SERVICES TRADE AND CHOICE OF INDUSTRIES
Studying Intergenerational Mobility of Indian workers

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***Abstract*:** The paper explores impact of growing services trade on the intergenerational job choice of the Indian households/workers towards as well as within services industry. Using NSSO data on employment-unemployment surveys for the period 1999-2000 to 2011-12 together with TSD_February_2015 data and UN Services trade data on India's services exports for the period 1995-96 to 2011-12, persistence is observed in intergenerational job choice, i.e. sons remain in the same industry as that of their fathers. The probit estimation shows that father's occupation and status has significant positive impact on persistence. Father's education above higher secondary level also has a significant positive impact on persistence. However, higher level of son's education and services export performance reduce the degree of persistence.

JEL Classification Code: F14, F16, J62, L80

Keywords: Services exports, job choice, probit estimation, intergenerational mobility/ persistence.

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An earlier version of the paper was presented at the ESS Seminar series at IIM Bangalore on 25 July 2019 and the WIDER Development Conference on "Transforming Economies – for Better Jobs" held at Bangkok, Thailand, during 11-13 September 2019. The authors are grateful to Rupa Chanda, Tirthatanmoy Das, Kunal Dasgupta, Arnab Mukherjee, Soham Sahoo, Kunal Sen, Selim Reihan, Nagesh Kumar and others for their comments on the paper. The usual disclaimer applies.

Section 1: Introduction

The Indian economy has experienced a structural change towards the services sector in the past decades. Growth of services sector picked up in the 1980s, and accelerated since the 1990s and the sector accounted for 57.3% of GDP in 2009-10 (Nayyar 2010). Along with sectoral growth, services trade has also witnessed rapid growth since the early 1990s. India's services trade volume increased by 16.09% per annum since 1991. Such phenomenal growth of trade in services has significant positive impact on the growth performance of the Indian service sector (Eichengreen and Gupta, 2010; Gordon and Gupta, 2004; Nayyar, 2010; and Rakshit, 2007).

Growth in services trade has been largely attributable to the advances in information and telecommunication technologies that have made a large array of services tradable across borders, and also the economic reforms that India has been pursuing since early 1990s (Raychaudhuri and De, 2012). Other studies, including Gordon and Gupta, show that the phenomenal growth of the Indian service sector is explained to a large extent by high income elasticity of demand, increased usage of services as inputs through splintering from domestic industries, economic reforms leading to deregulation and liberalization allowing more FDI in the country, and privatization of government-owned services like telecommunications, and, last but not the least, the high growth of exports of services. A closer look into the composition of India's services export shows that business services, comprising of software services, call centers and business process outsourcing, constitute around 46% of total services exports in 2010 (Raychaudhuri and De, 2012). It thus seems that the recent trends of fragmentation of the production processes in the developed nations and outsourcing of production activities to the developing world is the prime driver of such phenomenal growth in services exports from India.

Despite growth in services GDP and trade, there has not been commensurate growth in employment in services. Rangarajan et al. (2007) show that the employment elasticity in the services sector has remained low and the sector accounted for only 23.4 per cent of total employment in the economy in 2004-05. The existing literature studying the nature of employment in services sector in India (Ghose, 1999; Abraham, 2007) also arrive at similar findings even though they do not base their results on any rigorous econometric analysis. Some studies have looked into intergenerational mobility in jobs and occupation, but have not linked such mobility to services trade. These studies also view that the sector as a composite whole, thus ignoring the heterogeneity of different services sub-sectors.

This paper explores whether growing services trade across sub-sectors has any significant impact on the job choice of the Indian households/workers leading to intergenerational mobility towards service

industry. The rest of the paper is as follows. Section 2 elaborates on the literature review, section 3 describes the data sources for both employment and services export, section 4 explains the methodology and discusses the summary results, section 5 presents the estimation results based on a probit model of intergenerational choice of industry and section 6 concludes the paper with policy implications for the Indian job market.

Section 2: Review of literature

The review presented here consists of literature on two issues: services trade and intergenerational job choice and mobility. We intend to bring these two strands of studies together for the purpose of this paper. The literature on services trade, especially outsourcing, and employment in the context of the developing countries, in particular emerging market economies including India, is not large. According to Jones and Kierzkowski (2000) fragmentation makes custom-made delivery of final products possible by passing out the orders to foreign sub-contractors and differences in time zones make fragmentation and outsourcing of production blocks from developed western countries to the developing world a feasible option. This paper also suggests that with price of international service links falling, the information on potential international suppliers and legal systems becoming more widespread, the necessity for setting up various production blocks under the ownership of MNCs are getting gradually reduced. This implies enhanced scope of services exports from the developing world. Jones (2001) also suggests that as the production process becomes more fragmented, the developing economies get the advantage of gaining comparative advantage in producing some blocks of a previously integrated production process. These developing countries, thus, can actively participate in international trade and thereby acquire skills and knowledge about new techniques. In another paper Jones (2008) argues that the question is not about having comparative advantage in any production blocks to participate in international trade, but to find out how to make good use of lower-cost services in promoting production of fragments that can fit into a global production network. While making a comparative study of trade environments in China and India, the study highlights that India is more engaged in types of services trade that is performed on-line and India stands out because of the widespread use of the English language, which supports relatively higher local wage rates for those working in call centers and other service activities.

To identify the services sub-sectors important from the international trade perspective, Deardorff (2001) identifies 'trade services' as a special category of services and shows how services trade liberalisation may benefit the following services including transportation, insurance, communication, travel, professional services and finance. These are the sectors that facilitate the process of fragmentation and splintering of production blocks into the developing world. Therefore, while discussing the Indian

experience, these sub-sectors can be of prime importance. Considering the literature on expansion of services trade in India, Eichengreen and Gupta, (2010) have categorized services into three, which include traditional services comprising retail and wholesale trade, transport and storage, public administration and defense, hybrid of traditional and modern services comprising education, health and social work, hotels and restaurants, and other community, social and personal services and modern services comprising financial intermediation, computer services, business services, communications, and legal and technical services. They show that tradable and liberalized services have grown faster than non-tradable and controlled services. Increased export demand and net domestic demand are the main drivers of services sector growth. Such high growth has employment implications.

Gordon and Gupta (2004) gave only an intuitive explanation that growth of the services sector has been concentrated in sub-sectors which are more dependent on skilled labour with labour productivity in these sectors increasing on account of technological advancements and efficiency gains from liberalization, thus leading to a 'jobless' growth in the services sector. Nayyar (2010) carries out an econometric analysis of NSSO household survey data for the years 1993-94 and 2004-05 studying the nature of employment being generated in different sub-sectors of services in India. It shows that employment has been generated more in the sub-sectors with low educational requirement and the employment generated in the sub-sectors characterized by high educational requirements is not large. Further, these studies have not linked services employment with service sector trade. Ramaswamy et al. (2012), using NSS Data 1999-2000 (55^{th} Round) and 2009-2010 (66^{th} Round) for a comparative study of manufacturing and services sectors in urban India in terms of employment growth, job quality, earning distribution, skill and access to social security benefits, highlight that, within the services sector, young male workers improved their share in regular jobs while middle-aged men lost their share in regular jobs and moved to self-employment. The share of casual jobs and self-employment declined for women of all ages and their share in regular jobs increased significantly. Comparing employment scenario in manufacturing and services sectors, the paper shows that services had 66% informal enterprises compared to 55% in manufacturing in 2009-10. This paper however does not link services sector employment scenario with growth of services trade in India.

In Chanda (2011) a comparative study of the impact of services trade liberalization on employment in India, Bangladesh, Pakistan and Sri Lanka has been done. The study shows that the service sector's contribution to GDP exceeds 60%, but it's share in employment is merely 34% in 2009. The paper suggests that one of the possible explanations for this trend could be that employment in services has been increasingly informal and contract-based in nature. Growth in services output has been trade-oriented in India and software services have been an important driver of services export. Growth in outsourcing and establishment of offshore development centers in India has important spillover effects on

Indian economy. As of 2009, IT-BPO is one of the largest employers in India's organized private sector, and for every one person directly employed in the outsourcing industry, 3 persons are indirectly employed in other areas in India. However, the paper has not covered the nature of employment in other services sub-sectors. Even though some of the studies have highlighted of employment implications of services growth, none of them have linked such high growth to job choice.

Turning next to the literature on occupational choice, the pioneering work by Banerjee and Newman, (1993) builds a model where occupational choice is made on the basis of initial wealth distribution. The model places self-employment above wage employment highlighting that it is the poorest segment of the population who, being unable to get capital from the credit market due to absence of any collaterals, go for wage employment. However, as Jacob (2005) argues, large proportion of the self-employed workforce in developing countries are engaged in activities providing only subsistence level of income and are poorer than the wage-earners. According to this paper, occupational choice depends on three explanatory variables viz. human capital, risk aversion and initial wealth. Jacob's paper proposes that, agents that choose self-employment over wage-employment have lower educational level and belong to lower income level, and that, high-skilled entrepreneurs have the highest schooling and are the richest group in the economy.

Jones (2008) touches upon the link between services trade liberalization and occupational choice by highlighting that services trade liberalization tends to increase competition between generations. It is found that the older generation in many countries is relatively endowed in physical capital and the younger generation in human capital. Greater access to foreign education and sources for credit as a result of services trade liberalization and easy access to information about other cultures obtained through better information and communication network have tended to widen the range of opportunities to the younger generation. A foreign investor might prefer to make a partnership with a young graduate rather than an established local firm that has a vertically integrated production facility. This leads us to another interesting aspect of occupation choice theory that is the intergenerational mobility in labour market. The paper by Solon (1999) highlights that a child's earning is a function of investment in his human capital made by his parents and his endowed capacity. However, most of the intergenerational impact is unrelated to parental income and depends on the neighbourhood effect. Emran et al. (2011), studying intergenerational occupational mobility from agriculture to the nonfarm sector using household survey data from Nepal and Vietnam, find intergenerational occupational persistence is not driven by unobserved genetic correlations across generations and gender effects in occupational mobility, and show that the degree of intergenerational occupational mobility in developing countries is both gender and country specific.

Gang et al. (2012) show that there has been significant occupational diversification in India, with socially backward households in rural India catching up non-scheduled occupations indicating occupational mobility. The existing literature on occupational mobility in India has relied on the method of considering co-resident households where two or more generations stay together, and the occupational choices of parents and their children are studied. Azam et al. (2015) however, have used India Human Development Survey (IHDS) data and prepared a unique son-father matched data for the entire adult male population aged between 20 to 65 years to study intergenerational educational mobility across castes and states in India. Azam (2015), used India Human Development Survey (IHDS) data among men born between 1945 and 1985 in India on Altham Statistic[3], show higher degree of occupational mobility in the 1975-84 birth cohort compared with mobility in the 1945-54 birth cohort. The paper has also focused on mobility among different social groups. Hnatkovska et al., (2013), studying and comparing intergenerational mobility rates of the scheduled castes and tribes (SC / ST) in India with the rest of the workforce in terms of their education attainment, occupation choices and wages using several rounds of NSSO data between 1983 to 2005, find convergence in the intergenerational mobility rates of SC / STs to non- SC / ST levels in both education attainment and wages. The rate of switching occupation increased among SC / STs during this period and have matched that of the non-SC / STs. It is also seen that the sharpest change in intergenerational income mobility has been for middle income households for both SC / STs and non- SC / STs. Further it is observed that intra- generational gaps in education attainment levels, occupation choices, wages and consumption also declined between 1983 and 2004–2005. On examining the probable explanatory factors behind these observations, the paper concludes that, both aggregate growth and reservations for SC / STs in higher education and public sector employment have played important roles for education mobility convergence. Also, the competitive environment created by economic reforms, strengthening of caste- based networks of SC / STs and the increasing political empowerment of the lower castes over the past 30 years may have played a significant role as well.

Ahsan & Chatterjee (2017), who study the impact of trade liberalization on intergenerational mobility in urban India, find that a son residing in a district more exposed to trade liberalization is more likely to be in a higher ranked occupation than that of his father. This holds for a father belonging to the below-median income distribution. Both the papers rely on the same mechanism of co-resident households. Their model suggests that trade-induced innovation in high-tech firms raises the employment share of high-skill occupations. Though it might have negative impact on cross-sectional equality, it allows an increasing number of individuals to enter occupations that are better than their parents. To empirically examine the relationship between trade and intergenerational occupational mobility, the paper uses NSSO data and exploits the geographic variation in exposure to trade liberalization in India. They

[3] This follows Long and Ferrie (2013, 2007), Altham and Ferrie (2008), and Ferrie (2005).

find that a son residing in a district more exposed to trade liberalization is more likely to be in a higher ranked occupation than that of his father. This holds for a father belonging to the below-median income distribution. Additionally, they also found that increased investment in education does not explain the observed results but only facilitates upward occupational mobility in urban districts where there has been the necessary changes in the distribution of occupations.

Nandi, (2015) making use of the same method, studies the effect of education, ownership of productive assets and father's network on the intergenerational persistence of industry. It shows that educational attainment is an important factor determining intergenerational mobility across industries only when an individual has more than higher secondary level of education. Ownership of productive assets, at the bottom end of asset distribution, has a positive effect on intergenerational persistence. However, it loses importance with increase in asset size as it eases credit constraints to invest in the higher education of sons that leads to mobility across industries. The father's occupational status however, positively affects intergenerational persistence of industry.

The existing literature on this issue considers schooling or level of education as the most important variable in occupational choice decisions in developing economies. However, most of these studies are based on the manufacturing sector data and this leads us to conclude that very little has been done to trace the impact of growth of services trade on employment and job choice for households in the economy. With this backdrop of existing literature, this paper investigates into the intergenerational job choice in India using NSSO data at four time points, viz. 1999-2000, 2004-05, 2009-10 and 2011-12, to see whether there has been any significant change in the choice of industries or occupation pattern across two generations in the past decade. It has to be in reckoning that any study on intergenerational mobility is usually carried out using panel data on parents and their children, but in case of India panel data on labour mobility are not quite available. Rather, NSSO provides household level data for the country as a whole in their large sample rounds of surveys.

Section 3: Data Sources

We have used two types of data for this analysis, one is the employment data of Indian workers and the other is the services export data for India in the post liberalization period.

Employment Data:

In this paper, data on 'employment-unemployment' based on household surveys conducted by National Sample Survey Organization of India have been used. Four of the large sample rounds of survey viz. the 55th Round (1999-2000), the 61st Round (2004-05) the 66th Round (2009-10) and the 68th Round (2011-12) are considered for the current study.

NSSO uses a stratified multi-stage design of sampling. For the first stage, the first stage units (FSU) are the villages in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector as per 1991 census for the 55th round and as per 2001 census for the 61st, 66th and 68th rounds. The ultimate stage units (USU) are households in both the sectors. The large first stage units are further sub-divided into hamlet-groups (hgs) in rural areas and sub-blocks (sbs) in urban areas. Within each district of a State/ UT, generally speaking, two basic strata are formed: i) rural stratum comprising of all rural areas of the district and (ii) urban stratum comprising of all the urban areas of the district. However, within the urban areas of a district, wherever there are one or more towns with population 10 lakhs or more as per population census 1991 for the 55th round and as per census 2001 for the 61st, 66th and 68th rounds in a district, each of them is considered as a separate basic stratum and the remaining urban areas of the district are considered as another basic stratum. In the 55th round, hamlet-groups (hgs) and sub-blocks (sbs) are divided into segment 1 comprising of hg/sb having maximum concentration of non-agricultural enterprises and segment 2 comprising two more hg/sb selected from the rest. Then, the households in each segment are stratified into two second stage strata. Affluent households are clubbed as second stage stratum 1 and the rest are clubbed as second stage stratum 2. Sample households are then selected from the respective frames by circular systematic sampling with equal probability. For 61st, 66th and 68th rounds of survey, households in the selected FSU/ hamlet-group/ sub-block are stratified into three second stage strata (SSS). Required number of sample villages for the rural sector is selected from each stratum/ sub-stratum by probability proportional to size with replacement (PPSWR), size being the population of the village as per Census 2001. For urban sector, from each stratum FSUs are selected by using Simple Random Sampling without Replacement (SRSWOR). Households listed in the selected FSU/ hamlet-group/ sub-block are stratified into three second stage strata (SSS). From each SSS the sample households for each of the schedules are selected by SRSWOR.

Services Export Data:

For the export data, it is worth mentioning that services trade has a unique characteristic that it is intangible, invisible and non-storable.[4] Services export data at disaggregated level is still not available beyond the year 2000. We have explored the data provided by Reserve Bank of India, UN Services Trade

[4] As spelled out in the WTO-GATS, services trade can take place under the following four modes of supply:

- Mode 1 (Cross-Border): Services supplied from the territory of one Member into the territory of another.
- Mode 2 (Consumption abroad): Services supplied in the territory of one Member to the consumers of another.
- Mode 3 (Commercial presence): Services supplied through any type of business or professional establishment of one Member in the territory of another.
- Mode 4 (Presence of natural persons): Services supplied by nationals of one Member in the territory of another.

database, UNCTAD database and after compiling and comparing the Indian services export data from all these sources, finally services trade data provided by the Trade in Services Database (TSD_February 2015) version 8.9 are used. Francois et al. (2013), in a discussion paper on an update to the Trade in Services Database, mentioned that this database provides a consolidated and reconciled version of multiple sources of bilateral trade data. The data spans from 1981 to 2010, however, it is mentioned in the paper that the data on early years and 2010 are relatively incomplete as a substantial share of South-South Trade is unreported. But, this data serves our purpose as we fix the time span from 1995 to 2011-12.

Section 4: Methodology and Summary Statistics

Construction of Intergenerational Employment Tables

To study intergenerational choice of industries in the face of services trade liberalization, we construct a father-son paired up data for the three rounds of NSSO surveys. For that, we have adopted the methodology followed by Ahsan et al. (2016) to extract the data. Our working sample consists of urban men in the age group of 16 to 35 who are a part of the workforce and are not attending any educational institution. They have been paired up with their respective co-resident fathers, who have been identified as the male head of the household. The working sample includes only those father-son pairs who report their principal industry as well as their principal occupation. Construction of this dataset requires a few clarifications.

First of all, we have considered the urban population only, as services trade liberalization is expected to have its impact more on urban people than their rural counterpart. Secondly, following Hnatkovska et al. (2013) and Ahsan et al., (2016), we have considered co-resident household for our study. As NSSO does not ask for information about the fathers of the individuals surveyed, therefore paired up data on father-son duo can only be generated for the household where father and son co-reside in the same family. Again, we had to restrict ourselves to the families where the father is the head of the household. This is so, because, households where the son is the head of the household, NSSO does not distinguish between the father or the father-in-law who is co-residing in the same household and put them under the same code. So we have to drop these sons from our dataset. Third, following Hnatkovska et al. (2013) and Ahsan et al. (2016), male population is considered only as Indian daughters generally leave the family after marriage and become a member of another household. It is thus difficult to pair up daughters with their fathers to carry out any effective analysis. Also, female headed households are dropped from this sample, as such households being matched up with their sons comprise of merely 1% of the population under consideration. Last, but not of least importance, the upper age limit of the son is kept at 35 years in order to ensure that his father remains within the working population. The number of individuals in the working samples, in the four rounds, is thus as follows:

Table 1: Size of the working sample

	Round			
	55th (1999-2000)	61st (2004-05)	66th (2009-10)	68th Round (2011-12)
Urban Population	225500	204808	178457	176236
Population reporting Principal Industry and Occupation	72550	68906	58838	58365
Father-Son Pairs	9134	8586	7345	6980

Source: Author's calculations based on NSSO Employment Unemployment Survey for the four rounds

Table 2 depicts the summary statistics on the basic characteristics of the working sample for all four rounds of surveys. Panel A reports the mean age, level of general education, marital status, principal industry and occupation of the son and Panel B reports mean age, level of general education, principal industry and occupation of the father for the whole sample, Non-SC/STs and SC/STs. The figure in the parenthesis represents standard error. It shows that on an average, sons are approximately 24 years of age across groups and the average age of the father across groups is around 53. The average level of education is higher among sons than their fathers for the full sample, non SC/STs as well as SC/STs. However, the level of education of the general caste is much higher than that of SC/STs, and for all three categories, the level of education has gradually increased over time. The wholesale and retail trade sector occupies the maximum share in son's choice of principal industry for all three groups.

Mobility Analysis

In this paper we have tried to study the pattern of choice of industries as well as intergenerational occupational mobility for the four rounds of NSSO surveys as mentioned in the previous section. Following the literature on intergenerational mobility, one set of transition matrices are constructed for the principal industry groups and another set of transition matrices for the principal occupation of the father-son duo in our working sample for the four rounds of NSSO surveys.

For arriving at the industrial transition matrices 5-digit industry codes are suitably re-arranged and clubbed to form 18 industry groups with agriculture and allied activities as group 1, manufacturing as group 2 and different service industries at disaggregated level as groups 3 to 18. [Refer to TableA1 in Appendix]. Father's industry groups are arranged row-wise (i), while son's industry groups is arranged column-wise (j) to form the transition matrices presented in Tables A3, A4 and A5. Each cell (Pij) in

these tables represents the number of sons engaged in the jth industry whose father is from the ith industry. For example, cell P_{14} in Table A3 would show that 180 sons are engaged in wholesale and retail trade sector whose father belong to the agricultural sector. The number in the parenthesis shows the respective percentage values, i.e. for the same cell P_{14}, out of 1132 fathers belonging to the agricultural

Table 2: Sample Summary Statistics

Variables	Panel A: Son					Panel B: Father			
	Age	Education	Marital Status	Principal Industry Group	Principal Occupation	Age	Education	Principal Industry Group	Principal Occupation
All									
1999-2000	23.86 (0.05)	7.32 (0.03)	1.38 (0.01)	4.65 (0.04)	5.79 (0.02)	53.79 (0.08)	5.65 (0.04)	5.20 (0.05)	5.59 (0.03)
2004-05	23.95 (0.05)	7.45 (0.03)	1.38 (0.01)	4.71 (0.04)	5.90 (0.03)	53.16 (0.08)	5.61 (0.04)	5.08 (0.05)	5.79 (0.03)
2009-10	24.58 (0.06)	7.98 (0.03)	1.38 (0.01)	4.83 (0.05)	5.44 (0.03)	53.61 (0.08)	5.87 (0.04)	5.04 (0.05)	5.41 (0.03)
2011-12	24.93 (0.06)	8.16 (0.04)	1.40 (0.01)	5.25 (0.05)	5.38 (0.03)	54.07 (0.08)	6.01 (0.04)	5.23 (0.06)	5.25 (0.03)
Non-SC/ST									
1999-2000	24.54 (0.07)	8.13 (0.05)	1.39 (0.01)	4.76 (0.06)	5.27 (0.04)	54.55 (0.11)	6.63 (0.05)	5.26 (0.07)	5.00 (0.04)
2004-05	24.56 (0.08)	8.19 (0.05)	1.39 (0.01)	4.85 (0.07)	5.30 (0.04)	53.77 (0.12)	6.54 (0.06)	5.21 (0.08)	5.13 (0.04)
2009-10	25.42 (0.09)	8.76 (0.05)	1.40 (0.01)	5.07 (0.07)	4.67 (0.05)	54.45 (0.13)	6.90 (0.06)	5.21 (0.08)	4.58 (0.05)
2011-12	25.67 (0.09)	8.91 (0.06)	1.44 (0.01)	5.52 (0.08)	4.73 (0.05)	54.83 (0.14)	6.95 (0.07)	5.36 (0.09)	4.56 (0.06)
SC/ST									
1999-2000	23.20 (0.07)	6.52 (0.04)	1.36 (0.01)	4.53 (0.06)	6.31 (0.03)	53.05 (0.12)	4.70 (0.05)	5.14 (0.07)	6.16 (0.04)
2004-05	23.55 (0.07)	6.96 (0.04)	1.37 (0.01)	4.61 (0.06)	6.29 (0.03)	52.76 (0.11)	5.00 (0.04)	5.00 (0.07)	6.22 (0.03)
2009-10	24.03 (0.07)	7.46 (0.04)	1.37 (0.01)	4.67 (0.06)	5.95 (0.04)	53.06 (0.11)	5.19 (0.05)	4.94 (0.07)	5.95 (0.04)
2011-12	24.48 (0.07)	7.71 (0.04)	1.38 (0.01)	5.09 (0.07)	5.77 (0.04)	53.61 (0.11)	5.44 (0.05)	5.15 (0.07)	5.67 (0.04)

Source: Author's calculations based on NSSO Employment Unemployment Survey for the three rounds.

sector, 16 % of sons are engaged in wholesale and retail trade sector. The diagonal elements in the matrix reflect persistence of sons in their father's industry and the off-diagonal cells reflect mobility.

Coming occupational choices, NSSO provides occupational classifications for the 55th and 61st rounds as per National Classification of Occupations NCO 1968 and as per NCO 2004 for the 66th round. As per the concordance table for occupational codes for the years 1968 and 2004 published by NCO, the three-digit occupation codes for NCO 1968 are rearranged and clubbed to form ten occupational groups which are comparable across the four rounds of survey. (Refer to Table 2). These ten occupational codes are further grouped as per the nature of task performed to create four smaller groups. Group 1 takes into account white collar jobs comprising of legislators, senior officials, managers, professionals, associate professionals, group 2 comprises of clerks and service workers that include jobs like personal service providers, shop and market sales workers etc., group 3 includes skilled agricultural workers, craft and related trade workers and manufacturing labour and assemblers, and group 4 clubs agricultural labourers, mining and construction workers, transport labourers and freight handlers and other elementary occupations.

To construct the intergenerational occupational mobility matrix we put father's occupation along the columns and son's occupation along the rows and arrive at Tables A8, A9 and A10 and A11 for the four rounds respectively. Here, a cell P_{ij} in the matrix shows the number of sons engaged in j^{th} occupation having fathers in the i^{th} occupation. The number in the parenthesis depicts the respective percentage value. For example, cell P_{31} in Table A8 tells us that out of 3794 fathers engaged in agricultural or manufacturing sector related occupations, 4.7% of sons, i.e. 179 sons have moved to white-collar jobs.

For studying intergenerational occupational mobility of Indian workers, following the literature, the simplest measure of mobility, which is expressed as a ratio of sum of off-diagonal elements to total number of father-son pairs, is calculated. For example, for a mobility matrix,

$P=\begin{bmatrix} P11 & P12 \\ P21 & P22 \end{bmatrix}$, Mobility measured as $M_P = \frac{P12+P21}{P11+P12+P21+P22}$

In addition to this, we have calculated the upward and downward occupational mobility of the sons in the following manner. As the occupation categories are arranged in terms of skill-orientation of the occupations we have taken the sum of the cells to the left of the diagonal elements and as a percentage of total number of father-son pairs to get upward occupational mobility. Similarly the sum of the cells to the right of the diagonal elements as a percentage of total number of father-son pairs gives us the downward occupational mobility. The results are presented in Table 3 which shows that for all three rounds there is high degree of persistence among sons regarding choice of occupation. More than 60 % of sons are engaged in their father's occupation only. On an average 37% sons have moved out of their father's network and here also we observe a distinct pattern of choice for all three rounds. From Tables A7 to A9 we see that sons of fathers engaged in skilled agricultural and manufacturing related occupations have primarily moved towards clerical and service-related jobs. The rate of upward mobility has marginally improved over the years.

Table 3: Occupational Mobility Measure (in percentage terms)

	Persistence	Mobility	Upward Mobility	Downward Mobility
1999-2000	63.20	36.80	17.67	19.13
2004-05	61.97	38.03	19.55	18.49
2009-10	63.94	36.06	19.35	16.71
2011-12	62.15	37.85	20.67	17.18

Source: Author's calculations based on NSSO Employment Unemployment Survey for the three rounds

Construction of Services Export Tables

Export performance of service industries is matched with employment data for the four rounds, viz. 1999-2000, 2004-05, 2009-10 and 2011-12, by taking export data for a five year span preceding every employment data rounds i.e. 1995-96 to 1999-2000 for the 55th Round, 2001-02 to 2004-05 for the 61st round, 2005-06 to 2009-10 for the 66th Round and 2007-08 to 2011-12 for the 68th round. The share of individual service industries in total services exports and also the compound annual growth rate of services export for the five-year period preceeding each round is taken into consideration (See Tables A12, A13, A14 and A15).

Section 5: Studying Intergenerational Choice of Jobs across Industries

From working sample for all the four rounds, it is found that around 55% of the sons are engaged in the same industry as that of their fathers on an average. Table A7 depicts the degree of persistence among sons at different age groups, with different levels of education, and for sons belonging to different caste and religion. In NSSO survey design there is a concept of interpenetrating sub-samples. In every round, two independent samples are drawn as per the sampling strategy. In the urban sector, simple random sampling without replacement (SRSWOR) is followed. The samples within a sub-sample are drawn independently and separate estimates can be obtained from each of the subsamples. These sub-sample wise estimates are combined together to arrive at the final estimates. The final multiplier values are computed in a manner so that simple aggregation can generate the estimates. The NSSO calculates the multiplier values as per the sample design of the survey and posts it in the unit level records. The degree

of persistence has gradually declined irrespective of whether with and without the sample weight. It is seen that the degree of persistence has gradually declined in all four rounds with higher level of education in sons. Also, the degree of persistence is lowest among the sons belonging to scheduled caste and highest among the sons belonging to general caste in all four rounds of data.

The industrial transition matrices are formed by taking fathers' industry along the rows and sons' principal industry along the columns. The row-sum represents the number of sons engaged in all 18 industry categories for any particular category of father's industry. The column sum represents the number of fathers for each group of son's industry. Clearly the off-diagonal elements reflect the degree of intergenerational mobility across industry groups. The diagonal elements in the industry transition matrix show the degree of persistence.

It is clear from Tables A3, A4, A5 and A6 that there is high degree of persistence among the sons regarding choice of industries in all four rounds of data. The figures in the parenthesis represent the percentage of sons engaged in various industries with respect to the row total. It is seen that, barring a few services, 50 to 70 percent of sons are engaged in the same industries as their fathers in most industry groups including travel, post and telecommunication, financial services, insurance and pension services Public Administration and Defense, Education, Health and Social Work and Other elementary Services. For the above mentioned sectors, the residual proportion of sons have mostly moved towards manufacturing and wholesale and retail trade sectors for all the four years.

In the next section we try to trace the factors explaining this trend of intergenerational persistence of industries in jobs and whether growing services export has any influence on choice of industries for the younger generation by running probit regression for all the four rounds of survey during 1999-2000 to 2011-12.

The Model:

We have defined the dependent variable 'persistence' as y_i which takes a value of 1 if both the father and the son are engaged in the same industry and the value 0 otherwise. As explanatory variables, we have considered household characteristics like household type, religion and caste status of the household and the individual characteristics such as age, age squared and the marital status of the son, father's age, education level of both the father and the son, principal activity status and type of occupation of both the father and the son and finally, the average share of the service sector on total services export and CAGR of service export industries.

So, we define,

$$y_i = \begin{cases} 1 \; if \; son's \; industry \; group \; is \; same \; as \; his \; father's industry \; group \\ 0 \; if \; son's \; industry \; group \; differs \; from \; that \; of \; his \; father \end{cases}$$

We construct a Probit model which specifies

$$p_i = \Pr[y_i = 1|x_i] = \varphi(x_i' \beta)$$

where $\varphi(.)$ is the standard normal cumulative distribution function, and

$$x_i' \beta = \beta_\circ + \beta_1 age_i + \beta_2 age_i^2 + \beta_3 Fatherage_i + \beta_4 married_i + \theta' E + \alpha' R + \gamma' SG + \delta' HT + \varepsilon' FE + \mu' FO + \rho' FS + \sigma' SSE + \tau' SEG$$

where, E, R, SG, HT, FE, FO, FS, SSE and SEG represent complete sets of Education category dummies, religion dummies, Social Group dummies, Household type dummies, Father's Education dummies, Father's Occupation dummies, Father's activity Status dummies, share of export of service sector dummies and service export growth dummies respectively.

Estimation Results:

Three sets of probit estimation for each of the four rounds of data. In the first set, as the baseline results, only the individual and household characteristics of the son as the explanatory variables are considered. In the second specification, father's education, occupation and employment status are added as control to check its impact on son's choice of industry. Finally, in the third set of regression, variables on export performance of service industries are added to check its impact on intergenerational mobility of sons. The three sets of estimation results are presented in panel A, B and C respectively in Tables A16, A17, A18 and A19.

Starting with the baseline estimates, it is found that that age and age squared did not have any significant effect on intergenerational persistence of industries in all four rounds. Age of the father either does not have any significant impact in any of the rounds except during 2004-05 (61st round) when the father's age had a significant negative impact on intergenerational persistence. Marital status played a significant role in the 61st, 66th and 68th round, where the married sons are more likely to be employed in the same industry as their fathers. Son's primary education did not play any significant role except for the 55th round (1999-2000). Again, secondary and higher secondary education was significant only in 2009-10. However, an education level above higher secondary had significant negative impact on persistence in all four rounds of survey. Religion was not a significant explanatory variable for the last two rounds but it had a significant impact in the 55th round. It is seen that compared to Hindus, Muslims and Christian are less likely to be engaged in the same industry as that of their fathers. As for the social group as an explanatory variable, it is also seen that incidence of intergenerational persistence is more among the sons belonging to the General category, compared to SC, ST or OBC. This impact is significant in the previous three rounds but it turns out to be insignificant in the last round i.e. in 2011-12. Household type is a significant explanatory variable in all four rounds. Compared to the self-employed type of households, the

wage earners and casual workers are less likely to be persistent in their choice of industries over the generations.

In our second set of estimation to check father's impact on son's choice of industries, we introduce father's education, occupation and employment status as explanatory variables along with the initial ones. We see that the baseline explanatory variables remain the same in set 2 as well for the 55th, 61st and 66th round. In the 68th round, son's education above secondary level, has significant negative impact on persistence. Father's level of education had no significant impact on son's choice of industries in the previous three rounds, but became significant from secondary education level onwards in the 68th round. It is seen that compared to illiterate fathers, son's of fathers with higher education are more persistent in their choice of industries. Considering father's occupation as an explanatory variable, we see that compared to elementary occupation, if a father is engaged in white-collar, clerical and service oriented jobs or skilled agricultural and manufacturing jobs, there is higher probability of intergenerational persistence. As far as father's employment status is concerned, compared to a self-employed father, it is less likely for the sons of wage-earners to remain in the same industry as that of their fathers, but it is more likely for the sons of casual workers. These results hold good for the previous three rounds of survey, but father's employment status becomes insignificant in the 68th round i.e. in 2011-12.

Coming next to the third set of estimation, we have introduced three dummy variables for the three categories of export performance in terms of share of the sector in total services export. We have clubbed the 18 industry groups into three categories depending on whether the sector has low, moderate or high share in services export performance in preceding five years for each round. We have also considered the compound annual growth rate of services export and clubbed the 18 industry groups into three categories depending on whether the sector experiences low, moderate or high export growth rate and introduce three more dummy variables to represent export growth performance. We have refrained from introducing this last variable to the 55th round on account of insufficient data to calculate export growth rates for several services sectors. Both the variables introduced to capture the export performance of the services industry have significant negative impact on intergenerational persistence in all four rounds, i.e. higher the compound annual growth rate of export of the service sector or higher the share of the service sector in total services export for each round, it is less likely for the son to be employed in his father's industry. The statuses of other explanatory variables remain the same as in set 2.

Robustness checks:

To check for robustness of our results we have run the same analysis for two subsets of the son's age range. We have taken the set of sons within the age group of 16 to 24 and a separate set of son between age 25 to 35 and carried out the same estimation procedure. It is found that in both these cases,

the estimation results remain the same. The degree of persistence also remains the same for both the sub cases when compared with the original results.

We also intend to incorporate two other robustness checks for this analysis in our future work. One is to use the Services Trade Restrictiveness Index prepared by OECD to analyse India's openness to services trade at sectoral level and its impact on intergenerational industrial as well as occupational mobility of Indian workers. Secondly, we would like to carry out intergenerational mobility study at the state level.

To sum up the estimation result, the explanatory variables that have significant positive impact on persistence are

- Marital status: Married sons are more persistent in his choice of industries than unmarried sons.
- Father's Occupation: compared to the fathers engaged in elementary occupation, the sons of fathers belonging to White collar jobs, clerical or service jobs are more likely to be persistent.
- Father's status: compared to self employed fathers, the sons of casual workers are more likely to stick to their father's profession.
- Father's Education: though this variable was not significant in the previous three rounds of survey, however, in the 68th round it has a significant positive impact on persistence. Fathers who are educated up to or above higher secondary level are more likely to have their sons in the same industry.

The explanatory variables that are responsible for the observed mobility are:

- Son's Education: Son's level of education has significant negative impact on persistence. Sons with higher the degree of education are more likely to move out of their father's network. Primary education had significant negative effect on intergenerational persistence of industries in all the rounds except for the 68th round (2011-12). Secondary and higher secondary education became significant driver of mobility during 2004-05 onwards. However, in the 68th round i.e. in 2011-12, son's education had no impact on persistence in the baseline estimates but had significant negative impact on persistence when father's network and services trade performance was taken into consideration. Considering all the rounds, sons with more than higher secondary level of education are more likely to switch jobs.
- Social Group: Compared to general category, sons belonging to Scheduled Caste, scheduled tribe or other backward classes were more likely to choose industry of operation different from their fathers. May be, the social security measures extended by the government towards

these social groups widened the scope of employment for the younger generation which were not probably available to their fathers. This might explain the reason behind the significance of this variable in explaining mobility. It is to be noted that, it no longer remains a significant variable in the 68th round. This can be explained by the argument that over the years, the discrepancies in the facilities available to the two generations gradually die down, and thus the variable loses its significance.

- Household Type: In all four rounds of survey, compared to the self-employed type of households, the wage earners and casual workers are less likely to be persistent in their choice of industries over the generations.
- Performance of the service sector in total Services Export: We have used two measures to study the impact of this variable.
    - Average Share of the sector in total services export
    - Compound Annual Growth Rate of the export of the services sectors

Controlling for individual and household characteristics and father's network, we see that the services export performance plays a significant negative role on persistence. Compared to non-tradable services, higher the export performance of the service sectors, greater is the chance of sons moving out of their traditional choices and move into the sectors where new type of employment is being generated.

Comparing this result with the observations from the industry transition matrices for the four rounds presented in Tables A3, A4, A5 and A6 respectively, we see that not much sons have entered the tradable services sector moving out of their fathers industry. They have primarily been absorbed in the manufacturing sector or wholesale and retail trade sector and for some cases, in the transport and construction sector. To sum up, it is clear from the transition matrices of all three rounds that sons in general have moved towards manufacturing and whole-sale and retail trade sector irrespective of the industry where their fathers are employed.

However, this does not undermine the role of services trade liberalization in generating employment in India. In the next section we try to provide some intuitive explanation for the trend of employment that we observe among the younger generation.

An Intuitive Explanation:

One plausible explanation could be that the service sectors experiencing high compound annual growth rates are actually having negligible share in total services export on an average as shown in Table 6. The sectors with greater share in total services export are Computer and Information Services (42% share in 2009-10), Other Business Services (20% share in 2009-10), Travel (12% share in 2009-10) and

Transport (11% share in 2009-10). Jobs in the Computer and Information Services sector are available only to the group of educated youth with some specialized technical knowledge-base. So this sector might not have generated much employment, but expansion of this sector has generated employment in other non-traded service sectors through the following channels.

A spurt in IT and IT-enabled services introduced flexible timings for the workers engaged in IT-BPO services. To match the working hours with that of their foreign clients the working hours spread from usual formal office hours from 9am to 5pm setup to a 24-hour flexi-timing set up. This in turn created demand for transportation services catering to these new age workers that would run throughout the day. Also, serving office for long hours gave rise to demand for food joints and food delivery services as well. It further gave a spurt to construction business as the flexible and long working hours compelled the workers from suburban areas to stay in the city rather than commuting from distant areas. Therefore, though jobs in the Computer and Information Services sector are knowledge-centric and low employment generating, it has linkages with other non-traded service as well as manufacturing sector that creates employment in these sectors in turn.

As per the Balance of Payments Manual, International Monetary Fund, travel comprises of lodging, food and beverages, entertainment, and transportation consumed by the foreigners within the economy visited—all of which are consumed in the providing economy—and gifts, souvenirs, and articles (irrespective of value) purchased for travelers' own uses and taken out of the economies visited. So, it may be the case that the fruits of export growth in this sector are spread over a number of other non-tradable services as well as goods sectors. On the whole, intergenerational mobility, though evident on a smaller scale, can be explained by the rapid growth of services exports in the economy during the last two decades.

Section 6: Conclusions

In this paper we explored whether growing services trade has any impact on the intergenerational job mobility among Indian households/workers leading to intergenerational job switches towards service industry. For that, we have constructed a working sample of father-son duo based on certain characteristics from the NSSO data and constructed industrial transition matrices as well as occupational transition matrices to study the intergenerational job choices of the younger generation compared to the older ones. We found persistence among sons to remain in the same industry or occupation as that of their fathers.

The probit regression estimation results delineate the factors underlying such observed persistence in job choice. We found that marital status has significant impact on the degree of persistence. Similarly, father's occupation and status has significant positive impact on persistence. It needs to be

stressed that if the father is engaged in a better occupation as compared to elementary occupation, there is greater chance that the son will remain in the same industry. However, compared to illiterate sons, higher education level of sons has significant negative impact on persistence. Educated sons are more mobile in terms of choosing jobs. And finally, we found that rising importance of services exports in total, as well as compound annual growth rate of the services export has significant negative impact on persistence. The industry transition matrices do not reflect any significant job switches towards liberalized and trade oriented services sectors. However, it might well be the case that the fruits of services trade liberalization in terms of employment generation is spread over a number of other services sectors through backward and forward linkages including manufacturing sector. In fact the concept of embodied services that comes as a package with sales of durable manufactured goods, which is difficult to separate from the manufacturing sector, may have absorbed the employment potential of services sector into manufacturing.

In this paper, we have tried to establish a link between services trade liberalization and job switches towards services industries over the generations. Primarily, our results indicate a positive relation between the two. However, we intend to go deeper into the analysis and incorporate the asset-base of the father and the matching of skill-set of the son with the changing skill requirements of the growing liberalized and tradable services sectors to arrive at more comprehensive results on the matter.

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Appendix

Table A1: Industry Groups

Industry Group	Description	Industry Group	Description
1	Agriculture	10	Insurance and Pension
2	Manufacturing	11	Real Estate and Renting
3	Construction	12	Computer and Related Activities
4	Wholesale and Retail Trade	13	Other Business Services
5	Hotel and Restaurant	14	Public Administration and Defense
6	Transport and Storage	15	Education
7	Travel	16	Health and Social Work
8	Post and Telecommunication	17	Other Community, Social and Personal Services
9	Financial Services	18	Other Services

Source: Authors' construction on the basis of NIC-1998 and NIC-2004 at 5-digit level

Table A2: Occupation Groups

Occupation Group	Description	Occupation Group	Description
1	Legislators, Senior Officials, Managers	6	Skilled Agricultural and Fishery Workers
2	Professionals	7	Craft and related Trade Workers, Manufacturing Labour
3	Associate Professionals	8	Plant and Machine Operators and Assemblers
4	Clerks and Supervisors	9	Elementary Occupation
5	Service Workers	10	Service Labourers

Source: National Classification of Occupation-2004 at 1-digit level.

Table A3: Mobility across Principal Industry Groups: 55th Round (1999-2000) (Number of individuals) (weighted)

	Son Industry Group																		
Father Industry Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1	600 (53)	99 (9)	108 (10)	180 (16)	20 (2)	58 (5)	0 (0)	1 (0)	2 (0)	0 (0)	5 (0)	0 (0)	6 (1)	22 (2)	16 (1)	5 (0)	8 (1)	0 (0)	1132 (12)
2	16 (1)	1284 (65)	105 (5)	341 (17)	19 (1)	72 (4)	1 (0)	10 (0)	20 (1)	2 (0)	4 (0)	13 (1)	26 (1)	9 (0)	16 (1)	9 (0)	26 (1)	0 (0)	1972 (22)
3	14 (2)	89 (12)	433 (57)	130 (17)	8 (1)	37 (5)	0 (0)	1 (0)	5 (1)	0 (0)	3 (0)	0 (0)	5 (1)	1 (0)	7 (1)	2 (0)	22 (3)	2 (0)	759 (8)
4	42 (2)	227 (9)	117 (5)	1775 (72)	24 (1)	117 (5)	1 (0)	13 (1)	22 (1)	3 (0)	3 (0)	12 (1)	23 (1)	10 (0)	30 (1)	12 (1)	16 (1)	3 (0)	2450 (27)
5	5 (2)	42 (14)	13 (4)	50 (16)	173 (56)	16 (5)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (1)	1 (0)	0 (0)	3 (1)	0 (0)	307 (3)
6	20 (2)	159 (19)	73 (8)	260 (30)	20 (2)	266 (31)	3 (0)	5 (1)	5 (1)	0 (0)	2 (0)	8 (1)	7 (1)	2 (0)	12 (1)	4 (0)	9 (1)	4 (0)	860 (9)
7	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (7)	0 (0)	0 (0)	0 (0)	0 (0)	3 (75)	1 (17)	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	4 (0)
8	1 (1)	10 (22)	1 (2)	8 (16)	3 (7)	6 (13)	0 (0)	9 (18)	0 (0)	1 (1)	0 (0)	0 (0)	6 (13)	1 (1)	1 (1)	1 (3)	1 (2)	0 (0)	48 (1)
9	2 (2)	19 (21)	0 (0)	25 (28)	2 (3)	3 (4)	0 (0)	2 (2)	17 (19)	2 (2)	0 (0)	3 (3)	8 (9)	0 (0)	4 (5)	0 (0)	1 (2)	0 (0)	88 (1)
10	0 (0)	3 (66)	0 (0)	1 (15)	0 (0)	0 (0)	0 (0)	0 (0)	1 (17)	0 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (0)
11	0 (0)	2 (5)	0 (0)	13 (33)	2 (4)	5 (13)	0 (0)	0 (0)	1 (1)	0 (0)	14 (36)	0 (0)	1 (2)	0 (0)	1 (3)	0 (0)	1 (3)	0 (0)	39 (0)
13	5 (5)	12 (11)	4 (4)	20 (19)	3 (2)	7 (6)	0 (0)	0 (0)	1 (1)	1 (1)	0 (0)	1 (1)	41 (38)	1 (1)	7 (6)	2 (2)	2 (2)	0 (0)	108 (1)
14	18 (3)	99 (15)	66 (10)	179 (28)	9 (1)	48 (7)	0 (0)	6 (1)	16 (3)	0 (0)	5 (1)	18 (3)	20 (3)	85 (13)	40 (6)	12 (2)	20 (3)	1 (0)	640 (7)
15	5 (2)	51 (23)	5 (2)	89 (41)	1 (1)	11 (5)	0 (0)	6 (3)	0 (0)	0 (0)	2 (1)	1 (0)	14 (6)	2 (1)	24 (11)	3 (2)	5 (2)	0 (0)	218 (2)
16	1 (2)	23 (30)	3 (4)	22 (29)	1 (1)	3 (4)	1 (1)	1 (1)	0 (0)	0 (0)	2 (2)	1 (1)	2 (3)	2 (3)	2 (3)	12 (15)	1 (2)	0 (0)	77 (1)
17	8 (2)	39 (11)	33 (9)	60 (17)	1 (0)	13 (4)	0 (0)	0 (0)	2 (0)	1 (0)	1 (0)	0 (0)	5 (1)	5 (1)	5 (1)	6 (2)	174 (49)	2 (0)	355 (4)
18	0 (0)	17 (24)	0 (0)	21 (30)	2 (2)	6 (8)	0 (0)	0 (0)	3 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (4)	8 (11)	13 (18)	72 (1)
Total	737 (8)	2176 (24)	962 (11)	3173 (35)	288 (3)	668 (7)	6 (0)	54 (1)	95 (1)	10 (0)	41 (0)	59 (1)	166 (2)	142 (2)	167 (2)	71 (1)	297 (3)	24 (0)	9134

1-Agriculture, 2-manufacturing, 3-Construction, 4-Wholesale and Retail Trade, 5- Hotel and Restaurant, 6- Transport and Storage, 7- Travel, 8-Post and Telecommunication, 9- Financial Services, 10-Insurance and Pension, 11-Real Estate and Renting, 12- Computer and Related Activities, 13- Other Business Services, 14- Public Administration and Defense, 15- Education, 16- Health and Social Work, 17- Other Community, Social and Personal Services, 18- Other Services

Source: Author's calculations based on NSSO Employment Unemployment Survey-55th Round

(Figures in the parenthesis of each row show percentage of sons engaged in various industries for each of father's category)

(Figures in the parenthesis of the last column depicts the percentage of fathers belonging to different industries)

Table A4: Mobility across Principal Industry Groups: 61st Round (2004-05) (Number of individuals) (weighted)

	Son Industry Group																		
Father Industry Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1	475 (42)	142 (13)	106 (9)	193 (17)	16 (1)	94 (8)	0 (0)	7 (1)	14 (1)	2 (0)	9 (1)	1 (0)	7 (1)	9 (1)	10 (1)	19 (2)	17 (2)	0 (0)	1121 (13)
2	27 (1)	1297 (66)	123 (6)	256 (13)	20 (1)	94 (5)	0 (0)	13 (1)	19 (1)	2 (0)	9 (0)	11 (1)	17 (1)	12 (1)	22 (1)	14 (1)	26 (1)	1 (0)	1963 (23)
3	10 (1)	124 (16)	401 (52)	120 (15)	10 (1)	26 (3)	0 (0)	7 (1)	1 (0)	0 (0)	2 (0)	3 (0)	18 (2)	4 (1)	4 (1)	30 (4)	15 (2)	1 (0)	777 (9)
4	47 (2)	309 (14)	118 (5)	1566 (69)	20 (1)	76 (3)	2 (0)	22 (1)	14 (1)	0 (0)	17 (1)	8 (0)	21 (1)	4 (0)	15 (1)	16 (1)	11 (0)	2 (0)	2269 (26)
5	6 (2)	40 (13)	22 (7)	48 (16)	152 (50)	16 (5)	0 (0)	3 (1)	0 (0)	0 (0)	3 (1)	0 (0)	6 (2)	3 (1)	1 (0)	2 (1)	1 (0)	0 (0)	304 (4)
6	10 (1)	121 (17)	87 (13)	171 (25)	27 (4)	186 (27)	0 (0)	17 (2)	10 (1)	5 (1)	1 (0)	4 (1)	12 (2)	0 (0)	21 (3)	1 (0)	18 (3)	5 (1)	694 (8)
7	0 (0)	1 (28)	0 (0)	1 (28)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (29)	0 (0)	1 (15)	0 (0)	0 (0)	0 (0)	5 (0)
8	3 (4)	16 (20)	2 (3)	14 (17)	0 (0)	9 (11)	0 (0)	9 (11)	5 (7)	0 (0)	0 (0)	1 (1)	10 (12)	0 (0)	9 (11)	1 (2)	1 (2)	0 (0)	80 (1)
9	0 (0)	7 (13)	1 (3)	20 (35)	2 (3)	3 (5)	0 (0)	2 (4)	10 (17)	0 (0)	0 (0)	3 (6)	4 (7)	0 (1)	1 (1)	0 (1)	0 (0)	2 (4)	55 (1)
10	0 (0)	2 (33)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)	0 (0)	1 (26)	0 (3)	0 (0)	1 (20)	0 (0)	0 (4)	0 (0)	0 (3)	0 (0)	0 (0)	5 (0)
11	0 (0)	14 (21)	1 (2)	15 (21)	3 (4)	4 (6)	0 (0)	0 (0)	8 (11)	2 (3)	15 (22)	3 (4)	1 (1)	0 (0)	4 (6)	0 (0)	0 (0)	0 (0)	69 (1)
12	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (0)
13	2 (2)	24 (22)	5 (4)	27 (25)	0 (0)	2 (2)	0 (0)	3 (2)	8 (7)	0 (0)	0 (0)	3 (3)	25 (23)	6 (5)	2 (2)	0 (0)	2 (2)	0 (0)	108 (1)
14	21 (4)	76 (16)	37 (8)	88 (19)	7 (2)	60 (13)	2 (0)	21 (4)	14 (3)	0 (0)	1 (0)	11 (2)	23 (5)	63 (13)	23 (5)	9 (2)	11 (2)	4 (1)	471 (5)
15	8 (4)	45 (24)	3 (2)	36 (19)	6 (3)	4 (2)	0 (0)	12 (7)	2 (1)	1 (1)	0 (0)	5 (3)	2 (1)	7 (4)	34 (18)	0 (0)	21 (11)	0 (0)	186 (2)
16	1 (1)	9 (10)	12 (14)	26 (30)	6 (7)	6 (7)	0 (0)	2 (3)	0 (0)	0 (0)	0 (0)	1 (1)	4 (5)	2 (2)	7 (8)	10 (11)	1 (1)	0 (0)	86 (1)
17	0 (0)	41 (13)	12 (4)	60 (19)	4 (1)	30 (10)	0 (0)	1 (0)	5 (1)	0 (0)	1 (0)	0 (0)	8 (3)	1 (0)	3 (1)	0 (0)	144 (46)	0 (0)	312 (4)
18	1 (1)	18 (24)	15 (21)	9 (13)	1 (1)	13 (17)	0 (0)	3 (4)	2 (2)	0 (0)	0 (0)	5 (7)	0 (0)	3 (4)	0 (0)	1 (1)	1 (1)	2 (3)	73 (1)
Total	611 (7)	2287 (27)	945 (11)	2651 (31)	274 (3)	622 (7)	4 (0)	121 (1)	112 (1)	13 (0)	58 (1)	68 (1)	158 (2)	114 (1)	157 (2)	103 (1)	269 (3)	19 (0)	8586

1-Agriculture, 2-manufacturing, 3-Construction, 4-Wholesale and Retail Trade, 5- Hotel and Restaurant, 6- Transport and Storage, 7- Travel, 8-Post and Telecommunication, 9- Financial Services, 10-Insurance and Pension, 11-Real Estate and Renting, 12- Computer and Related Activities, 13- Other Business Servicves, 14- Public Administration and Defence, 15- Education, 16- Health and Social Work, 17- Other Community, Social and Personal Services, 18- Other Services

Source: Author's calculations based on NSSO Employment Unemployment Survey-61st Round

(Figures in the parenthesis of each row show percentage of sons engaged in various industries for each of father's category)

(Figures in the parenthesis of the last column depicts the percentage of fathers belonging to different industries)

Table A5: Mobility across Principal Industry Groups: 66th Round (2009-10) (Number of individuals) (weighted)

	Son Industry Group																		
Father Industry Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1	424 (55)	64 (8)	83 (11)	90 (12)	8 (1)	49 (6)	0 (0)	2 (0)	6 (1)	1 (0)	3 (0)	0 (0)	15 (2)	3 (0)	18 (2)	3 (0)	3 (0)	0 (0)	772 (11)
2	13 (1)	966 (65)	85 (6)	164 (11)	14 (1)	35 (2)	3 (0)	32 (2)	18 (1)	1 (0)	2 (0)	50 (3)	40 (3)	11 (1)	25 (2)	15 (1)	10 (1)	2 (0)	1487 (20)
3	5 (1)	99 (11)	540 (60)	98 (11)	13 (1)	49 (5)	0 (0)	15 (2)	3 (0)	1 (0)	3 (0)	5 (1)	12 (1)	9 (1)	5 (1)	36 (4)	7 (1)	0 (0)	899 (12)
4	14 (1)	207 (10)	92 (5)	1458 (72)	17 (1)	75 (4)	0 (0)	20 (1)	26 (1)	6 (0)	3 (0)	22 (1)	25 (1)	11 (1)	24 (1)	9 (0)	9 (0)	1 (0)	2021 (28)
5	2 (1)	12 (5)	36 (16)	41 (19)	114 (52)	3 (1)	1 (1)	1 (1)	2 (1)	0 (0)	0 (0)	3 (1)	1 (0)	0 (0)	1 (1)	0 (0)	0 (0)	3 (1)	220 (3)
6	9 (1)	108 (17)	82 (13)	105 (17)	33 (5)	201 (32)	3 (1)	12 (2)	16 (3)	4 (1)	9 (1)	8 (1)	16 (3)	3 (0)	16 (3)	3 (0)	4 (1)	1 (0)	633 (9)
7	0 (0)	2 (13)	0 (0)	3 (21)	0 (0)	0 (0)	5 (29)	0 (0)	3 (21)	0 (0)	0 (0)	3 (16)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	16 (0)
8	0 (1)	11 (22)	1 (1)	7 (14)	1 (2)	2 (3)	0 (0)	6 (12)	5 (11)	0 (0)	0 (0)	4 (9)	0 (0)	0 (0)	11 (24)	0 (0)	0 (1)	0 (0)	48 (1)
9	0 (0)	8 (11)	6 (8)	12 (16)	3 (4)	1 (1)	0 (0)	0 (0)	26 (34)	0 (0)	0 (0)	11 (15)	3 (4)	1 (1)	3 (5)	0 (0)	1 (1)	0 (0)	76 (1)
10	0 (0)	2 (20)	0 (1)	3 (40)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (3)	0 (0)	3 (33)	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	8 (0)
11	0 (0)	6 (11)	4 (7)	16 (30)	0 (0)	2 (3)	1 (2)	0 (1)	1 (1)	0 (0)	22 (41)	0 (0)	0 (0)	0 (0)	1 (3)	0 (1)	0 (0)	0 (0)	54 (1)
12	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (0)
13	1 (1)	27 (22)	11 (9)	16 (14)	2 (2)	2 (2)	0 (0)	5 (4)	1 (1)	0 (0)	0 (0)	14 (12)	34 (28)	3 (2)	2 (2)	2 (1)	0 (0)	1 (1)	121 (2)
14	9 (2)	72 (14)	44 (9)	98 (19)	19 (4)	57 (11)	1 (0)	4 (1)	22 (4)	1 (0)	1 (0)	34 (7)	15 (3)	57 (11)	19 (4)	16 (3)	24 (5)	15 (3)	507 (7)
15	3 (2)	9 (8)	16 (14)	24 (20)	0 (0)	2 (2)	0 (0)	3 (3)	8 (7)	0 (0)	0 (0)	2 (2)	0 (0)	8 (6)	31 (27)	8 (7)	2 (2)	0 (0)	117 (2)
16	0 (0)	25 (47)	2 (4)	6 (11)	1 (2)	1 (2)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	1 (1)	1 (2)	1 (2)	10 (18)	3 (5)	0 (0)	53 (1)
17	1 (0)	27 (11)	20 (8)	30 (12)	0 (0)	3 (1)	0 (0)	3 (1)	0 (0)	7 (3)	0 (0)	4 (2)	12 (5)	0 (0)	2 (1)	3 (1)	145 (57)	0 (0)	255 (3)
18	0 (0)	9 (17)	12 (22)	6 (12)	7 (13)	10 (19)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (3)	0 (0)	0 (0)	6 (11)	53 (1)
Total	481 (7)	1652 (22)	1034 (14)	2179 (30)	231 (3)	492 (7)	15 (0)	106 (1)	137 (2)	22 (0)	43 (1)	168 (2)	174 (2)	106 (1)	163 (2)	105 (1)	208 (3)	29 (0)	7345

1-Agriculture, 2-manufacturing, 3-Construction, 4-Wholesale and Retail Trade, 5- Hotel and Restaurant, 6- Transport and Storage, 7- Travel, 8-Post and Telecommunication, 9- Financial Services, 10-Insurance and Pension, 11-Real Estate and Renting, 12- Computer and Related Activities, 13- Other Business Servicves, 14- Public Administration and Defence, 15- Education, 16- Health and Social Work, 17- Other Community, Social and Personal Services, 18- Other Services

Source: Author's calculations based on NSSO Employment Unemployment Survey-66th Round

(Figures in the parenthesis of each row show percentage of sons engaged in various industries for each of father's category)

(Figures in the parenthesis of the last column depicts the percentage of fathers belonging to different industries)

Table A6: Mobility across Principal Industry Groups: 68th Round (2011-12) (Number of individuals) (weighted)

	Son Industry Group																		
Father Industry Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1	395 (52)	86 (11)	65 (9)	73 (10)	14 (2)	48 (6)	0 (0)	7 (1)	4 (1)	5 (1)	5 (1)	3 (0)	19 (2)	7 (1)	14 (2)	5 (1)	7 (1)	2 (0)	757 (11)
2	13 (1)	1075 (67)	78 (5)	153 (10)	9 (1)	45 (3)	8 (1)	21 (1)	26 (2)	16 (1)	13 (1)	48 (3)	36 (2)	8 (1)	25 (2)	4 (0)	13 (1)	4 (0)	1593 (23)
3	7 (1)	119 (16)	431 (58)	69 (9)	12 (2)	40 (5)	0 (0)	5 (1)	1 (0)	0 (0)	2 (0)	13 (2)	16 (2)	5 (1)	5 (1)	10 (1)	13 (2)	0 (0)	748 (11)
4	11 (1)	219 (13)	73 (4)	1068 (63)	26 (2)	68 (4)	0 (0)	19 (1)	25 (1)	11 (1)	8 (0)	25 (1)	74 (4)	4 (0)	22 (1)	12 (1)	16 (1)	12 (1)	1694 (24)
5	2 (1)	39 (16)	14 (6)	31 (13)	98 (42)	16 (7)	0 (0)	0 (0)	4 (2)	0 (0)	2 (1)	8 (4)	4 (2)	4 (2)	3 (1)	2 (1)	8 (4)	0 (0)	235 (3)
6	7 (1)	103 (15)	66 (10)	132 (20)	10 (2)	177 (26)	6 (1)	16 (2)	9 (1)	15 (2)	3 (0)	5 (1)	61 (9)	2 (0)	15 (2)	8 (1)	22 (3)	15 (2)	673 (10)
7	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	1 (9)	2 (27)	0 (0)	0 (0)	3 (51)	0 (0)	0 (0)	6 (0)
8	1 (2)	3 (8)	1 (2)	9 (24)	1 (2)	3 (9)	0 (0)	2 (6)	2 (6)	0 (0)	0 (0)	4 (12)	4 (10)	0 (0)	2 (4)	2 (7)	3 (9)	0 (0)	37 (1)
9	0 (0)	10 (15)	1 (1)	6 (9)	4 (5)	8 (11)	3 (5)	0 (0)	7 (10)	0 (0)	1 (2)	11 (16)	7 (9)	1 (2)	4 (6)	6 (9)	0 (0)	0 (0)	70 (1)
10	0 (0)	1 (9)	0 (0)	1 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (3)	0 (0)	4 (62)	0 (0)	6 (0)
11	0 (0)	12 (15)	0 (0)	6 (7)	2 (2)	6 (7)	0 (0)	0 (0)	1 (1)	0 (0)	39 (46)	0 (0)	7 (9)	0 (0)	0 (0)	6 (7)	4 (5)	0 (0)	85 (1)
12	0 (0)	0 (0)	0 (0)	2 (87)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (0)
13	4 (1)	48 (14)	16 (5)	58 (17)	6 (2)	10 (3)	0 (0)	2 (1)	21 (6)	6 (2)	5 (1)	17 (5)	112 (33)	5 (1)	21 (6)	9 (3)	3 (1)	0 (0)	342 (5)
14	3 (1)	29 (10)	27 (10)	48 (17)	4 (1)	23 (8)	0 (0)	11 (4)	19 (7)	6 (2)	1 (0)	10 (4)	21 (8)	40 (14)	28 (10)	7 (2)	3 (1)	1 (0)	281 (4)
15	2 (2)	13 (12)	4 (3)	15 (14)	2 (2)	5 (5)	1 (1)	12 (11)	6 (5)	0 (0)	0 (0)	19 (18)	9 (9)	0 (0)	17 (15)	2 (2)	0 (0)	2 (2)	108 (2)
16	0 (0)	22 (26)	1 (1)	12 (14)	4 (5)	4 (5)	0 (0)	2 (3)	1 (1)	1 (1)	0 (0)	1 (1)	13 (16)	1 (1)	1 (1)	20 (24)	1 (1)	0 (0)	85 (1)
17	4 (2)	20 (10)	26 (13)	24 (12)	2 (1)	12 (6)	0 (0)	0 (0)	8 (4)	0 (0)	0 (0)	8 (4)	7 (3)	4 (2)	5 (2)	0 (0)	76 (39)	1 (0)	197 (3)
18	0 (0)	4 (7)	2 (4)	22 (36)	0 (0)	4 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	7 (11)	4 (7)	2 (3)	0 (0)	5 (8)	9 (15)	62 (1)
Total	448 (6)	1802 (26)	804 (12)	1729 (25)	193 (3)	469 (7)	19 (0)	98 (1)	133 (2)	61 (1)	80 (1)	175 (3)	399 (6)	86 (1)	163 (2)	98 (1)	177 (3)	46 (1)	6980

1-Agriculture, 2-manufacturing, 3-Construction, 4-Wholesale and Retail Trade, 5- Hotel and Restaurant, 6- Transport and Storage, 7- Travel, 8-Post and Telecommunication, 9- Financial Services, 10-Insurance and Pension, 11-Real Estate and Renting, 12- Computer and Related Activities, 13- Other Business Servicves, 14- Public Administration and Defence, 15- Education, 16- Health and Social Work, 17- Other Community, Social and Personal Services, 18- Other Services

Source: Author's calculations based on NSSO Employment Unemployment Survey-68th Round

(Figures in the parenthesis of each row show percentage of sons engaged in various industries for each of father's category)

(Figures in the parenthesis of the last column depicts the percentage of fathers belonging to different industries)

Table A7: Incidence of Intergenerational Persistence

	55th Round (1999-2000)	61st Round (2004-2005)	66th Round (2009-2010)	68th Round (2011-2012)	55th Round (1999-2000)	61st Round (2004-2005)	66th Round (2009-2010)	68th Round (2011-2012)
	Without Sample weight				With Sample weight			
All	56.93	54.02	57.25	53.72	53.86	51.21	55.11	51.12
Age								
16-20 Years	55.56	55.13	60.51	55.83	52.39	49.40	56.81	55.76
21-25 Years	57.04	52.95	54.24	51.23	53.42	51.34	51.1	49.79
26-30 Years	56.16	52.99	56.63	54.16	55.28	52.23	57.02	48.62
31-35 Years	62.46	56.98	61.25	56.04	57.74	54.35	61.09	52.56
Education								
No Education	61.56	60.48	68.09	59.01	60.78	56.89	64.16	57.75
Primary Education	55.94	55.38	61	57.50	54.82	50.81	61.31	59.29
Secondary Education	56.95	55.19	58.04	55.2	53.12	53.03	57.6	52.27
Higher Secondary Education	53.49	53.62	58.61	55.15	61.58	51.27	55.11	51.78
More than Higher Secondary Education	52.74	45.68	47.65	46.1	45.89	43.74	41.91	40.79
Caste								
General	59.86	56.87	60.23	54.67	55.25	54.07	58.96	52.45
Scheduled Caste	50.04	47.22	49.05	48.27	50.58	43.57	45.44	48.86
Scheduled Tribe	51.47	50.46	50.71	52.23	42.48	45.82	39.39	46.77
Other Backward Class	55.98	43.57	58.36	55.01	54.49	51.69	56.07	51.13
Religion								
Hindu	56.39	52.71	55.78	52.79	52.65	49.56	54.06	48.87
Muslim	58.79	58.34	63.03	56.04	58.52	56.21	61.37	58.36
Christian	44.19	55.05	49.69	51.41	29.67	49.73	38.56	38.06
Others	64.46	54.18	62.79	59.11	63.16	49.73	55.38	55.90

Source: Author's calculations based on NSSO Employment Unemployment Survey for the four rounds.

Table A8: Mobility across Broad Occupation Groups: 55th Round (1999-2000)

	Son Occupation Group_small				
Father Occupation Group_small	1	2	3	4	Total
1	865	419	372	63	1719
	(50.3)	(24.4)	(21.6)	(3.7)	(18.8)
2	167	1551	482	119	2319
	(7.2)	(66.9)	(20.8)	(5.1)	(25.4)
3	**179**	589	2733	293	3794
	(4.7)	(15.5)	(72.0)	(7.7)	(41.5)
4	63	176	440	623	1302
	(4.8)	(13.5)	(33.8)	(47.8)	(14.3)
Total	1274	2735	4028	1097	9134

1. White collar jobs comprising of legislators, senior officials, managers, professionals, associate professionals
2. Clerical and service-oriented jobs
3. Skilled agricultural and manufacturing related jobs
4. Other elementary jobs

Source: Author's calculations based on NSSO Employment Unemployment Survey

Table A9: Mobility across Broad Occupation Groups: 61st Round (2004-05)

	Son Occupation Group_Small				
Father Occupation Group_small	1	2	3	4	Total
1	880	377	308	64	1629
	(54.0)	(23.1)	(18.9)	(3.9)	(19.0)
2	174	1300	484	95	2053
	(8.5)	(63.3)	(23.6)	(4.6)	(23.9)
3	257	565	2582	259	3664
	(7.0)	(15.4)	(70.5)	(7.1)	(42.7)
4	32	193	458	558	1240
	(2.6)	(15.5)	(36.9)	(45.0)	(14.4)
Total	1342	2435	3832	976	8586

1. White collar jobs comprising of legislators, senior officials, managers, professionals, associate professionals
2. Clerical and service-oriented jobs
3. Skilled agricultural and manufacturing related jobs
4. Other elementary jobs

Source: Author's calculations based on NSSO Employment Unemployment Survey

Table A10: Mobility across Broad Occupation Groups: 66th Round (2009-10)

	Son Occupation Group_Small				
Father Occupation Group_small	1	2	3	4	Total
1	1349	343	253	57	2002
	(67.4)	(17.1)	(12.6)	(2.9)	(27.3)
2	217	786	303	60	1365
	(15.9)	(57.6)	(22.2)	(4.4)	(18.6)
3	195	436	1960	212	2804
	(7.0)	(15.5)	(69.9)	(7.6)	(38.2)
4	55	178	340	601	1174
	(4.7)	(15.1)	(29.0)	(51.2)	(16.0)
Total	1816	1742	2856	930	7345

1. White collar jobs comprising of legislators, senior officials, managers, professionals, associate professionals
2. Clerical and service-oriented jobs
3. Skilled agricultural and manufacturing related jobs
4. Other elementary jobs

Source: Author's calculations based on NSSO Employment Unemployment Survey

Table A11: Mobility across Broad Occupation Groups: 68th Round (2011-12)

	Son Occupation Group_small				
Father Occupation Group_small	1	2	3	4	Total
1	1,359	318	385	61	2,122
	(64.1)	(15.0)	(18.1)	(2.9)	(30.4)
2	254	676	246	45	1,221
	(20.8)	(55.4)	(20.2)	(3.7)	(17.5)
3	279	377	1,851	145	2,651
	(10.5)	(14.2)	(69.8)	(5.5)	(38.0)
4	88	124	321	452	985
	(8.9)	(12.6)	(32.6)	(45.9)	(14.1)
Total	1,980	1,495	2,803	702	6,980

1.White collar jobs comprising of legislators, senior officials, managers, professionals, associate professionals
2.Clerical and service-oriented jobs
3.Skilled agricultural and manufacturing related jobs
4.Other elementary jobs

Source: Author's calculations based on NSSO Employment Unemployment Survey

Table A12: Export Performance of Indian Services Industries for the 55th Round

Panel A:India's Services Export Volume (in US $ million)												
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated	Total_EBOPS_Services
1995-96	1890	2582	56	49	170	15	14	2122		34	30	6932
1996-97	1989	2831	55	103	210	35	30	2149		75	66	7482
1997-98	1942	2890	42	103	229	32	51	3865	8	185	61	9346
1998-99	1773	2949	40	98	230	21	61	6115	8	624	61	11919
1999-00	1844	3010	50	161	238	63	59	8972	4	503	58	14903
Total	9438	14261	242	514	1077	166	214	23224	20	1422	276	50583

Panel B: Percentage Share of the Sector in Total Services Export											
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated
1995-96	27.27	37.24	0.81	0.71	2.45	0.21	0.20	30.62	0.00	0.49	0.43
1996-97	26.58	37.84	0.73	1.37	2.81	0.47	0.40	28.72	0.00	1.01	0.89
1997-98	20.78	30.92	0.45	1.10	2.45	0.34	0.54	41.35	0.08	1.98	0.65
1998-99	14.88	24.74	0.34	0.82	1.93	0.18	0.51	51.31	0.07	5.24	0.51
1999-00	12.37	20.19	0.33	1.08	1.60	0.42	0.39	60.20	0.03	3.38	0.39
Average Share of sector	20.38	30.19	0.53	1.02	2.25	0.32	0.41	42.44	0.04	2.42	0.57

Source: Author's calculation based on Trade in Services Database (TSD_February 2015) version 8.9.https://datacatalog.worldbank.org/dataset/trade-services-database

Table A13: Export Performance of Indian Services Industries for the 61st Round

Panel A: India's Services Export Volume (in US $ million)												
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated	Total_EBOPS_Services
2000-01	1979	3460	599	502	257	276	4727	4253	7	654	87	16713
2001-02	2050	3198	1104	104	282	306	7407	2451	8	538	77	17449
2002-03	2473	3263	779	231	332	598	8889	2803	9	353	64	19731
2003-04	3022	4463	969	276	408	367	11876	2277	50	269	4881	23975
2004-05	4373	6170	1094	516	842	341	16344	8325	46	350	5740	38400
Total	13897	20553	4545	1630	2121	1888	49244	20109	119	2163	10850	116269
CAGR	17.2%	12.3%	12.8%	0.6%	26.8%	4.3%	28.2%	14.4%	45.6%	-11.7%	130.9%	18.1%

Panel B: Percentage Share of the Sector in Total Services Export											
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated
2000-01	11.84	20.70	3.58	3.00	1.54	1.65	28.29	25.45	0.04	3.91	0.52
2001-02	11.75	18.33	6.33	0.60	1.62	1.75	42.45	14.05	0.04	3.08	0.44
2002-03	12.54	16.54	3.95	1.17	1.68	3.03	45.05	14.21	0.04	1.79	0.33
2003-04	12.60	18.61	4.04	1.15	1.70	1.53	49.53	9.50	0.21	1.12	20.36
2004-05	11.39	16.07	2.85	1.34	2.19	0.89	42.56	21.68	0.12	0.91	14.95
Average Share of sector	12.02	18.05	4.15	1.45	1.75	1.77	41.58	16.98	0.09	2.16	7.32

Source: Author's calculation based on Trade in Services Database (TSD_February 2015) version 8.9.https://datacatalog.worldbank.org/dataset/trade-services-database

Table A14: Export Performance of Indian Services Industries for the 66th Round

Panel A:India's Services Export Volume (in US $ million)												
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated	Total_EBOPS_Services
2005-06	5754	7493	1566	346	941	1143	21875	12970	111	328	8965	62273
2006-07	7561	8634	2181	619	1113	2357	29088	17605	306	274	12210	69738
2007-08	9035	10729	2348	753	1507	3379	37491	20911	510	317	15490	86980
2008-09	11318	11832	2423	722	1548	4059	49379	19038	707	387	19949	116693
2009-10	12921	11136	1486	837	1526	3661	46656	12001	467	406	19877	101460
Total	46589	49824	10004	3277	6635	14599	184489	82526	2101	1712	76491	437145
CAGR	17.6%	8.2%	-1.0%	19.3%	10.2%	26.2%	16.4%	-1.5%	33.3%	4.3%	17.3%	10.3%

Panel B: Percentage Share of the Sector in Total Services Export											
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated
2005-06	9.24	12.03	2.51	0.56	1.51	1.84	35.13	20.83	0.18	0.53	14.40
2006-07	10.84	12.38	3.13	0.89	1.60	3.38	41.71	25.24	0.44	0.39	17.51
2007-08	10.39	12.34	2.70	0.87	1.73	3.88	43.10	24.04	0.59	0.36	17.81
2008-09	9.70	10.14	2.08	0.62	1.33	3.48	42.32	16.31	0.61	0.33	17.10
2009-10	12.74	10.98	1.46	0.82	1.50	3.61	45.98	11.83	0.46	0.40	19.59
Average Share of sector	10.58	11.57	2.38	0.75	1.53	3.24	41.65	19.65	0.45	0.40	17.28

Source: Author's calculation based on Trade in Services Database (TSD_February 2015) version 8.9.https://datacatalog.worldbank.org/dataset/trade-services-database

Table A15: Export Performance of Indian Services Industries for the 68th Round

Panel A:India's Services Export Volume (in US $ million)												
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated	Total_EBOPS_Services
2007-08	9036	10729	2348	753	1506	3379	37491	40870	510	317	15490	86927
2008-09	11565	11832	2478	841	1559	4291	49112	53403	707	387	19949	107230
2009-10	10980	11136	1486	837	1526	3661	46656	50317	467	406	19877	93036
2010-11	13248	14160	1412	525	1782	5834	56878	62712	335	485	19904	124309
2011-12	17678	17707	1671	838	2585	6249	60446	66695	346	596	8948	138536
Total	44829	47857	7724	2956	6373	17165	190137	207302	2019	1595	75221	411502
CAGR	14.4%	10.5%	-6.6%	2.2%	11.4%	13.1%	10.0%	3.0%	-7.5%	13.5%	-10.4%	9.8%

Panel B: Percentage Share of the Sector in Total Services Export											
	Transportation	Travel	Communications	Construction	Insurance_services	Financial_services	Computer_information_services	Other Business Services	Personal_cultural_and_recreational_services	Government_services_n.i.e.	Services_not_allocated
2007-08	10.39	12.34	2.70	0.87	1.73	3.89	43.13	23.99	0.59	0.36	17.82
2008-09	10.79	11.03	2.31	0.78	1.45	4.00	45.80	17.74	0.66	0.36	18.60
2009-10	11.80	11.97	1.60	0.90	1.64	3.94	50.15	12.90	0.50	0.44	21.36
2010-11	10.66	11.39	1.14	0.42	1.43	4.69	45.76	17.53	0.27	0.39	16.01
2011-12	12.76	12.78	1.21	0.60	1.87	4.51	43.63	17.49	0.25	0.43	6.46
Average Share of sector	11.28	11.90	1.79	0.72	1.63	4.21	45.69	17.93	0.45	0.40	16.05

Source: Author's calculation based on Trade in Services Database (TSD_February 2015) version 8.9.https://datacatalog.worldbank.org/dataset/trade-services-database

Table A16: Probit Estimation Results for the 55th Round (1999-2000)

Variables	Panel A	Panel B	Panel C
	Set 1	Set 2	Set 3
Age	0.0147 (0.028)	0.0310 (0.029)	0.0464 (0.029)
Age Squared	-0.0002 (0.001)	-0.0005 (0.001)	-0.0008 (0.001)
Father's Age	-0.0017 (0.002)	-0.0034 (0.002)	-0.0037 (0.002)
Married	0.0414 (0.038)	0.0544 (0.040)	0.0493 (0.040)
Education			
Primary Education	-0.1165** (0.052)	-0.1371** (0.054)	-0.1514*** (0.054)
Secondary Education	-0.0620 (0.048)	-0.0814 (0.052)	-0.1001* (0.053)
Higher Secondary Education	-0.1419 (0.202)	-0.0996 (0.242)	-0.1876 (0.239)
More than Higher Secondary Education	-0.1682*** (0.062)	-0.1380* (0.072)	-0.1303* (0.074)
Religion			
Muslim	-0.0893** (0.038)	-0.1040*** (0.039)	-0.0970*** (0.039)
Christian	-0.1789** (0.089)	-0.1451 (0.092)	-0.1525* (0.093)
Others	0.1845** (0.071)	0.1910*** (0.072)	0.1956*** (0.073)
Social Group			
Scheduled Tribe	-0.0534 (0.080)	-0.0756 (0.082)	-0.0951 (0.082)
Scheduled Caste	-0.1983*** (0.049)	-0.1858*** (0.051)	-0.1909*** (0.051)
Other Backward Class	-0.1187*** (0.034)	-0.1284*** (0.035)	-0.1317*** (0.036)
Household Type			
Wage Earners	-1.0609*** (0.035)	-0.6194*** (0.070)	-0.6227*** (0.071)
Casual Labour	-0.3106*** (0.044)	-0.3893*** (0.080)	-0.4194*** (0.080)
Other	-0.3593*** (0.106)	-0.2450** (0.108)	-0.2618** (0.110)
Father's education			

Primary Education	---	0.0516 (0.041)	0.0568 (0.041)
Secondary Education	---	-0.0129 (0.046)	-0.0053 (0.046)
Higher Secondary Education	---	-0.3147 (0.356)	-0.2737 (0.352)
More than Higher Secondary Education	---	0.0505 (0.077)	0.0919 (0.079)
Father's Occupation			
White-collar Jobs	---	0.0370 (0.060)	-0.0012 (0.060)
Clerical and service-oriented Jobs	---	0.2655*** (0.054)	0.2134*** (0.055)
Skilled agricultural and manufacturing Jobs	---	0.1657*** (0.047)	0.1275*** (0.049)
Father's Activity Status			
Wage Earners	---	-0.4836*** (0.071)	-0.4637*** (0.072)
Casual Labour	---	0.1668** (0.081)	0.2023** (0.081)
Share of Sector in Total Services Export			
Moderate	---	---	-0.5095*** (0.060)
High	---	---	-1.0218*** (0.123)
Log pseudolikelihood	-5015.03	-4751.22	-4675.06
Number of observations	8105	7731	7731

* Denotes estimate is significant at 10 per cent level of significance.
** Denotes estimate is significant at 5 per cent level of significance.
*** Denotes estimate is significant at 1 per cent level of significance.
Blank space denotes estimate is not significant.
Figures in the parenthesis depicts the robust standard error.

Table A17: Probit Estimation Results for the 61st Round (2004-05)

Variables	Panel A	Panel B	Panel C
	Set 1	Set 2	Set 3
Age	-0.0331 (0.028)	-0.0303 (0.028)	-0.0140 (0.029)
Age Squared	0.0005 (0.001)	0.0005 (0.001)	0.0002 (0.001)
Father's Age	-0.0049** (0.002)	-0.0059** (0.002)	-0.0062** (0.002)
Married	0.2160*** (0.038)	0.2176*** (0.038)	0.1995*** (0.038)
Education			
Primary Education	-0.0982* (0.055)	-0.1181** (0.057)	-0.1209** (0.057)
Secondary Education	-0.0768 (0.052)	-0.1096** (0.056)	-0.1115** (0.057)
Higher Secondary Education	-0.1218* (0.066)	-0.1487** (0.070)	-0.1638** (0.071)
More than Higher Secondary Education	-0.2702*** (0.063)	-0.2858*** (0.071)	-0.2895*** (0.072)
Religion			
Muslim	-0.0494 (0.039)	-0.0530 (0.039)	-0.0473 (0.039)
Christian	0.2482*** (0.092)	0.2545*** (0.092)	0.2676*** (0.092)
Others	0.0822 (0.070)	0.0764 (0.070)	0.0730 (0.072)
Social Group			
Scheduled Tribe	-0.2625*** (0.082)	-0.2517*** (0.083)	-0.2785*** (0.083)
Scheduled Caste	-0.2031*** (0.047)	-0.1764*** (0.048)	-0.1688*** (0.049)
Other Backward Class	-0.1367*** (0.033)	-0.1282*** (0.033)	-0.1337*** (0.034)
Household Type			
Wage Earners	-1.0990*** (0.035)	-0.8442*** (0.061)	-0.8391*** (0.062)
Casual Labour	-0.3361*** (0.044)	-0.3554*** (0.075)	-0.3841*** (0.075)
Other	-0.0754 (0.116)	0.0188 (0.119)	0.0659 (0.117)

Father's education			
Primary Education	---	0.0537 (0.040)	0.0546 (0.041)
Secondary Education	---	-0.0074 (0.044)	-0.0186 (0.044)
Higher Secondary Education	---	0.056 (0.075)	0.0679 (0.077)
More than Higher Secondary Education	---	-0.0250 (0.070)	0.0075 (0.071)
Father's Occupation			
White-collar Jobs	---	0.0752 (0.055)	0.0554 (0.047)
Clerical and service-oriented Jobs	---	0.2675*** (0.050)	0.2063*** (0.050)
Skilled agricultural and manufacturing Jobs	---	0.0881** (0.044)	0.3580** (0.045)
Father's Activity Status			
Wage Earners	---	-0.3077*** (0.064)	-0.3018*** (0.065)
Casual Labour	---	0.0852 (0.076)	0.0940 (0.076)
Share of Sector in Total Services Export			
Moderate	---	---	0.3648*** (0.128)
High	---	---	-1.1554*** (0.250)
Services Export Growth Rate			
Moderate	---	---	-1.0082*** (0.119)
High	---	---	-0.2288*** (0.076)
Log pseudolikelihood	-5303.2959	-5233.8715	-5105.5296
Number of observations	8573	8572	8572

* Denotes estimate is significant at 10 per cent level of significance.
** Denotes estimate is significant at 5 per cent level of significance.
*** Denotes estimate is significant at 1 per cent level of significance.
Blank space denotes estimate is not significant.
Figures in the parenthesis depicts the robust standard error.

Table A18: Probit Estimation Results for the 66th Round (2009-10)

Variables	Panel A	Panel B	Panel C
	Set 1	Set 2	Set 3
	Coefficient	Coefficient	Coefficient
Age	-0.0394 (0.031)	-0.0417 (0.032)	-0.0241 (0.032)
Age Squared	0.0007 (0.001)	0.0008 (0.001)	0.0004 (0.001)
Father's Age	-0.0038 (0.003)	-0.0049* (0.003)	-0.0053** (0.003)
Married	0.1715*** (0.040)	0.1842*** (0.040)	0.1875*** (0.041)
Education			
Primary Education	-0.1342* (0.072)	-0.1554** (0.074)	-0.1336* (0.075)
Secondary Education	-0.1996** (0.067)	-0.2621*** (0.070)	-0.2589*** (0.071)
Higher Secondary Education	-0.1589** (0.077)	-0.2451*** (0.081)	-0.2570*** (0.083)
More than Higher Secondary Education	-0.3660*** (0.076)	-0.4614*** (0.082)	-0.4538*** (0.084)
Religion			
Muslim	0.0108 (0.042)	-0.0074 (0.042)	0.0106 (0.043)
Christian	-0.0114 (0.091)	0.0162 (0.092)	-0.0131 (0.093)
Others	0.1488* (0.078)	0.1382* (0.079)	0.1223 (0.080)
Social Group			
Scheduled Tribe	-0.1409* (0.082)	-0.1245 (0.084)	-0.0925 (0.086)
Scheduled Caste	-0.2368*** (0.051)	-0.1834*** (0.052)	-0.1623*** (0.053)
Other Backward Class	-0.0904** (0.036)	-0.0828** (0.037)	-0.0851** (0.037)
Household Type			
Wage Earners	-1.0742*** (0.038)	-0.8743*** (0.069)	-0.8715*** (0.070)
Casual Labour	-0.2707*** (0.045)	-0.3686*** (0.085)	-0.3232*** (0.087)
Other	-0.5911*** (0.111)	-0.5214*** (0.114)	-0.5867*** (0.114)

Father's education			
Primary Education	---	0.0175 (0.045)	0.0079 (0.046)
Secondary Education	---	0.0492 (0.048)	0.0402 (0.048)
Higher Secondary Education	---	0.0852 (0.074)	0.0559 (0.075)
More than Higher Secondary Education	---	-0.0405 (0.073)	-0.0095 (0.075)
Father's Occupation			
White-collar Jobs	---	0.3592*** (0.059)	0.3159*** (0.060)
Clerical and service-oriented Jobs	---	0.3812*** (0.058)	0.3130*** (0.059)
Skilled agricultural and manufacturing Jobs	---	0.2505*** (0.049)	0.1947*** (0.050)
Father's Activity Status			
Wage Earners	---	-0.2303*** (0.072)	-0.2189*** (0.073)
Casual Labour	---	0.2355*** (0.084)	0.2587*** (0.084)
Share of Sector in Total Services Export			
Moderate	---	---	-0.4565*** (0.065)
High	---	---	-1.7259*** (0.274)
Services Export Growth Rate			
Moderate	---	---	-0.3251*** (0.046)
High	---	---	-0.1691** (0.077)
Log pseudolikelihood	-4469.72	-4428.81	-4290.45
Number of observations	7334	7333	7333

* Denotes estimate is significant at 10 per cent level of significance.
** Denotes estimate is significant at 5 per cent level of significance.
*** Denotes estimate is significant at 1 per cent level of significance.
Blank space denotes estimate is not significant.
Figures in the parenthesis depicts the robust standard error.

Table A19: Probit Estimation Results for the 68th Round (2011-12)

Variables	Panel A	Panel B	Panel C
	Set 1	Set 2	Set 3
Age	-0.0365	-0.0441	-0.0140
	(0.032)	(0.032)	(0.032)
Age Squared	0.0007	0.0008	0.0002
	(0.001)	(0.001)	(0.001)
Father's Age	-0.0012	-0.0011	-0.0013
	(0.003)	(0.003)	(0.002)
Married	0.1316***	0.1397***	0.1355***
	(0.040)	(0.040)	(0.040)
Education			
Primary Education	-0.0364	-0.0692	-0.0724
	(0.073)	(0.075)	(0.076)
Secondary Education	-0.0780	-0.1577**	-0.1319*
	(0.070)	(0.072)	(0.073)
Higher Secondary Education	-0.0869	-0.2161***	-0.2071**
	(0.079)	(0.083)	(0.084)
More than Higher Secondary Education	-0.2557***	-0.4232***	-0.3678***
	(0.076)	(0.084)	(0.085)
Religion			
Muslim	-0.0775*	-0.0610	-0.0564
	(0.041)	(0.041)	(0.042)
Christian	-0.0241	-0.0328	0.0005
	(0.093)	(0.094)	(0.096)
Others	0.1042	0.1059	0.1048
	(0.078)	(0.078)	(0.078)
Social Group			
Scheduled Tribe	-0.0167	-0.0014	-0.0168
	(0.080)	(0.080)	(0.081)
Scheduled Caste	-0.1298**	-0.0771	-0.0947*
	(0.053)	(0.054)	(0.054)
Other Backward Class	-0.0494	-0.0306	-0.0273
	(0.036)	(0.036)	(0.037)
Household Type			
Wage Earners	-0.8903***	-0.8233***	-0.8045***
	(0.037)	(0.070)	(0.072)
Casual Labour	-0.1390***	-0.1046	-0.1632*
	(0.047)	(0.093)	(0.093)
Other	0.4462**	0.4822**	0.4866**
	(0.194)	(0.194)	(0.193)

Father's education			
Primary Education	---	0.0754 (0.046)	0.0656 (0.046)
Secondary Education	---	0.1327*** (0.049)	0.1259** (0.049)
Higher Secondary Education	---	0.3369*** (0.076)	0.3187*** (0.078)
More than Higher Secondary Education	---	0.1387* (0.071)	0.1460** (0.073)
Father's Occupation			
White-collar Jobs	---	0.2637*** (0.060)	0.2547*** (0.061)
Clerical and service-oriented jobs	---	0.2328*** (0.060)	0.2034*** (0.061)
Skilled Agricultural and manufacturing jobs	---	0.1570*** (0.051)	0.1338*** (0.052)
Father's Activity Status			
Wage Earners	---	-0.0754 (0.074)	-0.0479 (0.076)
Casual Labour	---	0.0686 (0.091)	0.0996 (0.092)
Share of Sector in Total Services Export			
Moderate	---	---	-0.4584*** (0.061)
High	---	---	-2.3513*** (0.411)
Services Export Growth Rate			
Moderate	---	---	-0.2658*** (0.064)
Log pseudolikelihood	-4443.0808	-4417.9344	-4278.5325
Number of observations	6975	6975	6975

* Denotes estimate is significant at 10 per cent level of significance.
** Denotes estimate is significant at 5 per cent level of significance.
*** Denotes estimate is significant at 1 per cent level of significance.
Blank space denotes estimate is not significant.
Figures in the parenthesis depicts the robust standard error.