intervals of the OLS estimates are represented by the light dotted lines in the graph. The dark dotted lines represent the OLS estimates. For *non-migrant sons* in *figure 5.1(a)*, we observed that the association between parents' education and son's educational attainment is not uniform at different quantiles of the educational distribution, unlike the OLS estimates. Below 25th quantile, the degree of association between father's education and son's educational attainment is much more than what is observed from the OLS estimates and above 80th quantile, the association is weaker than what we observe from the OLS estimate. Similarly, below 20th quantile of the son's educational distribution, the degree of

association between mother's education and son's educational attainment is more than what we observed under simple OLS estimates. On the contrary, above the 80th quantile, the association is weaker than the observed OLS estimates.

Similarly, from *figure 5.1(b)* and *figure 5.1(c)* we find that for both the migrant sons' cohorts, above 80th quantile, the degree of association between parents' and son's education is weaker than the OLS estimate. Below 25th quantile, the association is higher than the constant OLS estimate for both the parents; however, it lies within the confidence interval of the OLS estimate corresponding to the father of first-generation sons.

Figure 5.1(b): Intergenerational education coefficient at different levels of educational distribution for first-generation sons

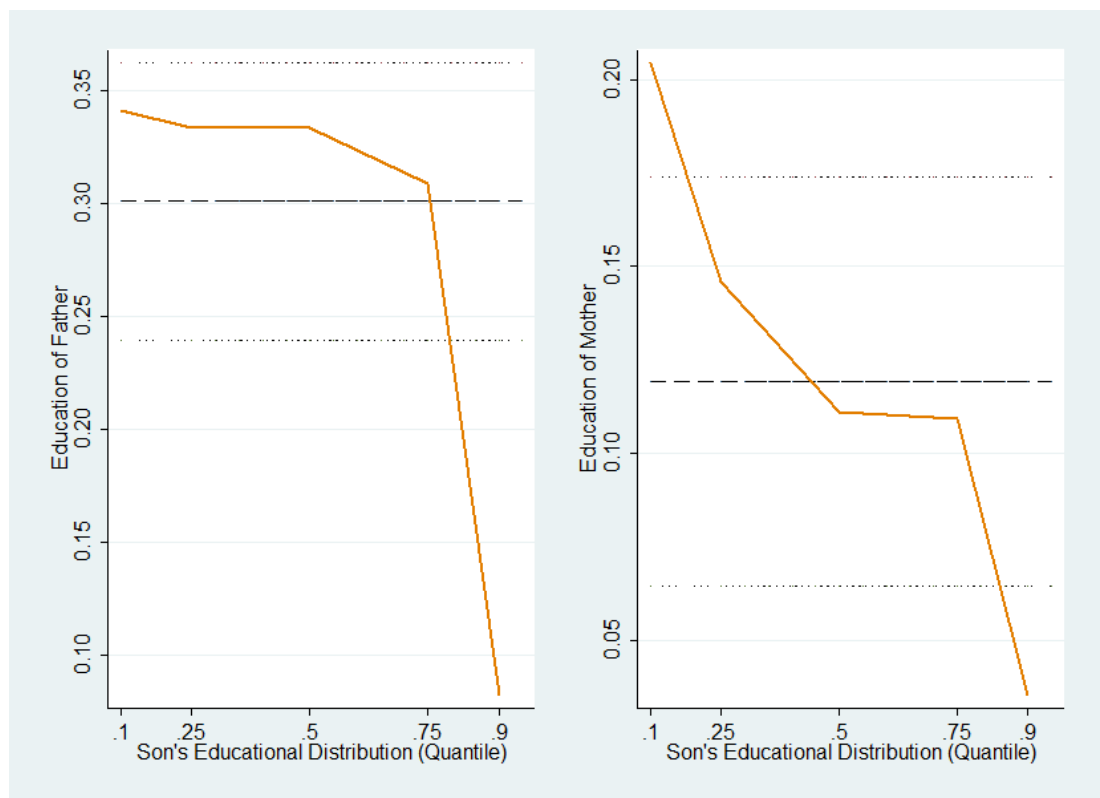
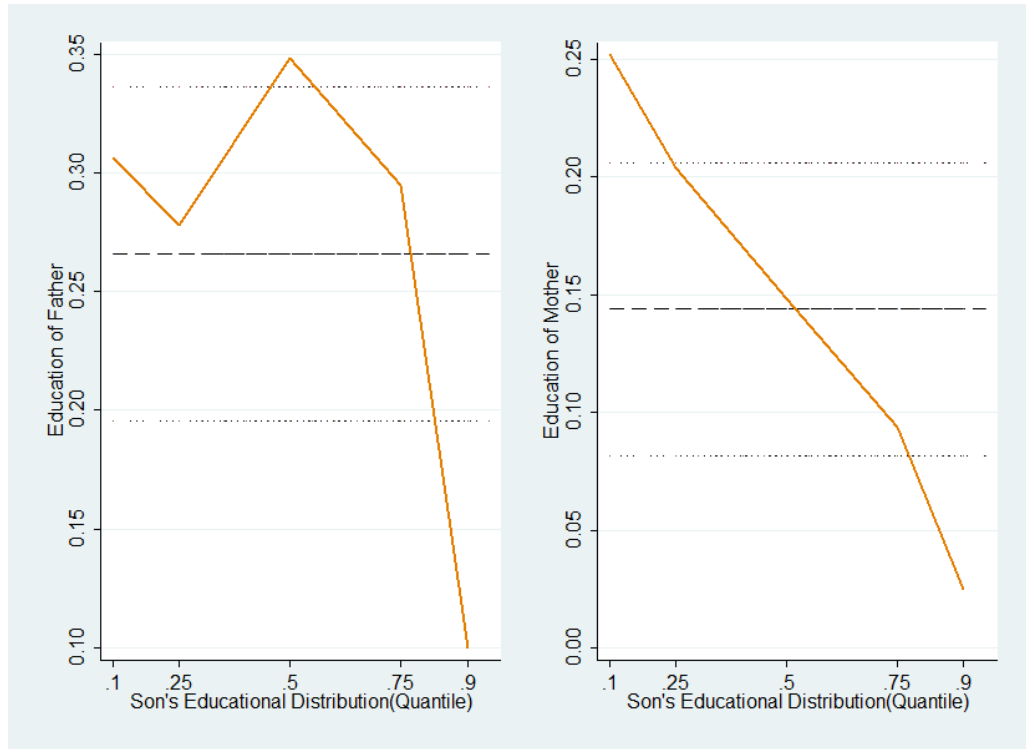


Figure 5.1(c): Intergenerational education coefficient at different levels of educational distribution for second-generation migrant sons



To summarise, we can conclude the degree of association between parents' education and son's educational attainment is not constant at all levels of sons' educational distribution. For all three groups, we found that beyond 80th quantile of the son's educational distribution the association between parents' and son's education is negligible since $(1 - \beta_i(\tau))$ values are very high whereas, it is much more at the lower end of the educational distribution. Hence, we can conclude that the socio-economic background of a son has no impact on the son's educational attainment at the upper end of the educational distribution. This might be because, after a certain level of education, sons can breakaway the impediments to higher education. However, we cannot determine the minimum level of education needed to break-free the impediments to higher mobility from our current research work.

Table 5.5(b): Intergenerational Education Coefficients across Educational Distribution for First-Generation Migrant Sons with controls

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.341*** (0.05)	0.659	0.333*** (0.057)	0.667	0.333*** (0.046)	0.667	0.309*** (0.048)	0.691	0.082***	0.918 (0.026)
Education of Mother	0.204*** (0.066)	0.796	0.146*** (0.042)	0.854	0.111*** (0.042)	0.889	0.0109 (0.048)	0.891	0.035 (0.019)	0.965
Caste Controls	Yes		Yes		Yes		Yes		Yes	
Religion Controls	Yes		Yes		Yes		Yes		Yes	
Number of siblings	Yes		Yes		Yes		Yes		Yes	
Constant	2.66** (1.10)		4.71*** (1.02)		8.22*** (0.794)		9.42*** (0.741)		14.2*** (0.392)	
Observations	704		704		704		704		704	

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility

Table 5.5(c): Intergenerational Education Mobility across Educational Distribution for Second-Generation Sons with controls

VARIABLES	Quantile (.10)		Quantile (.25)		Quantile (.50)		Quantile (.75)		Quantile (.90)	
	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$	β_i	$(1 - \beta_i)$
Education of Father	0.306*** (0.075)	0.694	0.277*** (0.048)	0.723	0.348*** (0.032)	0.652	0.295*** (0.054)	0.705	0.100*** (0.01)	0.900
Education of Mother	0.252*** (0.058)	0.748	0.203*** (0.040)	0.797	0.148*** (0.041)	0.852	0.094** (0.048)	0.906	0.025 (0.024)	0.975
Caste Controls	Yes		Yes		Yes		Yes		Yes	
Religion Controls	Yes		Yes		Yes		Yes		Yes	
Number of siblings	Yes		Yes		Yes		Yes		Yes	
Constant	1.99 (1.12)		4.43*** (0.897)		6.71*** (0.671)		8.8*** (0.922)		13.5*** (0.660)	
Observations	662		662		662		662		662	

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05. Intergenerational mobility in education is measured by $(1 - \beta_i(\tau))$. The table displays $(1 - \beta_i(\tau))$ values. A low $\beta_i(\tau)$ indicates that there is a weak association between parent's and son's education which, in turn, indicates higher mobility

5.5. CONCLUSION AND POLICY RESPONSE

This chapter examines the various aspects of intergenerational educational mobility in India for groups of sons classified according to their immigration history. Non-migrant sons are born to non-migrant parents. First-generation migrant sons are born outside the current place of residence and migrated after birth. Second-generation migrant sons are born at the current place of residence to migrant parents. *Firstly*, we use IHDS-II (2011-12) data to examine whether there exists any difference in the degree of association between parents' and sons' education for non-migrant and migrant sons. *Secondly*, we check whether the association exists even after controlling for the socio-economic factors. Additionally, socio-economic factors are identified that has an impact on the years of schooling of a son for each of the groups. *Thirdly*, we examine whether the intergenerational educational mobility coefficient is uniform at all levels of a son's educational distribution. Overall, the migrant sons and their parents have higher mean years of schooling compared to the non-migrant sons and their parents. *Chiswick (1978)* indicated in his study that migrants tend to make their largest human capital investments compared to the non-migrants. Using a linear regression model, we find that parents' education has a greater impact on non-migrant sons' education rather than on migrant sons' education. We also find that there is a stronger association between the son's education with that of paternal education rather than maternal education. This implies that a unit increase in the mother's education will increase the years of schooling of a son more than a unit increase in father's education. With the inclusion of the socio-economic factors as control variables, overall educational mobility coefficient reduces for all groups of sons. Furthermore, on average, education of parents has a lesser impact on the education of migrant sons rather than non-migrant sons. Caste and number of siblings have played a vital role in determining the

educational attainment of non-migrant sons. Moreover, if sons belong to the Other Backward Classes, then the years of schooling of son reduces by more than 50 units across all three groups. If individual has less than or equal to two siblings then years of schooling of son increases for all three groups, moreover, the migrant son's education increases by more units compared to the non-migrant sons. We employ quantile regression to examine intergenerational educational mobility at different quantiles of son's educational distribution. We observe that the association between parent and child education is not uniform at all levels of the son's educational distribution. At 10th quantile of the son's educational distribution, there is strong association between parents' education and son's educational attainment as compared to the 90th quantile of the educational distribution. In other words, sons at the upper end of the educational distribution are more mobile than sons at the lower end of the educational distribution.

Therefore, we can infer from the study that if parents are less-educated, sons are more likely to be less-educated but this is not true if the sons can break away the family endowment constraint and move up the education ladder. Policies that increase the opportunities for sons to acquire higher education should be emphasised. Although our results found the second-generation migrant sons to be more mobile than other two groups, we need to study the third generation to identify which generation can breakthrough the pattern of intergenerational stickiness in education.

Table A5.1: Number of Migrants Across Three Census Years of India

	1991 Census (In Million)	2001 Census (In Million)	2011 Census (In Million)
Total Migrants	229.8	307.2	447.3
Intra-District	136.2	181.8	264.1
Inter-District	59.1	76.8	121.2
Inter-State	27.3	42.3	56.3
From Abroad	7.2	6.2	5.7

Figure A5.1 Rate of growth in Migration per decade (1991-2001)

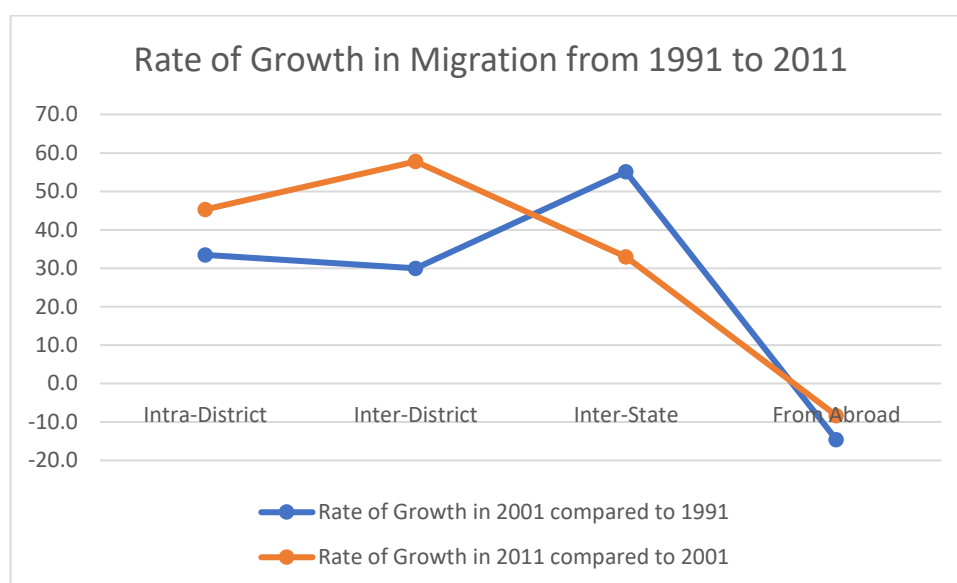


Table A5.2: Definitions of Variables

Variable	Dummy Variable	Description
Caste	Scheduled Caste (SC)	Dummy variable takes the value 1 if SC; otherwise, 0
	Scheduled Tribe (ST)	Dummy variable takes the value 1 if ST; otherwise, 0
	Other Backward Classes (OBC)	Dummy variable takes the value 1 if OBC; otherwise, 0
Religion	Hindu	Dummy variable takes the value 1 if Hindu; otherwise, 0
	Muslim	Dummy variable takes the value 1 if Muslim; otherwise, 0
Number of Siblings		Dummy variable takes the value 1 if the son has less than or equal to two siblings; otherwise, 0

Table A5.3(a): Pairwise Correlation Coefficient of the dependent and independent variables for non-migrant sons

	Education of Son	Education of Father	Education of Mother	Caste Categories	Religion	Number of Siblings
Education of Son	1					
Education of Father	0.403***	1				
Education of Mother	0.353***	0.425***	1			
Caste Categories	-0.155***	-0.180***	-0.145***	1		
Religion	-0.0575***	-0.0574***	-0.101***	0.0696***	1	
Number of Siblings	0.0406**	-0.00326	0.0270	-0.0453**	-0.117***	1

*** p<0.01, ** p<0.05, * p<0.1

Table A5.3(b): Pairwise Correlation Coefficient of the dependent and independent variables for first-generation migrant sons

	Education of Son	Education of Father	Education of Mother	Caste Categories	Religion	Number of Siblings
Education of Son	1					
Education of Father	0.440***	1				
Education of Mother	0.344***	0.410***	1			
Caste Categories	-0.159***	-0.166***	-0.179***	1		
Religion	-0.116**	-0.104**	-0.197***	0.195***	1	
Number of Siblings	0.150***	0.122**	0.159***	0.00527	-0.0942*	1

*** p<0.01, ** p<0.05, * p<0.1

Table A5.3(c): Pairwise Correlation Coefficient of the dependent and independent variables for second-generation sons

	Education of Son	Education of Father	Education of Mother	Caste Categories	Religion	Number of Siblings
Education of Son	1					
Education of Father	0.434***	1				
Education of Mother	0.362***	0.497***	1			
Caste Categories	-0.182***	-0.196***	-0.108**	1		
Religion	0.0236	0.0510	- 0.0313	- 0.00795	1	
Number of Siblings	0.150***	0.0814*	0.0607	0.0106	0.00404	1

*** p<0.01, ** p<0.05, * p<0.1

Table A5.4(a): Intergenerational Educational Mobility with the sequential addition of controls

(Non-Migrant Sons)				
	(1)	(2)	(3)	(4)
VARIABLES	Son's Education	Son's Education	Son's Education	Son's Education
Education of Father	0.279*** (0.0136)	0.258*** (0.0137)	0.250*** (0.0137)	0.250*** (0.0137)
Education of Mother	0.191*** (0.0124)	0.179*** (0.0125)	0.182*** (0.0124)	0.182*** (0.0124)
Scheduled caste	-0.214 (0.144)	-0.187 (0.142)	-0.282** (0.143)	-0.282** (0.143)
Scheduled Tribe	-0.623*** (0.226)	-0.518** (0.225)	-0.478** (0.228)	-0.478** (0.228)
Other Backward Classes	-0.519*** (0.102)	-0.471*** (0.101)	-0.513*** (0.101)	-0.513*** (0.101)
Hindu			0.777*** (0.170)	0.777*** (0.170)
Muslim			0.0231 (0.220)	0.0231 (0.220)
Constant	8.075*** (0.133)	7.760*** (0.150)	7.153*** (0.215)	7.153*** (0.215)
Observations	4,601	4,601	4,601	4,601
R-squared	0.208	0.224	0.231	0.231

Note: Reference category for caste: Upper caste; reference category for income: low income; reference category for religion: other religion

Table A5.4(b): Intergenerational Educational Coefficient with the sequential addition of controls
(First-generation Migrant Sons)

VARIABLES	(1) Son's Education	(2) Son's Education	(3) Son's Education	(4) Son's Education
Education of Father	0.304*** (0.0307)	0.280*** (0.0325)	0.283*** (0.0325)	0.283*** (0.0325)
Education of Mother	0.132*** (0.0262)	0.133*** (0.0262)	0.126*** (0.0262)	0.126*** (0.0262)
Scheduled caste	-0.762** (0.319)	-0.791** (0.318)	-0.878*** (0.320)	-0.878*** (0.320)
Scheduled Tribe	-0.999 (0.691)	-1.138 (0.707)	-1.017 (0.695)	-1.017 (0.695)
Other Backward Classes	-0.514** (0.248)	-0.474* (0.247)	-0.455* (0.246)	-0.455* (0.246)
Hindu			0.479 (0.401)	0.479 (0.401)
Muslim			-0.511 (0.557)	-0.511 (0.557)
Constant	8.587*** (0.352)	8.417*** (0.424)	8.066*** (0.549)	8.066*** (0.549)
Observations	704	704	704	704
R-squared	0.235	0.245	0.254	0.254

Note: Reference category for caste: Upper caste; reference category for income: low income; reference category for religion: other religion

Table A5.4(c): Intergenerational Educational Coefficient with the sequential addition of controls
(Second-generation Sons)

VARIABLES	(1) Son's Education	(2) Son's Education	(3) Son's Education	(4) Son's Education
Education of Father	0.279*** (0.0363)	0.246*** (0.0365)	0.239*** (0.0367)	0.239*** (0.0367)
Education of Mother	0.147*** (0.0337)	0.118*** (0.0326)	0.115*** (0.0330)	0.115*** (0.0330)
Scheduled caste	-0.388 (0.364)	-0.416 (0.356)	-0.494 (0.360)	-0.494 (0.360)
Scheduled Tribe	-1.467** (0.589)	-1.460** (0.595)	-1.362** (0.617)	-1.362** (0.617)
Other Backward Classes	-0.699*** (0.263)	-0.509** (0.259)	-0.493* (0.256)	-0.493* (0.256)
Hindu			0.777* (0.430)	0.777* (0.430)
Muslim			-0.0567 (0.650)	-0.0567 (0.650)
Constant	8.499*** (0.356)	8.062*** (0.445)	7.486*** (0.574)	7.486*** (0.574)
Observations	662	662	662	662
R-squared	0.230	0.280	0.288	0.288

Note: Reference category for caste: Upper caste; reference category for income: low income; reference category for religion: other religion

CHAPTER 6

Conclusion & Policy Response

Three factors that policymakers consider to judge the effectiveness of public policies are access, social inclusion and equality of opportunity. Equality of opportunity is said to exist when an individual's life outcomes depend on their abilities, talents and efforts rather than due to opportunities linked to their socio-economic background. One way to measure equality of opportunity is by examining the degree of intergenerational mobility across two or more generations. A high degree of intergenerational mobility indicates that the socio-economic status of parents has less influence on the child's life chances. India is characterised by inequality of opportunity. Better educated parents are more likely to be aware of the long-term benefits of education and invest in the education of their children. Also, parents with more education tend to earn more income and therefore financially more able to invest in the education of the child compared to parents with lower education. Most studies have documented the severity of inequality of opportunity in India by examining the degree of intergenerational mobility in education, occupation or earning. The occupation was classified as white-collar, skilled/semi-skilled, unskilled and farmers. No study has delved into the likelihood of sons of public sector employees to be employed in non-public sector jobs. Before 1991, India was characterised by public sector monopolies. Since the systematic adoption of the economic reform policies in 1991, the rate of growth in public sector employment has declined over time compared to the rate of growth in private sector employment. Historical data also shows that the average annual growth rate of the

private sector's contribution to GDP has increased whereas the public sector's contribution has declined in the post-reform period. Hence, in our first chapter, we examined whether we see a similar shift over time in the employment structure across two generations. We have examined the degree of intergenerational mobility between father and son's sector of employment over time. The data set is classified into three groups according to the son's job entry period: before 1991, between 1992-2007 and between 2008-2012. The three sectors of employment that we have considered for our analysis are the private sector, public sector or business sector. Firstly, we have used mobility measures and Altham Statistic to examine whether there is movement between the private sector and public sector employment in India across two generations. Secondly, we used multinomial logit regression analysis to determine the skill level of the son's sector of employment whose fathers are employed in the public sector jobs. Based on skill level, jobs were classified into white collar jobs, semi-skilled/skilled jobs and unskilled jobs. Additionally, we have also identified factors that affect the skill level of the son's sector of employment. Thirdly, we use the logistic regression analysis to identify the socio-economic factors that affect the overall mobility of the sons. Although sons entering the job market in the later period are more mobile than those sons who entered the job market before 1991, this mobility is mostly due to change in the occupational distribution for each period. Over time, the degree of association between father and son's sector of employment has no significant difference. This identical association between fathers' and sons' sector of employment is observed not solely because there are strong similarities in the tendency of sons to inherit fathers' occupation across the two time periods but it is also evident when only the off-diagonal elements are considered in each table to measure the degree of association.

For instance, the likelihood of sons entering the public sector when the father is a private sector employee is similar between sons across all three groups. The odds of working in a different sector than that of the fathers is higher among sons whose fathers are employed in the public sector rather than in the private sector or business sector. Thus, we consider only those sons whose fathers are public sector employee. Next, we examine the skill level of private-sector jobs where the sons are employed. Sons who moved towards the private sector when fathers are employed in the public sector are more likely to be employed in skilled and semi-skilled jobs rather than unskilled jobs. We also found that sons who entered the job market in the post reform period are more likely to be employed in white collar jobs rather than skilled or unskilled sector, irrespective of a public sector or private sector. An overall increase in the years of schooling of sons increases the level of skill acquisition by the son and therefore might have increased his chances of working in white collar jobs or skilled and semi-skilled jobs rather than unskilled jobs. Sons of fathers employed in unskilled jobs are more likely to remain in unskilled jobs. The caste affiliation of the individual also influences his chances of working in unskilled jobs rather than skilled/semi-skilled jobs. It is more likely for a son to be employed in unskilled jobs rather skilled/semi-skilled jobs if he belongs to the backward classes, scheduled castes and scheduled tribes rather than general category. Increase in the years of schooling of son significantly increases the likelihood of sons working in white collar jobs and reduces the likelihood of sons working in unskilled jobs. Furthermore, education has a significant impact on the likelihood of sons being employed in a different sector than that of his father. Sons with education in technical fields are more likely to be employed in a different sector than sons with education in non-technical fields. Low level of education leads to immobility across

sectors of employment among the sons. We found highest amount of mobility among sons whose fathers are public sector employees. Indian society is characterised by caste-based discrimination. To achieve equality of opportunity across caste groups, the affirmative action program was adopted by the Indian Constitution since the 1950s. If the reservation policy is effective, we expect that with increasing opportunities the children belonging to the socially backward classes to be employed in a different sector than that of their father who enjoyed the benefit of reservation in public sector jobs. Hence, in our second chapter, we examined how far the choice between the public sector and private sector jobs has changed across two generations for the social groups who have enjoyed the benefits of job reservation policies since the 1950s. our primary goal is to examine the effectiveness of the job reservation policy adopted in India since the 1950s to provide equal opportunity to the socially and economically backward classes, Scheduled Castes and Scheduled Tribes. Since Other Backward Classes were brought under the purview of reservation policy since 1991 (recommended by Mandal Commission) and reservation benefits are only given to the non-creamy layer among the OBCs, we have considered them along with the general category. Therefore, the three social groups considered in our study are General category (including OBC), Scheduled Castes and Scheduled Tribes. Firstly, we use the mobility measures and Altham Statistic to examine whether there is movement between the private sector and public sector employment across social groups. Secondly, we use OLS regression analysis to identify the factors that improve overall mobility. Thirdly, we use multinomial logit regression analysis to identify what factors improve the mobility of a son whose fathers are public sector employees. Using the Altham Statistic measure, we find that there is no significant

difference in the degree of association between fathers' and sons' sectoral choice of employment between General category and Scheduled castes. However, we find a significant difference in the degree of association between father and son's sector of employment between General category and Scheduled tribes. This difference in the underlying association is due to the difference in the tendency of sons to inherit fathers' occupation across the two social groups; no such difference is observed when only the off-diagonal elements are considered. The factors that positively affect the mobility of the son are the employment sector of the father, whether sons belong to the backward classes or general category and years of schooling completed by the son. Sons whose fathers are employed in the public sector rather than the business sector are more likely to work in a different sector than that of their fathers. Sons belonging to the scheduled caste category rather than general category are more likely to work in a different sector than that of their fathers. With the increase in the years of schooling of a son, it is more likely that he will be employed in a different sector than that of the fathers. The age of the son has a negative sign and is significant. This implies that less mobility is observed among the older sons compared to the younger sons. Since we found that sons belonging to fathers who are working in the public sector are significantly more likely to be employed in a different sector of occupation as compared to sons whose fathers are in the Business sector, it is expected that if the affirmative action policies are effective, then sons belonging to Scheduled castes or Scheduled tribes will find employment in a non-government sector, unlike fathers who have enjoyed the benefits of reservation policy in public sector jobs. To analyse the effectiveness of the job reservation policy, we identify which factors including caste groups, improves the mobility of son. Hence, we consider only those sons whose fathers are

employed in public sector jobs. Sons are either employed in the public sector, private sector or business sector. Using multinomial logit regression, we observe that if sons belong to the scheduled tribe category, then they are more likely to be employed in the public sector rather than the private sector or small business. Increase in the years of schooling of sons increases the overall probability of finding employment in the private sector and decreases the likelihood of being employed in small business. Education of parent increases the likelihood of son being employed in the large business sector rather than the public sector. Highly educated parents tend to earn a higher income, which might give financial security to venture out in the business sector. In the last two chapters, we studied the intergenerational occupational mobility over time and across social groups. Another external shock that might influence inequality of opportunity is the migration background of an individual. Since the education of children is one of the primary determinants of the productive potential of any nation and also it is an outcome variable which determines the level of success of a child in the labour market, it is important to study the impact of migration on a child's development. Therefore, in our third chapter, we examined the degree of intergenerational educational mobility among the non-migrant and migrant sons. A low value of intergenerational educational coefficient corresponding to father and mother's education indicates that a parent's education has less impact on the son's educational attainment. In other words, there exists a high degree of intergenerational educational mobility between parent and son's education. In our tables we have displayed the $(1-\beta_i)$ values which is a measure of intergenerational educational mobility. Therefore, higher value indicates higher mobility. We have classified the dataset based on their migration background: *non-migrant sons* are defined as those sons who are born to non-

migrant parents. *First-generation* includes those sons who are born outside their current place of residence and migrated after birth. *Second-generation* includes those sons who are born at their current place of residence to migrated parents. We have included sons who are between 25 years and 64 years. Migrant sons comprise first-generation and second-generation sons. Firstly, we have used a simple OLS regression analysis to examine the difference in the degree of educational mobility for both non-migrant and migrant sons. There are several socio-economic factors (like, caste category, religion and number of siblings) that are positively correlated with the schooling of a child. Hence, in the second regression analysis, we have included the socio-economic factors as control variables along with the parents' education. The second regression model also helps us to identify the factors which significantly affects the years of schooling of a son. Existing literature has found that intergenerational educational mobility is not constant at all levels of the son's education distribution. Hence, in our thesis, we have used quantile regression analysis to examine whether the association between the parents' education and son's educational attainment is similar at all levels of son's educational distribution for both the migrant and non-migrant sons and compared the results.

We also examined whether mobility changes at different levels of a son's educational distribution. Parents have higher mean years of schooling compared to the parents of non-migrant sons and this advantage is passed on to the next generation; that implies, sons of migrant parents have more years of schooling compared to the non-migrant sons. From the first regression, we find that there is some amount of association between the parents' education and son's educational attainment in all three groups. The sons belonging to the non-migrant parents exhibit marginally higher mobility compared to the sons belonging to the migrant

parents. We also found that there is a strong association of son's education with paternal education as compared to maternal education. Our results are similar to some of the international studies on intergenerational educational mobility. One unit increase in the mother's education will increase the son's education by lesser units than a unit increase in father's education. With the addition of the socio-economic variables, the intergenerational coefficient for all three groups reduced but remained positive; however, we find the migrant sons, on average, are more mobile than the non-migrant sons. Additionally, we also found that caste and religion of the household have a lower impact on the years of schooling of migrant sons compared to the non-migrant sons. Moreover, the impact changed from negative in first-generation migrants to insignificant in the second-generation migrants. Mean years of schooling increases across all three groups if the number of siblings is less than or equal to two. Our next objective was to check whether the value of intergenerational education coefficient is uniform across the son's educational distribution. In all three groups, we found that the educational attainment of a son is least affected by the education of father or mother if the son is at the upper end of educational distribution rather than at the lower end of the distribution. At 10th quantile of the distribution, the value of intergenerational educational mobility is lower than at the 90th quantile of the distribution. This implies that parents' education has a greater impact on son's education at the lower end of the educational distribution compared to the sons at the 90th quantile of distribution and this is true for both non-migrant sons and immigrant generations. Furthermore, at the lower end of the educational distribution, parents' education has a higher impact on the migrant son's educational achievements relative to the non-migrant sons. However, at the upper end, it is the migrant sons who exhibit higher

mobility when compared to the non-migrant sons. This may be because, at the top end of the educational distribution, migrant sons managed to break away from his circumstances, while at the lower and middle parts of the distribution, a son is still encumbered by his background.

The findings of this thesis have several policy implications. Education is one of the principal avenues through which socio-economic advantage or disadvantage is passed from parents to their children. One way to achieve equality of opportunity for the future generation is to try and reduce inequality in educational attainment in the present generation. With higher education for the present generation, it is expected that awareness about the importance of education to improve life condition will grow; leading to higher skill development and economic efficiency. In this context, public policy that provides free and compulsory formal education for every individual irrespective of his socio-economic background might help to achieve higher intergenerational mobility and economic efficiency. Additionally, technical education increases the skill level of an individual and therefore, widens his opportunity to find employment in a different sector rather than remain in the fathers' sector of employment. Public policies that motivate individual to acquire technical and vocational education should be introduced. Reservation policy can be deemed to be effective as we observed higher intergenerational mobility among the scheduled caste category compared to the general category.

However, there are a few limitations to our thesis. We did not examine the extent to which the mobility observed between public and private sector jobs is due to the shrinkage in the public sector during the post-reform period. Also, due to the lack of reliable data on married women, we examined only the parent-son pair in our thesis. The limitations of our thesis present scope for future work. More surveys

should be conducted that provides researchers with a pool of data to under intergenerational mobility at a deeper level.

To conclude, more studies on intergenerational mobility is crucial in the Indian context to guide the policymakers to adopt policies that provide equal opportunities to all individuals irrespective of their socio-economic background. Our study is an important contribution to the limited literature on intergenerational mobility available in the context of India.

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