ISSN 1471-0498

DEPARTMENT OF ECONOMICS

DISCUSSION PAPER SERIES

THE NATURE OF EMPLOYMENT IN INDIA'S SERVICES SECTOR: EXPLORING THE HETEROGENEITY

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Number 452
September 2009

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The Nature of Employment in India's Services Sector: Exploring the Heterogeneity

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Abstract

For some observers, the dramatic growth of the services sector in India reflects rapid strides made by educated professionals. Some others see it as the expansion of an employer of last resort. Given this heterogeneity, the object of the paper is to analyze the nature of employment being created in the different sub-sectors of services, relative to the industrial sector. The nature of employment is defined to include educational requirements and quality, where the latter comprises wages, job security and social protection. Using different econometric models to analyse household survey data from India in 1993-94 and 2004-05, we find the following. First, sub-sectors of services are generally either 'good' or 'bad' employers. Second, service sub-sectors with low educational requirements have low overall quality of employment, and vice-versa. Moreover, employment expansion appears to be more in sub-sectors where educational requirements and quality of employment is low.

JEL Classification: C21, C25, L80, O12, J30

Keywords: Services, India, Employment, Educational Requirements, Wages, Contracts

[1] The author would like to thank John Knight for his detailed comments and suggestions.

1. Introduction

The process of economic development has been associated with structural change. The pioneering work of Fisher (1935), Clark (1940) and Kuznets (1971) postulates a set of stylized facts relating to the now industrialized countries. They suggest that once countries have industrialized and reached an advanced stage of economic development, the share of the manufacturing sector declines, while the share of the services sector increases. Rowthorn and Wells (1987) provide a similar description of the patterns of structural change in today's advanced economies, focusing on employment. There is a wide consensus in the literature this increasing share of the services sector in total output and employment is attributable to high-income elasticity of demand for final product services, contracting out of services from firms in the manufacturing sector, and increased international trade in services. A section of the literature also suggests that the increasing share of services in total employment is attributable to a slow increase in productivity, relative to the industrial sector [Rowthorn and Wells, 1987; Baumol, 1967].

In the context of this literature on structural change, the case of India is unusual. Table 1 shows that during the period from 1980-81 to 2004-05, the share of the agricultural sector in GDP declined by almost 18 per cent. On the other hand, the increase in the share of the industrial sector in GDP was, at best, modest, while the increase in the share of the services sector in GDP was substantial – so much so that it picked up more than 80 per cent of the decline in the share of agriculture.

Table 1: Sectoral Shares in Gross Domestic Product: 1980-81 to 2004-05

Sector	*1980-81*	*1990-91*	*2000-01*	*2004-05*
Agriculture	38.9	31.3	24.6	21.1
Industry	24.5	27.6	26.6	27.1
Services	36.6	41.1	48.8	51.7

Source: Central Statistical Organisation, National Accounts Statistics

Table 2 shows that during the period from 1983 to 2004-05, the share of the agriculture in total employment declined by about 12 percentage points. On the other hand, the share of the industrial and services sectors in total employment increased by about 5 and 7 percentage points respectively. While this

indicates that the workforce has shifted somewhat more towards services than to industry, it is not commensurate to the case of total output. It implies that during the last two decades, the productivity of services has risen relative to industry. This contradicts Baumol's 'Cost Disease' hypothesis.

Table 2: Sectoral Shares in Total Employment: 1983 to 2004-05

Sector	*1983*	*1987-88*	*1993-94*	*1999-00*	*2004-05*
Agriculture	68.6	65	64.7	59.9	56.4
Manufacturing	13.8	15.9	14.8	16.3	18.8
Services	17.6	19.1	20.5	23.9	24.8

Source: National Sample Survey Organisation, Surveys on Employment

This relative increase in the productivity of services is likely to affect the nature of employment being created in the sector in terms of wage and non-wage attributes. This is especially interesting given that services comprise a set of highly heterogeneous economic activities. For some observers, the dramatic growth of the services sector in India reflects rapid strides made by educated professionals employed in business process outsourcing, software, financial and telecommunications services. In contrast, some others see the growth of services as the expansion of the unorganised sector as an employer of last resort because economic growth has not created sufficient employment opportunities elsewhere. This suggests that the nature of employment generated is likely to vary across different sub-sectors of services.

Given the above, the object of this paper is to analyze the nature of employment being created in the different sub-sectors of services. We define the nature of employment to include educational requirements and quality of employment, where the latter is analysed using three measures that reflect quality of life: wages, job security and social protection. It is important to emphasize the fact that such an exercise has not been attempted in the literature on India. There is a study by Ghose (1999) which constructs an 'employment quality index' for India by analysing employment growth in four categories: regular wage employment in the organised sector, self-employment in the organised sector, regular wage employment in the unorganised sector, and casual wage-employment. He shows that during the period from 1977-78 to

1993-94; quality of employment was higher in services than in agriculture and industry[2]. Similarly, a study on the OECD economies reveals that, relative to the industrial sector, the services sector is characterised by higher average earnings, longer average job tenure and higher job satisfaction [OECD, 2001]. These studies, however, do not base their results on rigorous econometric analysis. Moreover, they view the services sector as a composite whole, which is not very meaningful given that it is extremely heterogeneous. This heterogeneity, while not explicitly analysed, is emphasised in a recent study on India by Mazumdar and Sarkar (2008). Using earnings data for the period from 1983 to 1999-2000, they show that the gap between low and high earners is large in the services sector, relative to the industrial sector.

The scope of the paper is limited to cross-sectional analysis of survey data for a sample of over 600,000 individuals in India in 1993-94 and 2004-05. The choice of surveys is determined by the following. First, the period from 1990-91 to 2004-05 saw the most dramatic increase in the output share of the services sector. Second, 2004-05 is the most recent survey conducted, while those preceding 1993-94 are not as comprehensive in the variables they cover. The surveys do not cover the same individuals over time.

The structure of the paper is as follows. Section 2 presents arguments from the literature in economics on the role of education in access to employment and of theories relating to quality of employment. Section 3 describes the data and highlights the potential opportunity that it provides for an unexplored research question. Section 4 presents descriptive statistics of the data. Section 5 specifies the notation used in the econometric analysis to follow. Section 6 explores differentiation between the various sub-sectors of services in terms of the importance of educational requirements in securing a job. Section 7 outlines the variables chosen to measure quality of employment. Sections 8 and 9 present the econometric frameworks used and subsequently discuss results for these chosen measures. Section 10 presents conclusions.

[2] Assuming that regular and casual wage employment offer the highest and lowest quality of employment respectively.

2. Nature of Employment: The Relevant Economic Theory

2.1 Educational Requirements

Education is a potentially important determinant of access to employment because it converts individuals into a different kind of 'labour'. This may be attributable to the following: 'human capital theory' which argues that education improves producitvity by imparting skills [Schultz, 1961; Becker, 1964], theories of signalling and screening which reason that education acts as a signal of innate ability [Spence, 1976; Arrow, 1973], or the view that education is an instrument of job competition [Thurow, 1976; Bhagwati and Srinivasan, 1977]. Importantly, all these theoretical frameworks imply that education may restrict access to employment. This, in turn, may influence the quality of employment. For instance, more educated people are likely to be employed in the formal sector which, relative to the informal sector, is characterised by higher wage and non-wage benefits.

2.2 Quality of Employment

The quality of employment is a multidimensional and subjective concept, and hence difficult to define. Conceptually, it may refer to quality of life the job provides or quality of work per se. In the economics literature, the focus of the good-job versus bad-job debate is on wages or income. Wages earned in the labour market is naturally an important indicator of the quality of employment because it provides individuals with a source of livelihood. In terms of neoclassical theory, wages influence quality of life defined by individual utility, because it enables people to purchase market goods and services and enjoy leisure. Economists also use wages to measure the quality of employment for because it is the most systematically monitored characteristic of employment [Jackson and Kumar, 1998].

While recognising that income is an important component of quality of life, the work of Sen (1987) and Townsend (1979) moves to more complex definitions. Sen (1987) emphasises the importance of capabilities to achieve certain freedoms, and others such as Townsend (1979) highlight the

multidimensionality of quality of life to include along with income, human development and security of life. There is also a literature, developed to a large extent by the International Labour Organisation (ILO), which highlights the importance of analysing different extrinsic and intrinsic job characteristics [Ritter and Anker, 2002], which are likely to affect quality of life and quality of the job per se respectively. Extrinsic joc characteristics include job security, social protection and job satisfaction. Job security relates to contractual agreements [Dewan and Peek, 2007; Letourneux, 1998; Mishel et al., 2001], social protection refers to benefits and insurance to reduce risk [Messier and Floro, 2008], and job satisfaction relates to the notion of what workers value [Freeman, 1978]. Furthermore, in the context of employment representing quality of life, there is a growing literature on subjective well-being or happiness [Easterlin, 2001; Clark and Oswald, 1996; Layard, 1980 and 2005]. Intrinsic job characteristics comprise job content, on-the-job training, working hours, and relationships with others at the work place [Beaston, 2000; Johri, 2005]. Finally, some studies have attempted to develop a single index of employment quality [Leschke et al., 2008; Ghose, 1999]. While the simplicity of an index has an inherent appeal, it is based on value judgements which determine indicators to be included and methods of scoring and weighting.

3. Data

3.1 Sample: Source and Size

In order to analyse the nature of employment, a necessary condition is the availability of data at the level of the individual. Pan-India surveys on employment, conducted regularly by India's National Sample Survey Organisation (NSSO), collect such micro-level data, thereby providing the opportunity for empirical analysis on the aforementioned research question. For the present exercise, the data are taken from two of the seven comprehensive quinquennial surveys on employment: 1993-94 and 2004-05. The choice of these years was explained in the introduction. Importantly, large sample sizes [see Table 3] are a real strength of the econometric analysis to follow.

Table 3: Sample Size

	1993-94 (50th Round)	2004-05 (61st Round)
Number of Villages Surveyed	6,983	7,999
Number of Urban Blocks Surveyed	4,670	4,602
Number of Individuals Surveyed (Total)	**564,740**	**602,833**
Number of Individuals Surveyed (Rural areas)	356,351	398,025
Number of Individuals Surveyed (Urban areas)	208,389	204,808

Source: Surveys on Employment, National Sample Survey Organisation

3.2 Definitions and Categories

The division between the employed and the unemployed, the sector of employment, and the division between the self-employed, regular salaried employees and casual wage employees[3] are based on activities pursued by individuals during three alternative reference periods: one year, one week and each day of the week. They are referred to as 'usual status', 'current weekly status' and 'current daily status' respectively [NSSO, 1996a; NSSO, 2006a]. The 'usual status' approach is generally preferred as it is based on a relatively longer time horizon. The current weekly status approach is important in any analysis of wages because they are expressed in weekly terms. Each approach is guided by the 'majority time spent' criterion. For instance, under the 'usual status' approach, an individual is considered 'employed' in a particular industry if he or she spent the majority of his or her time in the last 365 days on that economic activity, rather than being unemployed or engaged in non-economic activities.[4]

4. Descriptive Statistics

Of the individuals covered in the surveys, some are employed; some are unemployed, while others are out of the labour force. For the surveys of 1993-94 and 2004-05, the total number of individuals employed is 202,000 and 221,309 respectively. Of these, the total number of people employed in services is 59,992

[3] Comprises individuals employed in others' enterprises according to a daily or periodic work contract.

[4] Those attending educational institutions, those performing domestic duties only, pensioners, beggars and infants.

and 75,827 respectively. This implies that for the samples of 1993-94 and 2004-05, the services sector accounts for about 30 and 34 per cent of total employment respectively.

Table 4: Individuals in the Sample Employed in Different Sub-Sectors of Services: All-India

Sector	Number of Individuals		As a % of the total number of individuals employed in the services sector	
	1993-94	2004-05	1993-94	2004-05
Wholesale and Retail Trade	20,948	27,965	35.0	37.0
Hotels and Restaurants	2,262	3,980	3.8	5.0
Transport Services	6,836	9,899	11.4	13.0
Communication Services	509	1,258	0.8	2.0
Financial Services	1,782	1,698	3.0	2.0
Real Estate and Renting Services	260	554	0.4	0.5
Business Services	891	1,732	1.5	2.0
Public Administration and Defence	9,960	8,653	17.0	11.0
Education Services	5,717	9,194	9.5	11.0
Health Services	2,104	2,470	3.0	3.0
Other Social, Community and Personal Services	8,421	8,424	14.0	11.0
Services Sector (Aggregate)	59,992	75,827	100.0	100.0

Source: National Sample Survey Organization, Surveys on Employment, 2004-05 and 1993-94

Table 4 shows that within the services sector, wholesale and retail trade is undoubtedly the largest employer, while other large employers include transport, other social, community and personal services, public administration and defence, and education services. For the first three, this is not entirely surprising given that they are largely unskilled labour-intensive sectors. On the other hand, for public administration and education services, the creation of a large amount of jobs may be attributable to a dominant public sector. Hotels and restaurants, communication, financial, business, real estate and renting, and health services each account for a very small proportion of total employment in services. This is only to be expected as with the exception of hotels and restaurants, these sub-sectors are likely to require individuals to be well educated and skilled. The set of results described above holds true for both samples. During the period from 1993-94 to 2004-05, public administration and defence, financial services and other social, community and personal services saw a decline in their relative share of total services employment. For

public administration and defence, this reflects government policy to reduce overmanning. This result appears to be counter-intuitive for financial services, but it may be indicative of the emergence of a more efficient private sector component as well as policy to reduce overmanning in the public sector component. Finally, for other social, community and personal services, the decline may be a result of heterogeneity within the sector. An analysis of data that are further disaggregated shows that while employment has increased significantly in the domestic, refuse disposal, sanitation and other personal services, it has contracted in recreational, cultural and sports activities.[5]

Table 5: Number of People in the Sample Employed in Different Sub-Sectors of Services: Rural-Urban Division

Sector	Rural areas as a percentage of the total		Urban areas as a percentage of the total	
	1993-94	2004-05	1993-94	2004-05
Wholesale and Retail Trade	31	44	69	56
Hotels and Restaurants	27	37	73	63
Transport Services	31	48	69	52
Communication Services	31	43	69	57
Financial Services	19	31	81	69
Real Estate and Renting Services	22	37	78	63
Business Services	14	22	86	78
Public Administration and Defence	30	42	70	58
Education Services	46	59	54	41
Health Services	30	45	70	55
Other Social, Community and Personal Services	38	44	62	56
Services Sector (Aggregate)	33	45	67	55

Source: National Sample Survey Organization, Surveys on Employment, 2004-05 and 1993-94

Table 5 presents the distribution of individuals in the different sub-sectors of services across rural and urban areas. For the sector as a whole, the total number of people employed in rural areas is 33 and 45 per cent for the sample of 1993-94 and 2004-05 respectively. This suggests that the period from 1993-94 to 2004-05 has seen the realtive growth of a rural non-farm sector comprising service activities. Within each sub-sector, the rural-urban division is broadly similar with the exception of business and financial

[5] Estimates available with the author

services, in which about three-fourths (or more) of the individuals employed are located in urban areas. This should come as no surprise as business services are associated with sophisticated technology and skill, while financial service providers plagued by several problems encountered in rural credit markets.

Table 6: Employment in Different Sub-Sectors of Services by Occupation in the Sample

Sector	Professional and Technical Workers (%)		Administrative, Executive and Managerial Workers (%)		Clerical Workers (%)		Sales Workers (%)		Service Workers (%)	
	1993-94	2004-05	1993-94	2004-05	1993-94	2004-05	1993-94	2004-05	1993-94	2004-05
Wholesale and Retail Trade	0.8	0.3	4.8	9.1	2.4	1.1	86.2	76.1	0.8	0.6
Hotels and Restaurants	0.2	0.1	14.9	20.0	3.2	1.4	14.1	7.6	60.0	65.8
Transport Services	1.4	0.6	5.6	9.9	12.4	8.2	0.8	0.6	3.0	1.5
Communication Services	6.5	3.6	1.9	21.0	69.0	54.4	1.8	6.7	2.1	2.4
Financial Services	4.1	2.8	21.8	19.1	60.1	45.5	10.0	26.4	2.4	4.6
Real Estate and Renting Services	2.3	2.3	27.4	40.3	7.2	4.0	48.8	29.6	2.7	5.9
Business Services	48.6	42.5	8.0	12.5	25.6	18.4	6.0	8.3	3.2	8.4
Public Administration and Defence	15.6	12.8	4.6	4.8	43.0	44.3	0.6	0.45	22.6	24.7
Education Services	79.7	85.6	1.6	1.5	12.4	7.8	0.1	0.1	4.6	3.9
Health Services	71.0	71.8	0.1	1.1	10.3	9.7	1.0	0.3	15.1	14.4
Other Social, Community and Personal Services	15.9	14.2	3.3	2.7	1.2	1.4	0.9	0.6	52.8	67.5

Source: National Sample Survey Organization, Surveys on Employment, 2004-05 and 1993-94
Note: The sum of the columns does not add up to 100 because there are other occupation categories as well

Importantly, individuals employed in the same sector may be employed in different occupations, where occupation refers to the nature of tasks performed. Table 6 presents the distribution of individuals across

occupations in the different sub-sectors of services. According to India's National Classification of Occupations (NCO), individuals may be employed in the following occupations at the one-digit level (a) professional, technical and related workers (b) administrative, executive and managerial workers (c) clerical workers (d) sales workers (e) service workers (f) famers, fishermen, hunters and loggers (g) production workers, transport equipment operators and labourers.

For the sample of 2004-05, Table 6 shows that communication, financial, real estate, business, public administration, education and health services are dominated by professional and technical workers, administrative and managerial workers or clerical workers. This suggests that in these sub-sectors of services, individuals are likely to be well educated and skilled on average and hence have a higher probability of experiencing good quality of employment.[6] In contrast, wholesale and retail trade consists primarily of sales workers, while hotels and restaurants and other social, community and personal services are dominated by service workers. This implies that, on average, individuals in these sub-sectors of services are likely to have little to no skill and hence a lower probability of experiencing good quality of employment. In transport services, there is no single dominant occupation category. For 1993-94, the results are broadly similar with one interesting difference. The number of clerical workers appears to be notably higher for communication, financial and business services in 1993-94 than in 2004-05. This fall may be indicative of government policy to reduce over-manning in the public sector as well as increased privatisation in the economy during this period.[7]

5. Notation and Description of Variables

Table 7 explains the notation for variables used in the equations specified in the sections to follow.

[6] If levels of education or skill are associated with higher wage and non-wage benefits.

[7] The estimates above follow the 'prinicipal usual status' reference period. Although not reported for reasons of space, the use of the 'current weekly status' reference period does not alter the results in any notable way.

Table 7: Notation and Description of Variables used in the Analysis to follow

Notation	Description
SECTOR	Dummy variable that takes the value 1 when an individual is employed in a particular sub-sector of services and zero if an individual is not employed in that sub-sector
SECTOR (Used in the Multinomial Logit Model)	Variable that consists of 13 discrete outcomes where each outcome refers to an individual being employed in one of the 13 sectors of the economy
EARNINGS	Weekly earnings of an individual (does not include the self-employed)
CONTRACT	Dummy variable that takes the value 1 when an individual receives a written job contract and zero if an individual does not receive a written job contract
SOCIALSEC	Dummy variable that takes the value 1 when an individual receives any social security benefits and zero if an individual receives no social security benefits
AGE	Age of an individual
AGESQ	Square of the age of an individual
LAND	Land owned by an individual measured in terms of hectares
MALEDUM	Dummy variable that equals 1 for those individuals who are male
EDUDUM2	Dummy variable that equals 1 for individuals who have completed medium, secondary or senior secondary school
EDUDUM3	Dummy variable that equals 1 for individuals who have completed an undergraduate degree, postgraduate degree or a diploma/certificate course
SECTORDUMMIES	Vector of dummy variables referring to the sector that individuals are employed in
OCCDUMMIES	Vector of dummy variables referring to the occupation of an individual at the one-digit level
SELFEMPDUM	Dummy variable that equals 1 if the individual is self-employed
PUBLICDUM	Dummy variable that equals 1 for enterprises characterised by public ownership
UNIONDUM	Dummy variable that equals 1 for enterprises which have an active labour union
SCALEDUM	Dummy variable that equals 1 for enterprises that have ten or more workers

6. Educational Requirements in the Services Sector

Given the heterogeneity of the services sector, educational requirements are likely to vary considerably across its various segments. The visible dimension of the dynamism of India's services sector is the rapid growth of business process outsourcing, software, financial and telecommunication services which are likely to be biased in favour of the educated. At the same time, the services sector also includes personal services provided by domestic servants, maids, cooks, drivers etc. This may represent the services sector's 'residual' segment that provides employment to individuals who fail to find employment elsewhere.

6.1 Econometric Model

In order to estimate the importance of education for securing employment in a sub-sector of services, we estimate the following econometric model:

$$SECTOR_i = \lambda + \alpha_1 AGE_i + \alpha_2 AGESQ_i + \alpha_3 LAND_i + \alpha_4 MALEDUM_i + \alpha_5 EDUDUM2_i + \alpha_6 EDUDUM3_i + \beta SECTORDUMMIES_i + STATEDUMMIES_i + \varepsilon_i$$

We estimate the the above equation in two specifications. First, defining *SECTOR* as a binary dependent variable that takes the value 1 when an individual is employed in a particular sub-sector of services and zero if an individual is not, we estimate the above regression equation using a Logit model, separately, for each sub-sector of services. Each of the eleven equations is estimated for the all-India sample, rural and urban areas. Second, defining SECTOR as a dependent variable that has thirteen discrete outcomes[8] (each outcome referring to an individual being employed in industry, agriculture, or one of the eleven sub-sectors of services), we estimate the above regression equation using a Multinomial Logit model. Being employed in the industrial sector is taken as the base outcome. Our variables of interest are the two dummy variables for education: one represents individuals who have completed secondary education and the other represents those who have completed tertiary education.[9]. We control for personal characteristics and state dummy variables.

6.2 Results

6.2.1 Logit Model

The marginal effects of the education dummy variables are indicative of the importance of higher levels of education for securing employment in a particular sub-sector of services For communication, financial, real estate and renting, business, public administration and defence, education and health services, the marginal effects of both education dummy variables are positive and significant at the 1 per cent level. It is only to be expected as a majority of individuals employed in these sub-sectors of services are professional, managerial or clerical workers. In contrast, the marginal effect of both education dummy

[8] These outcomes cannot be ordered in any meaningful way.

[9] The omitted category is individuals who are illiterate or who have completed only primary education.

variables is negative and significant at the 1 per cent level for wholesale and retail trade, hotels and restaurants, transport, and other social, community and personal services. This too should come as no surprise because a majority of individuals employed in these sub-sectors of services are non-professional, non-managerial workers. The results described above hold true for both 1993-94 and 2004-05 in each specification: all-India, rural areas and urban areas (estimates available with author).

6.2.2 Multinomial Logit Model

For the all-India sample, we find that relative to the industrial sector, the marginal effects of both education dummy variables are positive and statistically significant at the 1 per cent level for communication, financial, real estate and renting, business, public administration and defence, education and health services. In contrast, relative to the industrial sector, the marginal effects of both education dummy variables are negative and statistically significant at the 1 per cent level for other social, community and personal services. Finally, relative to the industrial sector, we find that the marginal effect of both education dummy variables are statistically insignificant for wholesale and retail trade, hotels and restaurants and transport services. This set of results holds true for both 1993-94 and 2004-05 (estimates available with author).

6.3 Endogeneity Bias

It may argued that the two dummy variables for education suffer from endogeneity bias, i.e. unobservable variables such as ability and family background of individuals are likely to influence both the level of education attained as well as the probability of being employed in a particular sub-sector of services. However, given that the object of our analysis is not related to estimating the true returns to education, this endogeneity bias is not a cause for concern. We can simply redefine educational requirements to include, along with education, the importance of the associated ability, dedication and family background in securing a job. Table 8 provides the summary of our conclusions from both sets of analysis.

Table 8: Educational Requirements[10]: Differentiated across Sub-Sectors of Services

High	Low	Largely Free-Entry
Communication Services Financial Services Real Estate and Renting Services Business Services Public Administration and Defence Education Services Health Services	Wholesale and Retail Trade Hotels and Restaurants Transport Services	Other Social, Community and Personal Services

'Human capital' theory argues that education is rewarded with higher wages. Moreover, more educated individuals are largely employed in formal sector white-collar jobs where they are likely to receive relatively higher wage and non-wage benefits[11]. This may imply heterogeneity of job quality according to access to employment in terms of educational requirements.

7. Quality of Employment: The Chosen Attributes

We identify three parameters to analyse quality of employment: wages, the availability of written job contracts and the availability of social security benefits. The choice of attributes is determined by the following. First, conceptually, we are interested in analysing measures that have implications for quality of life as opposed to quality of the job per se. This allows us to exclude variables such as working conditions and on-the-job training. Second, we are inclined to analyse what the literature refers to as 'objective', rather than 'subjective' measures.[12] This implies the exclusion of measures such as job satisfaction and subjective well-being. Third, we are constrained by the limitations of the dataset.

Wages earned in the labour market are an important indicator of the quality of employment as they provide individuals with a source of livelihood. In a neoclassical world with full employment and perfect

[10] Educational requirements may also reflect the importance of ability, dedication and family background.

[11] Relatively high job security, social protection, relatively long job tenures and non-hostile working conditions.

[12] Of course, the classification of certain variables as 'objective' also involves a value judgement.

competition, there should be no inter-sector wage differentials in equilibrium, after controlling for defining individual characteristics such as education and experience[13]. An exception to this norm within neoclassical economics is the theory of compensating wage differentials [Adam Smith, 1776]. It argues that there is 'compensating variation' in the wage level according to other job characteristics such as low job security and poor working conditions. In the real world, there are several other factors that cause labour market rigidities. The theory of segmented labour markets argues that labour markets consist of several distinct segments with different rules for wage determination [Doeringer and Piore, 1971] where the 'distinct segments' may be defined according to the industy of employment [Krueger and Summers, 1987], the nature of occupation [Dickens and Katz, 1987], organised and unorganised economic activity, and the distinction between public and private ownership. For example, wages in the organised sector are institutionally determined, often kept up by profit-sharing, collective bargaining and minimum wages. In contrast, unorganised sector wages are lower as it falls outside the labour regulation system. In addition, labour unions, efficiency wages and firm size may also explain inter-sectoral wage differentials for similar workers [Osburn, 2000; Krueger and Summers, 1988; Gibson and Stillman, 2009; Oi et al, 1999].

Job contracts and social protection are also important indicators of job quality because they measure job security and insurance against uncertainty respectively. Social security benefits in India include pensions, gratuity, health care and maternity benefits. In this context, the distinction between organised and unorganised sectors assumes importance. In India's National Accounts Statistics, the unorganised sector is defined to include economic activity which is not regulated under any legal provision. Hence, relative to enterprises in the organised sector, those located in the unorganised sector are likely to be characterised by the non-applicability of labour laws, absence of formal contracts and lack of employment benefits. Given the heterogeneity of the services sector, the division of economic activity into organised and

[13] They need to have identical tastes too.

unorganised components varies considerably across its various segments. This, in turn, will result in significant inter-sector variation in the probability of receiving job contracts and social security benefits. The juxtaposition of an analysis of inter-sectoral differences in wages and non-wage benefits such as job security and social protection lends itself to a careful examination of the theory of compensating variation. In this context, the theory would suggest that individuals require wage compensation for negative job traits such as poor job security and social protection.

8. Wages or Earnings

8.1 Econometric Model I

Much of the empirical literature on earnings functions is concerned with estimating returns to education. It goes back to the seminal work of Mincer (1974) who expressed the natural logarithm of earnings as a function of education, years of experience and years of experience-squared. Usually, it is estimated by applying ordinary least squares (OLS) or instrumental variable (IV) analysis [Psacharopoulos, 1994; Schutz, 1988; Knight and Sabot, 1987]. In order to analyse whether the earnings of individuals employed in different sub-sectors of services are significantly different from those of individuals employed in the industry, we estimate the following earnings function by OLS. The self-employed are excluded as data on their wages are not available.

$$\ln(EARNINGS)_i = \lambda + \alpha_1 AGE_i + \alpha_2 AGESQ_i + \alpha_3 LAND_i + \alpha_4 MALEDUM_i + \alpha_5 EDUDUM2_i + \alpha_6 EDUDUM3_i + \alpha_7 CASTEDUM_i + \alpha_8 RELIGIONDUM3_i + \alpha_9 HRSWORKED_i + \beta SECTORDUMMIES_i + STATEDUMMIES_i + \varepsilon_i$$

Our variables of interest are the sector dummy variables. Their inclusion in an earnings function is fairly common in the literature analysing inter-sectoral wage differentials [Lucifora, 1993; Osberg at al, 1987]. We include dummy variables for all sub-sectors of services and for agriculture, keeping industry as the residual category. Hence, the coefficients on these variables are interpreted as the effect on earnings of being employed in a particular sub-sector of services relative to industry. We include state dummy

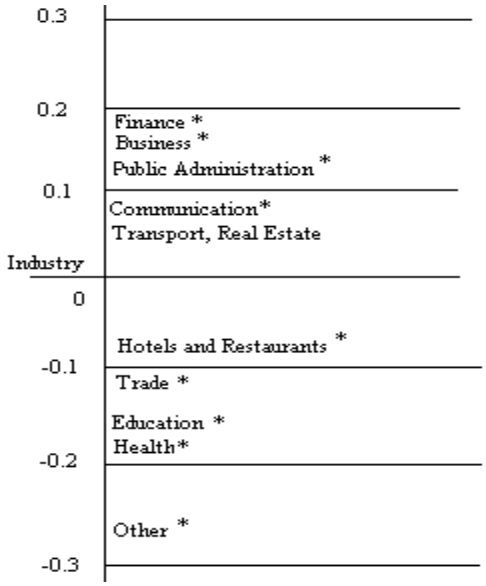
variables and control for age, sex, education, land owned, and hours worked. The equation is estimated at the all-India level, for rural areas and for urban areas. It may be argued that the sector dummy variables are picking up the effect of an individual's occupation or a characteristic of his or her workplace. Hence, as a robustness check, we control for occupation, firm size, union activity and public ownership.[14]

$$\ln(EARNINGS)_i = \lambda + \alpha_1 AGE_i + \alpha_2 AGESQ_i + \alpha_3 LAND_i + \alpha_4 MALEDUM_i + \alpha_5 EDUDUM2_i + \alpha_6 EDUDUM3_i$$
$$+\alpha_7 CASTEDUM_i + \alpha_8 RELIGIONDUM_i + \alpha_9 HRSWORKED_i + \beta SECTORDUMMIES_i + STATEDUMMIES_i$$
$$+\gamma_1 OCCDUMMIES_i + \gamma_2 SELFEMPDUM_i + \mu_1 PUBLICDUM_i + \mu_2 UNIONDUM_i + \mu_2 SCALEDUMDUM_i + \varepsilon_i$$

8.2 Results

Figure 1 reports coefficients of the sector dummy variables and their statistical significance (see Appendix Table).

Figure 1: Service Sub-Sectors Dummy Variable Coefficients from Regression (2004-05, All-India)



Source: Based on author's regression estimates
Note: *denotes statistical significance at the 1 or 5 per cent level

[14] For the sample of 1993-94, there are no data available on the different enterprise characteristics.

For the all-India sample in 2004-05, coefficients of the dummy variables for communication, financial, business and public administration services are positive and significant at the 1 per cent level. This should come as no surprise because these sub-sectors are dominated by organised sector activity. Moreover, most individuals are employed in professional, managerial, and clerical jobs, all of which require a reasonably high level of skill. In addition, financial and business services may consist of a large number of private sector firms that may pay efficiency or profit sharing wages. In contrast, coefficients of dummy variables for transport and real estate services are statistically insignificant. This is plausible as, like the industrial sector, these sub-sectors have significant organised and unorganised segments and employ large numbers of individuals in both skilled and unskilled jobs. Strikingly, along with wholesale and retail trade, hotels and restaurants and other social, community and personal services, coefficients of dummy variables for education and health services are negative and statistically significant at the 1 per cent level. For wholesale and retail trade and other social, community and personal services, this is only to be expected as both sectors are dominated by unorganised sector activity and largely employ people in unskilled jobs. For hotels and restaurants too, this is not surprising as except for in a luxury hotels, individuals working in small restaurants and *dhabas*[15] are likely to earn low wages. More interestingly, those employed in education and health services earn significantly lower wages than those in industry. This is plausible as a majority of teachers and health professionals are employed in public institutions which pay relatively low salaries, as determined by national pay scales. There are minor differences for the samples of rural and urban areas only, but not reported for reasons of space. Table 9 provides a summary of the results.

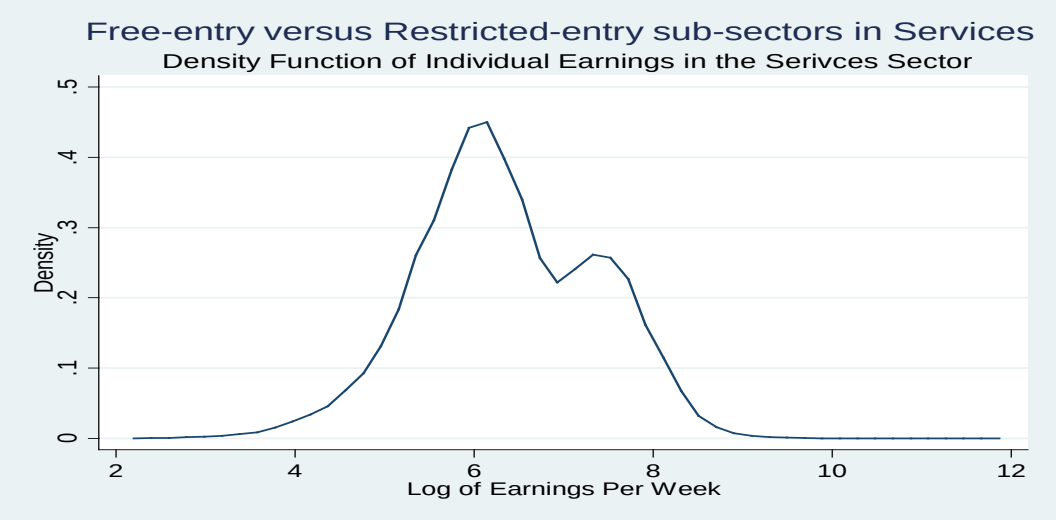
Table 9: Quality of Employment in terms of Wages: A Dividing Line vis-à-vis the Industrial Sector

Worse-off or neither worse-off nor better-off	*Better-off*
Wholesale and Retail Trade	Communication Services
Hotels and Restaurants	Financial Services
Transport Services	Business Services
Real Estate and Renting Services	Public Administration and Defence
Education Services	
Health Services	
Other Social, Community and Personal Services	

[15] Small-scale roadside restaurants.

The above table reflects a dichotomy in the services sector which is also captured in Figure 2 which shows that wages of individuals included in the sample are not normally distributed. There appears to be a set of individuals to the left of the distribution who earn relatively lower wages and a set to the right who earn relatively high wages. It is likely that the former are employed in sub-sectors that have low barriers to entry or are largely free-entry while the latter are employed in sub-sectors that have restricted entry.

Figure 2



Source: Based on primary data from National Sample Survey Organisation, India

For the sample of 1993-94, we find two notable differences. First, relative to the industrial sector, those employed in education and health services earn significantly more. This may be explained by fact that in 1993-94, the industrial sector was not as prosperous and was dominated by public sector enterprises which tended to pay relatively lower wages. Second, the coefficient on the dummy variable for business services is statistically insignificant. This may be attributable to the fact that business services such as software, business process outsourcing, and accountancy were in their nascent stages of development at the time. We cannot carry out panel data analysis as the two surveys do not cover the same individuals.[16]

[16] Panel data analysis at the level of regions is feasible but not desirable because the sector dummy variable will be replaced by the share of a sector in total employment.

8.4 Endogeneity and Selectivity Bias

Despite the inclusion of several control variables, the sector dummy variables in the earnings function may be characterised by selectivity bias. For instance, there may be certain unobservable variables such as specialised training or industry-specific skills which influence earnings of an individual, but are also correlated with his or her sector of employment. This is important because the focus of our analysis is the influence of an individual's sector of employment on his or her wage. The ideal way to address such selectivity bias is instrumental variable estimation. Unfortunately, because we have twelve sector dummy variables, we would need at least twelve instruments. Finding twelve potential instrumental variables is extremely improbable, if not impossible, given that it is usually difficult to find even one good instrument [Wooldridge, 2002]. Given this, we adopt a second-best solution. On the basis of the results described above, we combine the eleven sub-sectors of services to form two distinct categories: high-wage services, which includes communication, financial, business services and public administration services, and low-wage services, which includes wholesale and retail trade, education, health, hotels and restaurants, transport, real estate and renting, and other social, community and personal services (see Figure 2).

Using the above, we have two dummy variables for the services sector, which are instrumented by the following: (a) people employed in services as a proportion of all people employed, at the level of districts (b) people employed in low-wage services as a proportion of all services, at the level of districts and (c) a dummy variable for religion. The first two instrumental variables are defined at the level of districts because state-level dummy variables are already included in our earnings function. The results of the instrumental variable estimation, carried out only for the sample of 2004-05, validate our earlier findings [available with author]. Relative to individuals employed in the industrial sector, those employed in the 'high-wage' sub-sectors of services earn significantly more, while those employed in the 'low-wage' sub-

sectors of services earn significantly less. This holds true for all three samples. Importantly, our chosen instrumental variables meet the instrument relevance and exogeneity criteria.[17]

9. Job Contracts and Social Security Benefits

9.1 Econometric Model

In order to estimate the effect of being employed in a particular sector on the probability of receiving a written job contract and social security benefits, we estimate the following econometric model:

$$CONTRACT_i or SOCIALSEC_i = \lambda + \alpha_1 AGE_i + \alpha_2 AGESQ_i + \alpha_3 LAND_i + \alpha_4 MALEDUM_i + \alpha_5 EDUDUM2_i + \alpha_6 EDUDUM3_i + \beta SECTORDUMMIES_i + STATEDUMMIES_i + \varepsilon_i$$

Given binary dependent variables, we estimate the equations using a Logit model, each in three specifications: all-India, rural areas and urban areas. Our variables of interest are the sector dummy variables and, as before, their coefficients represent the effect of being employed in a particular sub-sector of services, relative to industry, on the probability of getting a written job contract or receiving social security benefits. In estimating this relationship, we control for age, sex, education, the amount of land owned and state dummy variables. Similar to the case of wages, as a robustness check, we control for an individual's occupation affiliation as well as enterprise characteristics including the presence of unions, enterprise size, and public-private ownership. In addition, we include a dummy variable for the self-employed because they do not receive expllicit job contracts or social security benefits.

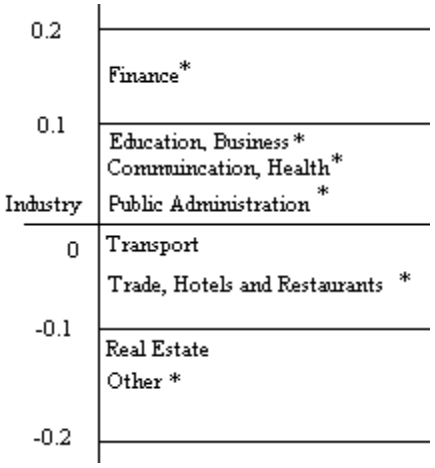
$$CONTRACT_i or SOCIALSEC_i = \lambda + \alpha_1 AGE_i + \alpha_2 AGESQ_i + \alpha_3 LAND_i + \alpha_4 MALEDUM_i + \alpha_5 EDUDUM2_i + \alpha_6 EDUDUM3_i + \beta SECTORDUMMIES_i + STATEDUMMIES_i + \gamma_1 OCCDUMMIES_i + \gamma_2 SELFEMPDUM_i + \mu_1 PUBLICDUM_i + \mu_2 UNIONDUM_i + \mu_2 SCALEDUMDUM_i + \varepsilon_i$$

[17] The instrument relevance condition is met as we get a first-stage F-statistic that is greater than 10 and significant at the 1 per cent level. The instrument exogeneity condition is satisfied as well using the test of overidentifying restrictions. This is reflected in the p-value of the Amemia-Lee-Newey test statistic, which is about 0.15.

9.2 Results

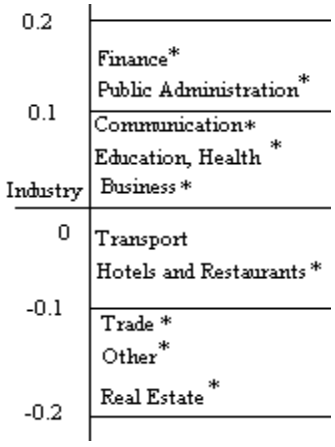
Figures 3 and 4 report coefficients of the sector dummy variables and their statistical significance for the case of job contracts and social security benefits respectively (see Appendix Table).

Figure 3: Service Sub-Sector Dummy Variable Coefficients from Regression (2004-05, All-India)



Source: Based on author's regression estimates
Note: *denotes statistical significance at the 1 or 5 per cent level

Figure 4: Service Sub-Sector Dummy Variable Coefficients from Regression (2004-05, All-India)



Source: Based on author's regression estimates
Note: *denotes statistical significance at the 1 or 5 per cent level

For the all-India sample, in the case of both job contracts and social security benefits, the marginal effects of dummy variables for communication, financial, business, public administration and defence, education and health services are positive and significant at the 1 per cent level. These sub-sectors have greater educational requirements and larger organised segments relative to the industrial sector, which is likely to comprise a large number of unskilled workers employed in manufacturing, mining and construction. In contrast, the marginal effect of the dummy variable for other social, community and personal services, wholesale and retail trade, and hotels and restaurants is negative and significant at the 1 per cent level. These services sub-sectors are largely free-entry sectors with extremely large unorganised segments.

The marginal effect of the dummy variable for real estate and renting services is negative and statistically significant in the case of social security benefits, but it becomes statistically insignificant in the case of job contracts. This implies that while people employed in real estate agencies or units renting out machinery have a significantly lower chance of getting social security relative to those employed in industry, they are no different in terms of their chances of getting a job contract. It may be explained by the fact that almost all real estate and renting service providers are privately owned. And enterprises in the private sector are likely to provide job contracts, but no social security benefits, to their employees.

Finally, both in the case of job contracts and social security benefits, the marginal effect of the dummy variable for transport services is statistically insignificant. It implies that individuals in transport services are no different from those employed in industry in terms of the likelihood of receiving job contracts or social security benefits. This result may be because of the presence of diverse segments within the transport services sector, which is similar to the industrial sector. In the transport services sector, air transport and the railways are dominated by organised sector employment, whereas road and water transport segments are dominated by unorganised sector employment. Table 10 provides a summary of the results from our econometric analysis.

Table 10: Quality of Employment in terms of Job Contracts and Social Security Benefits: A Dividing Line vis-à-vis the Industrial Sector

Worse-off or neither worse-off nor better-off	*Better-off*[18]
Wholesale and Retail Trade	Communication Services
Hotels and Restaurants	Financial Services
Transport Services	Business Services
Real Estate and Renting Services	Public Administration and Defence
Other Social, Community and	Education Services
Personal Services	Health Services

9.4 Endogeneity and Selectivity Bias

The sector dummy variables may be characterised by selectivity bias, i.e. certain omitted variables may influence both the sector of employment of an individual and the probability of getting a job contract and social security benefits. This is important because the focus of our analysis is the influence of an individual's sector of employment on his or her probability of receiving a job contract and social security benefits. These omitted variables are likely to be firm-specific rather than employee-specific characteristics. However, because we control for three important firm characteristics (labour unions, the scale of operation and public sector ownership), the possibility of selectivity bias is reduced.

10. Conclusion

In order to study the nature and quality of employment being generated in the different sub-sectors of services in India, we carried out an econometric analysis of household survey data for two points in time: 1993-94 and 2004-05. We first found that in certain sub-sectors of services, the level of education of an individual has a siginificant effect on the probability of being employed, while in others it does not. Subsequently, we found that relative to the industrial sector, service sub-sectors with low educational requirements have low overall quality of employment, while those with high educational requirements have high overall quality of employment. Quality of employment was defined to include three variables

[18] 'Better-off' because written job contracts provide security of employment social security benefits provide individuals with income in times or dire need or emergencies.

that reflect quality of life: wages, the probability of getting a job contract and the probablility of getting social security benefits. Table 11 provides a summary of the results from our analysis of these measures.

Table 11: Quality of Employment across different Sub-Sectors of Services

Dividing Line vis-à-vis the Industrial Sector	
Worse-off or neither worse-off nor better-off	*Better-off*
Wholesale and Retail Trade	Communication Services
Hotels and Restaurants	Financial Services
Transport Services	Business Services
Real Estate and Renting Services	Public Administration and Defence
Other Social, Community and Personal Services	Education Services*
	Health Services*

Hence, after standardizing for several possible factors, service sub-sectors appear to be generally either 'good' or 'bad' employers, i.e. we see no 'compensating variation' where higher wages compensate for less job security or less social protection. Education and health services are exceptions to the trend in this context. This is because while individuals employed in these sectors enjoy high quality of employment in terms of job security and social protection, they do not offer high wages. This can also be seen in the Table 12 which reports the impact of being employed for a 'good' employer or 'bad' employer (defined in Table 11) relative to the industrial sector on each of the three parmaters of job quality as determined by our regression analysis, i.e. the coefficient on a service sub-sector dummy variable.

Table 12: Coefficients on the Services Sector Dummy Variables from the Regression Analysis for the All-India Sample in 2004-05

Sector	Wages	Job Contract	Social Security Benefits
'Good'Employers (Mean across six sub-sectors of services)	0.06	0.45	0.42
'Bad' Employers (Mean across five sub-sectors of services)	-0.47	-0.38	-0.50

Source: Author's estimates based on primary data from National Sample Survey Organisation

The fact that certain sub-sectors of services are generally 'good' or 'bad' employers may be attributable to the overall profitability of firms, profit-sharing wages and non-wage benefits, efficieny wages and sector-specific 'production functions' where the importance of technology and quality (as opposed to level) of employees' education may vary. This result may also relate to the theory of segmented markets where

institutional factors such as the division between organised and unorganised economic activity and strength of the public sector are important. In addition, the juxtaposition of these results on quality of employment with data on quantity of employment reveals an interesting story. Table 13 shows that the sub-sectors of services which are characterised by low educational requirements and quality of employment account for the largest shares in total services employment, both in 1993-94 and 2004-05[19]. These include wholesale and retail trade (that takes the lion's share in both years), transport and other social, community and personal services. In contrast, communication, financial and business services are characterised by high educational requirements and quality of employment, but account for a very small proportion of total services employment, both in 1993-94 and 2004-05.

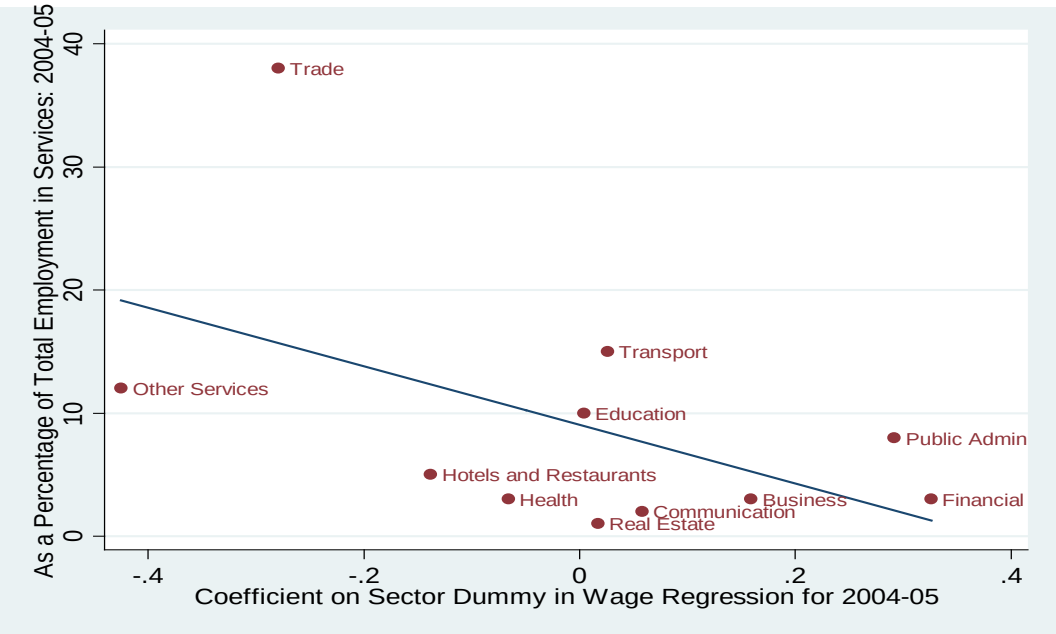
Table 13: Number of Persons employed in different Sub-Sectors of Services: 1993-94 and 2004-05 (Sample Figures converted to All-India Level)

Sector	Number Employed			As a Percentage of Total Employment in Services		Rate of Growth of Employment (%)	Percentage Contribution to Increase in Employment
	1993-94	2004-05	Increase: 1993-94 to 2004-05	1993-94	2004-05	1993-94 to 2004-05	1993-94 to 2004-05
Wholesale and Retail Trade	23,071,570	35,431,315	12,359,745	36	38	0.5	43.7
Hotels and Restaurants	2,702,078	4,919,688	2,217,611	4	5	0.8	7.8
Transport Services	8,272,397	13,856,716	5,584,319	13	15	0.7	19.7
Communication Services	600,896	1,614,031	1,013,135	1	2	1.7	3.6
Financial Services	1,812,692	2,490,281	677,589	3	3	0.4	2.4
Real Estate and Renting Services	264,010	844,678	580,668	0.5	1	2.2	2.0
Business Services	823,482	2,834,967	2,011,485	1	3	2.4	7.1
Public Administration and Defence	8,364,519	7,313,423	-1,051,096	13	8	-0.1	-3.7
Education Services	5,431,770	9,119,201	3,687,430	8	10	0.7	13.0
Health Services	2,630,858	3,071,370	440,512	4	3	0.2	1.5
Other Social, Community and Personal Services	9,897,141	10,657,002	759,861	15	12	0.1	2.7
Services Sector (aggregate)	63,871,414	92,152,672	28,281,257	100	100	0.4	100

Source: National Sample Survey Organisation, Surveys on Employment

[19] Different rates of growth of employment across service sub-sectors implies that their shares in total services employment have changed during the period from 1993-94 to 2004-05.

Figure 5: Quantity and Quality of Employment I (2004-05)



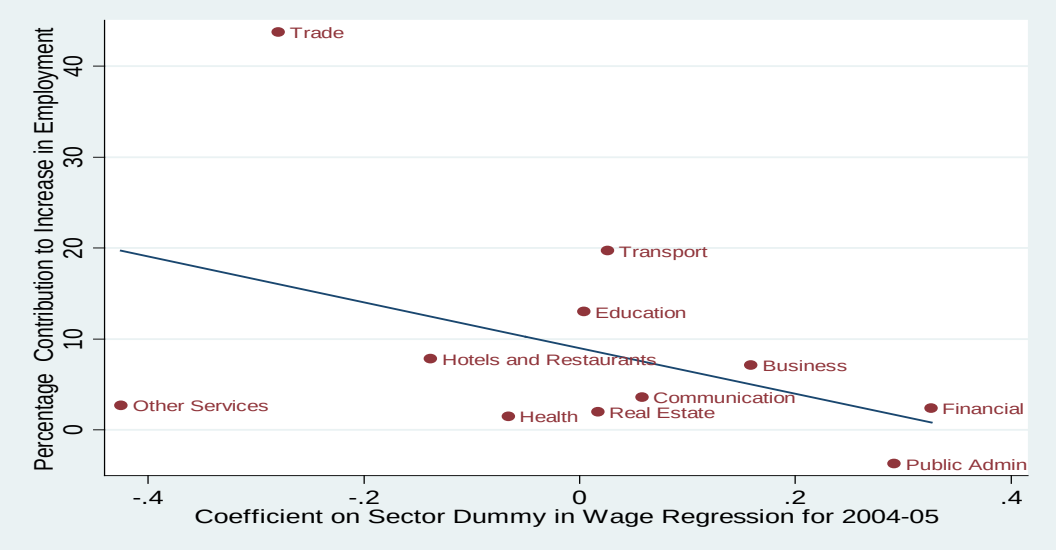
Source: Based on primary data from National Sample Survey Organisation, Surveys on Employment

Figure 5, which correlates the coefficient on the sector dummy in the wage regression and the share of that sector in total services employment shows this association for 2004-05. A linear relationship is a good approximation with the exception of wholesale and retail trade which appears to be an outlier. This is attributable to the fact that the sub-sector takes up a lion's share of total services employment. What is more, it is the generally 'bad' employers that have the highest percentage contribution to the increase in total services employment during the period from 1993-94 to 2004-05. This validates the findings of Mazumdar and Sarkar (2008) who show that a relatively large number of jobs in the services sector are being created in the bottom most part of the income distribution. While wholesale and retail trade accounts for a little less than half of the increase in total services employment, hotels and restaurants and transport services are the other major contributors.[20] This association between the quality and quantity of employment can be seen in Figure 6, which correlates the coefficient on the sector dummy variables from

[20] Business and education services are exceptions as they are generally 'good' employers and also have a high percentage contribution to the increase in total services employment during this period.

the wage regression for 2004-05 with the percentage contribution of that sector to the increase in total services employment during the period from 1993-94 to 2004-05.

Figure 6: Quantity and Quality of Employment II (2004-05)



Source: Based on primary data from National Sample Survey Organisation, Surveys on Employment

Once again, a linear relationship is a reasonable approximation, except for wholesale and retail trade and other social, community and personal services that appear to be outliers. Surprisingly, other social, community and personal services which is largely a free entry sector with low quality of employment does not contribute in a significant way to the increase in total services employment during the period under consideration. This may be because this sub-sector is dichotomised between modern and traditional economic activity. In fact, data that is further disaggregated reveals that within this sub-sector, recreational, cultural and sports activities saw a very small increase in employment. In contrast, domestic personal services, sewage and refuse disposal, sanitation and other similar activities that constitute the mostly unorganised, free-entry segment with low quality of employment saw a large increase in employment.[21] In sum, barring a few exceptions, employment expansion appears to be more in sub-sectors of services where educational requirements and quality of employment is low.

[21] Estimates available with author

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APPENDIX

Note: An appendix with detailed regression tables is available from the author on request.

Table: All-India Sample (2004-05)

Dependent Variable→ Explanatory Variables ↓	Wages (OLS)	Wages (IV)	Job Contract (Logit)	Social Security Benefits (Logit)
Trade Dummy	-0.145*** [0.0131]		-0.078*** [0.015]	-0.106*** [0.018]
Hotels Dummy	-0.076*** [0.0199]		-0.073*** [0.022]	-0.063** [0.028]
Transport Dummy	0.014 [0.0207]		-0.011 [0.0095]	-0.050*** [0.012]
Communication Dummy	0.037*** [0.0238]		0.074*** [0.017]	0.057* [0.023]
Finance Dummy	0.150*** [0.0206]		0.105*** [0.015]	0.130*** [0.021]
Real Estate Dummy	0.017 [0.0540]		-0.104 [0.069]	-0.148 [0.090]
Business Dummy	0.145*** [0.0244]		0.094*** [0.017]	0.037* [0.022]
Public Administration Dummy	0.103*** [0.0131]		0.040*** [0.0091]	0.106*** [0.013]
Education Dummy	-0.182*** [0.0158]		0.080*** [0.011]	0.045*** [0.015]
Health Dummy	-0.194*** [0.0203]		0.064*** [0.015]	0.049** [0.020]
Others Dummy	-0.179*** [0.0145]		-0.114*** [0.015]	-0.135*** [0.020]
Agriculture Dummy	-0.161*** [0.0235]	-0.364 [0.521]	-0.109*** [0.025]	-0.129*** [0.032]
Low Wage Services Dummy *First stage F-statistic: 215.8 [0.000]*		-0.825*** [0.057]		
High Wage Services Dummy *First stage F-statitics: 69.7 [0.000]*		0.685** [0.097]		
Vector of Controls	Yes	Yes	Yes	Yes
State Dummy Variables	Yes	Yes	Yes	Yes
Constant	3.337*** [0.0288]	3.999*** [0.314]	-0.623*** [0.035]	-1.382*** [0.044]
Observations	46085	46085	49388	49388
Amemia-Lee-Newey minimum chi-squared statistic		2.133 [0.144]		

Note: Standard error in brackets; ***p<0.01, **p<0.05, *p<0.1