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The main aim of this paper is to examine two core features of on-the-job search in India. First, based on National Sample Survey (NSS) 66th round unit level data, we identify the factors influencing the decision of the employed to engage in search activity. Based on a probit model, this study suggests that household, personal and labour market characteristics play a pivotal role in the determination of on-the-job search. The two most fascinating findings of this study are: the significant and positive coefficient of *economic activity* indicates that workers in the manufacturing sector are more likely to look for jobs while employed; and, the coefficients of size of firm appears to be negative in the manufacturing sector and positive in the services sector. Second, based on a sample survey of 367 employees from 346 firms located in an urban agglomeration, we show the major determinants of on-the-job search of employees in an industrial cluster. While the first exercise unravels an aggregate function of the employed search, built on labour supply characteristics, devoid of organisation-person relation, the second one inquires workers behaviour against the context of organisation, bringing some flavour of demand for labour. Interestingly, as revealed in second exercise, wage, firm size, and job tenure have a negative impact on the on-the-job search.

Key Words*:* labour market, on-the-job search, search,
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1 Introduction

Search for a job is an important activity in the labour market, and is typically carried out by both the employed as well as the unemployed. While the former represents those who look for jobs while employed, commonly referred to as on-the-job search, the latter mainly deals with the search activity of the unemployed, known as off-the-job search. Quite interestingly, this can also be defined from a different view point. While on-the-job search is an outcome derived from a combination of search and work, off-the-job search, seemingly characterised by a full-time job search, is the principal constituent of unemployment. Empirically, a plethora of studies – for example, Tobin (1972), Burdett (1978), Holzer (1987), and Blau and Robins (1990) – attempted to examine the effectiveness of both employed and unemployed job searchers. One of the fundamental assumptions of job search theory is that off-the-job search is more effective than on-the-job search. Using data for youth from the panel of the National Longitudinal Survey 1981 (NLS), Holzer (1987) shows that unemployed search is not only extensive -use of more job search methods – but also intensive -longer hours of search. As a result of extensive and intensive search methods, unemployed job searchers are likely to receive more job offers. However, a few scholars are of the view that search activity of the employed seems to be more effective than the unemployed job search, suggesting that search cost –be it direct or indirect –can be minimised. It stands to reason that, owing to the incentive emanating from the low search cost, as suggested by Blau and Robins (1990), the probability of obtaining job offers is higher among employed searchers. In brief, from a pragmatic point of view, as described by Clark and Summers (1979), the optimum strategy for a job seeker, given that the search activity of the employed is more effective than the unemployed, is to accept the first job offer and continue to search while employed.

Given this backdrop, our attempt in this paper is to analyse search behaviour of the employed. In fact, '*what factors motivate employed workers to look for another job'* has been featured prominently in the domain of labour economics for the last three decades. Table 1 provides a capsule summary of major studies that deal with the on-the-job search. Black (1981)[1], based on the Michigan Panel Study of Income Dynamics, shows that a tight labour market, which is manifest in the form of greater number of job vacancies, increases the likelihood of on-the job search. Based on a sample of 3017 employed workers drawn from

[1] This study is based on the black and white male workers

the Labour Force Survey data, Pissarides and Wadsworth (1994) pinpoint the major factors that determine the decision to engage in on-the-job search. The most influential factor that affects the decision to participate in employed search is wage. If expected wage is less than observed wage, employed workers are more likely to look for another job. Similarly, using a survey of 1608 migrants in Delhi, Banerjee and Bucci (1995) report that employed search is quite conspicuous in Indian informal sector, which constitutes a substantial proportion of Indian workforce. Fuentes (2002) shows that a great deal of inequality in the distribution of wage has a positive effect on the employed search. Similarly, factors such as low unemployment rate increase the degree of on-the-job search. Yankow and Horney (2004) examine how the demographic characteristics influence the on-the-job search behaviour of young women. Ponzo (2010), covering a wide range of variables, shows the degree of on-the-job search for public and private sector workers. Strictly speaking, there is a dearth of empirical studies that deal with the search behaviour of employed workers, particularly in the context of developing countries. In this paper, we attempt to answer two important questions by presenting India as a case: what factors determine workers' tendency to look for another job while employed; second, does the degree of on-the-job search vary across different sections of workers.

Table 1

A brief overview of the empirical studies on the determinants of on-the-job search

Author (s) (year)	*Survey period and Region of study*	*Sample size*	*Data source*	*Type of Regression*
Black (1981)	1972; The United States of America	1990	Michigan Panel Study of Income Dynamics	Logit Model
Pissarides and Wadsworth (1994)	The United Kingdom	3,912 (Men) 2,943 (Women)	The Labour Force Survey (1984)	Probit Model
Banerjee and Bucci (1995)	1975-76; India, New Delhi	1,574	Field survey	Logit Model
Fuentes (2002)	The United Kingdom	3,926 (Men) 2,344 (Women)	The Labour Force Survey (1996)	Probit Model
Yankow and Horney (2004)	1980, 1984, 1996; The United States of America	934, 1920, 2138	National Longitudinal Survey of Youth 1979	Probit Model
Ponzo (2010)	1995-2006; Italy	33,544	Survey on Household Income and Wealth	Probit Model

Source: Compiled by authors

The remainder of this paper is organised into four sections. Based on NSS 66th round unit level data, section 2 presents an overview of the major determinants of on-the-job search in India. Section 3 describes the data sources and sampling design of the case study. Section 4 explains the empirical estimates from our field survey conducted at Peenya Industrial area and section 4 concludes the study.

2 On-the-job search in India: Major determinants

In this section, using NSS 66th round unit level data, we present major determinants of on-the-job search in India. The 66th round of employment and unemployment survey of NSS was carried out from July 2009 to June 2010, and is the largest database, covering a wide range of labour force characteristics in India. The 66th quinquennial round unit level data consist of twelve levels given in text format. For the present analysis, we considered 4 distinct levels: level 2, level 4, level 5 and level 9. While level 2 provides household characteristics, such as religion, social group, land owned, and so on, level 4, 5, and 9 depict demographic and labour market characteristics of household members. It is important to note that the unit of analysis for levels 4, 5, and 9 is person, while household is the unit of analysis for level 2. To begin with, we generated a separate spreadsheet for each level. After generating four spreadsheets, using common identification items -first stage sampling unit (FSU) serial number, hamlet-group/sub-block number, household serial number, level number and item/person serial number- we merged four level-specific spreadsheets into a master file, which consists of household, personal and labour market characteristics. For the purpose of present analysis, we filtered the dataset by using the following six criteria: usual principal activity, age between 15 and 59, workers engaged in on-the-job search, regular wage/salaried workers, workers employed in manufacturing and services sectors. It is worth noting that the response to '*whether sought/available for alternative work during the days he/she had work'* is considered as a proxy for on-the-job search. Within the broad spectrum of employed workers, as we described above, we restrict our sample to persons who are employed as salaried or regular wage workers. Further, our sample fulfils three criteria: (a) in a year duration in labour market should not be lower than non participation in labour force, (b) duration of employment should not be lower than duration of employment, and (c) who are engaged in non agricultural activities.

Using a probit regression model, we explore the core determinants of on-the-job search India. In this model, dependent variable is on-the-job search, a dichotomous variable comprising either *yes* or *no*. In other words, it describes whether employed workers are engaged in search activity or not. Generally speaking, the independent variables comprise personal, household and labour market characteristics. It should be noted that, a prominent omission in our model is wage. We ran regression models with and without wage. While model with wage returns majority of independent variables being statistically not significant, model without wage

proves to be far credible option with majority of independent variables being significant. In fact, wage is omitted owing to two specific reasons: first, the labour market characteristics such as social security and occupational status are used as proxy variables to assess the effect of wage in the model; second, compared to variables listed in the model, wage is discernibly noisy[2]. Another important omission is the variable sex -either male or female-. This is primarily due to abysmally lower female participation in regular employment. As shown in Appendix 1, we ran another model incorporating all the variables in our original model and sex, there is no discernible difference between results of both these models. Table 2 reports the estimated coefficients and marginal effects[3] from a maximum-likelihood probit model. Clearly, the reference variables are implicit in the regressions, albeit not explicitly indicated in table 2. Additionally, in order to assess to what extend workers employed in the manufacturing and services sector respond to the on-the-job search, we run two distinct regression models. A glance at table 2 shows that, of these two sectors, the most noticeable feature is that coefficients of all explanatory variables, except firm size, are consistent with the whole sample, albeit differ in degree.

As shown in table 2, our results suggest that workers in rural India are less likely to engage in employed job search compared to workers in urban India. As better job opportunities and new openings being limited in rural India, workers are reluctant to look for alternative jobs while employed. Intuitively, an urban space is likely to generate more labour market specific information, rich in content and diversity, than rural spaces do.

The coefficient of *age*, which is statistically significant at 1 per cent level, appears to be positive. The increase of workers' age coupled with the accumulation of specific human capital prompts them to change their jobs frequently, and to find out a seasonable job that suits their skills. It should be, however, noted that the coefficient of *age squared* is negative, indicating that the marginal effects (*dO/dx)* of age are declining. Put differently, the link between age and on-the-job search is concave. This result is similar to the finding of Black

[2] It is worth noting that as given in level 6 of NSS unit level data, wage is derived by aggregating daily employment status, which is obtained through household interviews. Data of this nature is likely to suffer from potential noises like head of the household or key informant wrongly reporting the daily status and wages. On the other hand, a reliable compilation of wage distribution entails wage data to be collected directly from workers, who are engaged in specific economic activities either in incorporated or unincorporated. Interestingly, our primary data presented in sections 4 uses the latter approach to generate the patterns related to wage distribution.

[3] Marginal effects refer to change in the probability for an infinitesimal change in each independent variable, continuous variable, and by default, discreet change of dummy variables.

(1981). Intuitively speaking, this result suggests that the new entrants appear to be more mobile than established workers. As age increases, by way of changing jobs frequently, new entrants attempt to find out better jobs. Interestingly, unlike new entrants, established workers having specific human capital are likely to find out better and satisfying jobs. This result is quite conspicuous for workers employed in manufacturing and services sectors.

The decision to participate in search is also influenced by the marital status of a worker. Pissarides and Wadsworth (1994) report that if a worker is single, he/she is more likely to search for another job. This is due to the fact that single workers incur low mobility cost compared to the married. In table 2, the coefficient of *currently married* is statistically significant, implying that married workers are less likely to participate in on-the-job search. The coefficients reported for manufacturing and services are also statistically significant, albeit varying in percentage points.

The most fascinating results emerge from this study is that the attainment of general education has no impact on the on-the-job search. However, a recent study by (Ponzo 2010) reports that the likelihood of engaging in search for workers having postgraduate degree is 9.6 percentage points higher than high school diploma holders. Presumably, compared to less-qualified workers, the availability of better job opportunities in the labour market might encourage the highly qualified workers to look for another job. Contrary to this finding, which posits that higher educational attainment increases the probability of being engaged in on-the-job search, this paper suggests that workers having an investment of 1-12 years of schooling or graduate and above are not significantly different from illiterate workers (this category is omitted in the model). In other words, it implies that the attainment of general education in India, be it high school education or college degree, is not an important determinant of employed search. Presumably, this phenomenon may have its roots in general social characteristic of viewing education as a signalling strategy for social status, rather than being a significant component of better labour market outcomes, in particular for general tertiary educational streams such as Arts and Humanities.

Unlike general education, the attainment of technical education[4] positively influences the workers' search behaviour. Although technical education does not impact workers' on-the-

[4] It is a dummy variable, comprising 1 if technical 0 otherwise.

search behaviour in the manufacturing sector, it has positive impact in the services sector. Considering the workers employed in services sector, a significant proportion of them are working in technology-intensive fields, such as banking, information and communication technology, and so on. As we discussed above, the coefficient of firm size, represented in terms of number of workers, is discernibly different for workers employed in the manufacturing sector. To be more precise, the coefficient of firm size turns out to be negative in the manufacturing sector and positive in the services sector, albeit not statistically significant for whole sample. Put it in slightly different way, the increase of firm size gives rise to high turnover of workers in the services sector and low turnover in the manufacturing sector. What lies beneath this pattern? Presumably, the negative effect of firm size on employed search reflects that large manufacturing units pave the way for intra-firm occupational mobility. On the other hand, in case of services sector, firm size has a positive impact on the search behaviour, implying the chances of engaging in inter-firm mobility.

It is obvious that if workers avail social security benefits such as pension and gratuity, they are less likely to involve in on-the-job search compared to workers with no social security benefits. Similarly, availing social security in the services sector has strong negative effect on the workers' decision to engage in on-the-job search, albeit no impact in the manufacturing sector. If nature of economic activity is taken into account, workers in the manufacturing sector are more likely to participate in on-the-job search compared to workers in the services sector. Intuitively speaking, unlike workers in the services sector, a majority of manufacturing workers in India acquire human capital through informal mechanism such as learning by doing. Hence, by way of moving from job to another, workers attempt to accumulate specific skills, which increase not only labour productivity but also wages (Yankow and Horney 2004).

As shown by Pissarides and Wadsworth (1994), because of the availability of time, part-time workers not only engage in random search and but also make use of more search methods. It stands to reason that searching for jobs requires an investment of time. It is obvious that part-time workers more likely to engage in employed job search than full-time workers. This finding holds true for both manufacturing and services sector.

It is commonly found that, in other to find out seasonable jobs, workers register their names with the employment exchanges. We also attempted to understand whether workers who

registered their names in the employment exchange, a state initiative, play a critical role in the decision of their on-the-job search. Irrespective of manufacturing and services sector, those who have registered with the employment exchange tend to look for jobs.

As per the National Classification of Occupation 2004, there are 9 broad types of occupations in India: managers, professionals, technicians, clerks, service workers, skilled agricultural and fishery workers, craft and related trade workers, plant and machine operators and assemblers, and elementary occupations. For the purpose of present analysis, looking at the nature and skill level of occupations, professionals, managers and technicians are brought into a single category, referred to as *PMT workers*, and the remaining categories are conceived as *others*. An analysis of occupation-wise search shows that PMT workers are less likely to engage in on-the-job search than *others*. Intuitively speaking, the strong negative effect sheds light on the fact that the probability of being in the job, rather than looking for jobs, depends on age and occupational wages, as PMT workers are offered relatively higher wages in the labour market. A common phenomenon, as noted by Pissarides and Wadsworth (1994), is that low-wage workers are prompted to explore alternative job opportunities in the labour market. In fact, the findings hold true for manufacturing and services sector.

An important aspect that we emphasize in this paper is that whether social groups, captured on the basis of caste, play a critical role in employed job search. A glance at table 2 shows that, the coefficients of scheduled caste and other backward class appear to be significant, albeit not statistically significant for scheduled tribe. Compared to general class, scheduled caste and other backward class are less likely to engage in on-the-job search. This finding points to the need for more serious field research, entailing probing on the role social capital in search process. Put differently, is there relation between social backwardness and search in labour market. Presumably, social backwardness that emanates from identities like caste may restrict person's capacity to engage in fruitful search[5].

[5] It is quite likely that identities may create frictions in search processes. For example, a person who is a post graduate in engineering, who is from a disadvantaged social group, may not find peers from the same social group to share and source useful job related information. On other hand, a person from an advantaged group may have several peers who may share relevant information, thus, leading to smooth flow of search process.

Table 2

Probit estimates of on-the-job search in India: major determinants

Independent variables	*Coefficient (Whole sample)*	*dO/dx*	*Coefficient (Manufacturing)*	*Coefficient (Services)*
Constant	-1.884***		-1.455**	-2.00***
	(.272)		(.596)	(.315)
Rural	-.054*	-.044	-.049	-.042
	(.031)		(.073)	(.035)
Age	.089***	.008	.069*	.094***
	(.017)		(.037)	(.020)
Age Squared	-.001***	-.000	-.001**	-.002***
	(.002)		(.001)	(.000)
Currently married	-.147***	-.013	-.204**	-.132***
	(.037)		(.085)	(.042)
Schooling (1-12 years)‡	.012	.000	-.050	.019
	(.058)		(.109)	(.068)
Graduate and above	.035	.002	-.054	.054
	(.067)		(.139)	(.078)
Technical education	.130**	.012	.038	.142***
	(.047)		(.120)	(.052)
Firm size (number of workers)	.008	.001	-.244***	.094***
	(.032)		(.067)	(.036)
Social security benefits	-.539***	-.046	.049	-.699***
	(.036)		(.077)	(.042)
Manufacturing	.092**	.008	------	-----
	(.038)			
Full-time	-.618***	-.086	-.510*	-.630***
	(.078)		(.270)	(.083)
Registered in employment exchange	.311***	.032	.066	.329***
	(.037)		(.109)	(.040)
PMT workers (NCO 2004 one-digit)	-.602*	-.005	-.408***	-.026
	(.037)		(.121)	(.041)
Scheduled tribe	-.033	-.002	-.037	-.009
	(.272)		(.168)	(.053)
Scheduled caste	-.114**	-.008	-.202**	-.074
	(.043)		(.093)	(.048)
Other backward class	-.166***	-.013	-.190***	-.154 ***
	(.034)		(.071)	(.039)
Sample size	24,581		4,226	20,355
Pseudo R-squared	0.07		0.04	.10
Log-likelihood	-4552.97		-924.29	-3577.12

Dependent variable: on-the-job search

‡Diploma is included in this definition

Figures in parenthesis represent robust standard error.

****, **, * indicate that coefficients are statistically significant at 1, 5, and 10 per cent level respectively.*

Source: National Sample Survey, 66th round unit level data, 2009-2010

The above analysis brings forth two striking features: first, as shown by results, compared to the reference group 'services', persons employed in the manufacturing sector report significantly higher propensity to engage in the on-the-job search; second, the propensity to search is significantly negative for employment size of firms in the manufacturing sector, while the sign is positive for the same variable in the service sector. Considering these two patterns, manufacturing in aggregate shows higher search propensity than services sector. As a matter of fact, the structure of manufacturing sector in India is skewed towards the enormous unregistered manufacturing sector, primarily consisting of small and medium enterprises inundated with relatively unorganised workforce, almost resembling the neoclassical construct of interaction between highly competitive labour and product markets,

wherein neither workers nor firms command power in determining the wage, rather being open to demand and supply. On the other hand, government's presence in the regular employment in services sector is discernibly predominant, leaving lesser scope for flexible labour market conditions to persist.

From this macro frame, it would be interesting to see search behaviour in relatively micro settings. In fact, there is rationale for undertaking a case study. The estimates presented in table 2 are based on data collected from head of household, who shared information about members of the household. Although data of this nature may have valuable cues for supply side of labour, it appears that there is no much information which links workers and firms. It is important to collect data directly from workers, that too from an industrial setting. Our heuristics is that collecting data directly from workers in settings like industrial area in an urban agglomeration may share valuable cues on important variables such as wage, which was omitted in the macro model.

3 Determinants of on-the-job search: Evidence from Peenya Industrial Area

As we mentioned above, to draw a broader viewpoint, we conducted a field survey at Peenya Industrial area, which appears to be the largest industrial area in India as well in South Asia. Intuitively speaking, firms in this area often employ temporary and casual workers, who are not part of the firms' pay roll. It is striking that, due to stiff global competition, a significant number of firms have shut down its operation in this region. Owing to these constraints, arriving at an appropriate sample size based on secondary data was a strenuous task. As a result, in order to determine an appropriate sample size, the study adopts a two-stage sampling method[6].

[6] To calculate an appropriate sample size, we apply the following two formulae: $n = \frac{Z^2 P(1-P)}{d^2}$ and $n^1 = \frac{NZ^2 P(1-P)}{d^2(N-1)+Z^2 P(1-P)}$, where $n^1 n$ delineates sample size drawing from the finite population (*N*), *Z* represents Z statistic for 95% confidence level, *P* is the expected proportion that we are going to calculate, *d* indicates precision (Daniel, 1999). It should be noted that the Z value is set at 1.96 for 95% confidence level. Interestingly, *P* (expected proportion) varies between 0 and 1, and the sample size is a variant of *P*. It is important to note that the P is taken in proportion of one, i.e., if expected proportion or prevalence is 40%, then *P* is equal to 0.4. Smaller *d* implies good precision or smaller error of estimate, and it should be in proportion of one (Naing *et al.* 2006). Interestingly, although there is no a precise rule to choose an appropriate d, Naing *et al* (2006) show that if P is less than 10% (0.1), then *d* should be half of *P*, i.e., 0.05. On the other hand, if P is greater than 90% (0.9), *d* would be 0.5 (1-P). Of course, a larger or smaller d can be set depending on the availability resources. If P is between 0.1 and 0.9, then it is appropriate to choose 5% precision (0.05). In this study, d is set at 0.05. Using the second formula with P is equal to 0.5 and d is equal to 0.05, the sample size is 367. At the same time, using the first formula with P is equal to 0.4 and d is equal to 0.05, the sample size is 369.

Sample size -first stage

The first stage of sampling is mainly based on the enumeration of firms. To determine an appropriate sample size, the study applies the latest database[7], which shows that Peenya consists of 3616 industrial units. The database provides very limited information such as name of owner, company name, contact address, and telephone number. After crosschecking the database, all industrial units listed in the database were given a unique identification number. Using Daniel's (1999) formula, with 95 per cent confidence level and 5 per cent of error of estimate, 346 units have been chosen[8] in the first stage. Following the estimation of sample size, we conducted an interview with the proprietors of these firms. The major points of inquiry in the first stage were firms' economic activities, size and composition of workforce, nature of employment, working hours, and occupation. Tale 2 shows an overview of the different types of manufacturing units, firm size, and sample size. It is important to note that the activities of firms listed in the sample are classified into National Industrial Classification (NIC) four-digit classification. Interestingly, the size of employment in the sample units varies between 7 and 536, and over one-fifth of the firms are engaged in the manufacture of machine-tools.

Sample size -the second stage

The second stage of the sampling consists of the basic unit of analysis, that is to say, workers employed in the first stage of units. More aptly, the second stage of sampling was derived from the total workforce employed in 346 manufacturing units. Our preliminary survey suggests that about 8352 workers were employed in first-stage units. Using Daniel's (1999) formula, with 95 per cent confidence level, 367 workers have been randomly selected in the second stage. Considering the characteristic features of sample workers, there are four major points to be noted. In consistent with criteria adopted in section 2, the survey covers only regular/salaried workers aged between 15 and 70. We cover only those who are employed in principal economic activities, excluding temporary and casual workers. In other words, those who enjoy the status of subsidiary activities are not taken into consideration. A significant proportion of workers in the sample have changed their jobs irrespective of occupations,

[7] The information can also access from the following web: *http://www.1peenya.com/peenya-database.htm*
[8]Of the 346 units in the first-stage sampling, 3 units were dropped out because of their unwillingness to participate in the survey, and 2 units have shifted their production to another area. These 5 units were replaced.

economic activities, and regions and a small percentage of workers are new entrants to the Peenya industrial area.

Table 3

A brief description of the type of manufacturing units, employment size, and sample

Industry of work (as per NIC four-digit code) figures in parenthesis are NIC four digit code	*No. of Units (%)*	*Population(N)**	Sample (*n*)
Manufacture of pharmaceutical, medicinal chemicals and botanical products (*2423)*	8 (2.3)	127(1.52)	02 (0.5)
Casting of iron and steel (*2731)*	3 (0.9)	27 (0.32)	*Nil*
Casting of non-ferrous metals (*2732)*	2 (0.6)	11 (0.13)	*Nil*
Dressing and dyeing of fur; manufacturing of articles of fur (*1820)*	1 (0.3)	6 (0.07)	*Nil*
Forging, pressing (*2891)*	1 (0.3)	81 (0.97)	01 (0.3)
Manufacture of accumulators, primary cells and primary batteries (*3140)*	2 (0.6)	15 (0.18)	02 (0.5)
Manufacture of agricultural and forestry machines (*2921)*	3 (0.9)	76 (0.91)	03 (0.8)
Manufacture of articles of concrete, cement and plaster (*2695)*	1 (0.3)	16 (0.19)	*Nil*
Manufacture of basic precious and non-ferrous metals (*2720)*	14 (4)	362 (4.33)	07 (1.9)
Manufacture of bearings, gears, gearing and driving elements (*2913)*	15 (4.3)	456 (5.46)	21 (5.7)
Manufacture of bicycles and invalid carriages (Parts and accessories) (*3592)*	3 (0.9)	38 (0.45)	02 (0.5)
Manufacture of cordage, rope, twine and netting (*1723)*	1 (0.3)	110 (1.32)	14 (3.8)
Manufacture of cutlery, hand tools and general hardware (*2893)*	10 (2.9)	93 (1.11)	03 (0.8)
Manufacture of domestic appliances, n.e.c *(2930)*	6 (1.7)	134 (1.60)	07 (1.9)
Manufacture of electric lamps and lighting equipment *(3150)*	4 (1.2)	81 (0.97)	01 (0.3)
Manufacture of electric motors, generators and transformers *(3110)*	9 (2.6)	107 (1.28)	02 (0.5)
Manufacture of electricity distribution and control apparatus *(3120)*	16 (4.6)	319 (3.82)	15 (4.1)
Manufacture of electronic valves and tubes and other electronic components *(3210)*	1 (0.3)	33 (0.40)	03 (0.8)
Manufacture of engines and turbines, except aircraft, vehicle and cycle engines *(2911)*	3 (0.9)	73 (0.87)	09 (2.5)
Manufacture of fertilizers and nitrogen components *(2412)*	1 (0.3)	17 (0.20)	01 (0.3)
Manufacture of flat products, coated with zinc, tin, chromium or other materials *(2717)*	2 (0.6)	46 (0.55)	*Nil*
Manufacture of flat steel products not coated *(2716)*	2 (0.6)	103 (1.23)	14 (3.8)
Manufacture of footwear *(1920)*	2 (0.6)	256 (3.07)	18 (4.9)
Manufacture of furniture *(3610)*	3 (0.9)	61 (0.73)	*Nil*
Manufacture of glass and glass products *(2610)*	2 (0.6)	48 (0.57)	07 (1.9)
Manufacture of insulated wire and cable *(3130)*	3 (0.9)	63 (0.8)	03 (0.8)
Manufacture of knitted and crocheted fabrics and articles *(1730)*	1 (0.3)	119 (1.4)	13 (3.5)
Manufacture of lifting and handling equipment *(2915)*	3 (0.9)	117 (1.4)	09 (2.5)
Manufacture of luggage, handbags, and the like, saddler, and harness *(1912)*	2 (0.6)	35 (0.4)	03 (0.8)
Manufacture of machine-tools *(2922)*	48 (13.9)	629 (7.5)	33 (9.0)
Manufacture of machinery for mining, quarrying and construction *(2924)*	1 (0.3)	6 (0.1)	*Nil*
Manufacture of made-up textile articles, except apparel *(1721)*	4 (1.2)	116 (1.4)	07 (1.9)
Manufacture of medical and surgical equipment and orthopaedic appliances *(3311)*	9 (2.6)	54 (0.6)	02 (0.5)
Manufacture of motorcycles (specialized parts and accessories) *(3591)*	18 (5.2)	512 (6.1)	19 (5.2)
Manufacture of non-metallic mineral products n.e.c *(2691)*	1 (0.3)	7 (0.1)	*Nil*
Manufacture of office, accounting and computing machinery *(3000)*	3 (0.9)	28 (0.3)	*Nil*
Manufacture of other electrical equipment n.e.c *(3190)*	12 (3.5)	468 (5.6)	16 (4.4)
Manufacture of other fabricated metal products n.e.c *(2899)*	9 (2.6)	428 (5.1)	06 (1.6)
Manufacture of other food products n.e.c *(1549)*	4 (1.2)	39 (0.5)	05 (1.4)
Manufacture of other general purpose machinery *(2919)*	9 (2.6)	238 (2.8)	07 (1.9)
Manufacture of other rubber products *(2519)*	4 (1.2)	83 (1.0)	01 (0.3)
Manufacture of other special purpose machinery *(2929)*	16 (4.6)	312 (3.7)	17 (4.6)
Manufacture of paints, varnishes and similar coatings *(2422)*	2 (0.6)	46 (0.6)	01 (0.3)
Manufacture of plastic products *(2520)*	11 (3.2)	293 (3.5)	14 (3.8)
Manufacture of pumps, compressors, taps and valves *(2912)*	11 (3.2)	537 (6.4)	20 (5.4)
Manufacture of rubber tyres and tubes; retreading and rebuilding *(2511)*	3 (0.9)	107 (1.3)	04 (1.1)
Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations *(2424)*	1 (0.3)	27 (0.3)	03 (0.8)
Manufacture of soft drinks; production of mineral waters *(1554)*	1 (0.3)	14 (0.2)	*Nil*
Manufacture of structural metal products *(2811)*	18 (5.2)	264 (3.2)	09 (2.5)
Manufacture of structural non-refractory clay and ceramic products *(2693)*	2 (0.6)	37 (0.4)	*Nil*
Manufacture of tanks, reservoirs and containers of metal *(2812)*	3 (0.9)	28 (0.3)	*Nil*
Manufacture of handbags *(1912)*	1 (0.3)	47 (0.6)	01 (0.3)
Manufacture of machinery for metallurgy *(2923)*	1 (0.3)	7 (0.1)	*Nil*
Manufacture of paper and paper product *(2101)*	1 (0.3)	9 (0.1)	*Nil*
Manufacture of watches and clocks *(3330)*	5 (1.4)	73 (0.9)	07 (1.9)
Manufacture of wearing apparel, except fur apparel *(1810)*	2 (0.6)	487 (5.8)	11 (3.0)
Manufacture of wooden containers *(2023)*	2 (0.6)	32 (0.4)	05 (1.4)
Other publishing *(2219)*	1 (0.3)	15 (0.2)	01 (0.3)
Saw milling and planning of wood *(2010)*	1 (0.3)	10 (0.1)	*Nil*
Treatment and coating of metals; general mechanical engineering on a fee or contract basis *(2892)*	18 (5.2)	369 (4.4)	18 (4.9)
Total	***346***	***8352***	***367***

Source: Field Survey, Peenya Industrial Area, 2010-2011
N represents the number of workers*
***Figures in parenthesis (column 2, 3, 4) represent the percentage of total*

Basic characteristics of employed workers

To find out the basic characteristics of employed workers, it is important to explore if the labour market features of employed workers who look for jobs are discernibly different from employed workers who do not engage in search. As mentioned above, on-the-job search is a

dichotomous variable, comprising either *yes* or *no*. Surprisingly, of the total 367 workers surveyed, nearly two-third of the workers are engaged in on-the-job search, and the corresponding figure for those who are not engaged in on-the-job search is close to one-third. As shown in table 4, to examine the differences between these two groups of workers, six personal and labour market characteristics -age, monthly wage earnings, duration of work in the present job, level of job satisfaction, level of educational attainment, and occupational mobility in present job are taken into account. While the level of job satisfaction, educational attainment, and job mobility within firm are measured in interval scale, age, monthly wages, and duration of work are considered as scale variables. More aptly, considering the level of job satisfaction, the scale ranges between 5 and 1, 5 being given to represent the highest satisfaction and 1 being given to delineate the lowest satisfaction. Similarly, the level of education is measured by a scale ranging between 6 and 1 and the occupational mobility in the present job is measured by a scale varying from 1 to 4[9].

To illustrate the major characteristics of workers engaged in on-the-job search, the present analysis focuses on two basic measures: mean and standard deviation (SD). Standard deviation conveys the message of the degree of dispersion in the distribution. Table 4 clearly shows that all variables are statistically significant at one per cent level, implying that mean values are different for *yes/no* categories of on-the-job search. More precisely, compared with no category of on-the-job search, workers engaged in on-the-job search show lower means of age, monthly wage earnings, level of job satisfaction, duration in present job, and job mobility. Put it in a slightly simple way, the likelihood of engaging in on-the-job search is inversely related to these explanatory variables. It should be noted that the variable, particularly duration in present job reports higher standard deviation than the mean value.

[9] 1 for up to secondary, i.e., at least 10 years of schooling; 2 for ITI, i.e., 12 years of schooling; 3 for higher secondary, i.e., 12 years of schooling; 4 for diploma i.e., 15 years of schooling; 5 for graduate general, i.e., 15 years of schooling; and 6 for graduate technical, i.e., 15 years of schooling. Although level of education appears to be discrete variable, it is different from conventional nominal variables, considering that there is an order implicit in the scale. This is also valid for variables like job satisfaction.

Table 4

The basic characteristics of on-the-job search of the sample workers

On-the-job search		*Age* (Years)*	*Monthly wage in present job* (in Rs)*	*Level of job satisfaction**	*Level of educational attainment**	*Duration in present job* (months)*	*Job mobility Within firm**
Yes	Mean	30.58	7606.03	1.63	2.49	56.15	0.64
	Std. Deviation	8.44	4227.95	0.59	1.58	57.35	0.69
	Sample size (n)	*232*	*232*	*232*	*232*	*232*	*232*
No	Mean	37.16	11924.07	4.12	3.02	93.51	0.86
	Std. Deviation	11.9	6884.60	0.96	1.80	89.24	0.84
	Sample size (n)	*135*	*135*	*135*	*135*	*135*	*135*
Total	Mean	33	9194.41	2.55	2.68	69.90	0.73
	Std. Deviation	10.33	5743.08	1.41	1.68	72.92	0.76
	Sample size (n)	*367*	*367*	*367*	*367*	*367*	*367*

Source: Field Survey, Peenya Industrial Area, Bangalore, Karnataka, 2011-2012
**the difference between means for yes/no categories is statistically significant at 1%.*

Major determinants

In this section, our purpose is to explore how on-the-job search responds to wages and duration of work in the firm. Conventional wisdom posits that wage is inversely related to on-the-job search. Those who are looking for jobs are more likely to be found in low-wage categories. The low wage induce workers to quit jobs frequently and the frequent job-to-job changes enable workers to find out better opportunities without having a protracted period of unemployment. It follows that longer duration of search, greater the search cost. Nor are workers interested to engage in protracted search, as it incurs cost –be it direct or indirect. The summary results of the mismatch between the observed and the expected wage are presented in table 5. The results suggest that the gap between expected wage and observed wage for workers who have not engaged in on-the-job search does not report a significant difference in mean value. There is, however, a significant difference in mean value for workers engaged in on-the-job search, implying that wages play a crucial role in the degree of on-the-job search.

Table 5

The observed and expected monthly wage earnings

On-the-job search		*Mean*	*Standard deviation*	*Sample size (n)*
Yes	Observed	7606.03	4227.95	232
	Expected	10015.95	5651.98	232
No	Observed	11924.06	6884.60	135
	Expected	12250.37	6580.67	135

Source: Field Survey, Peenya Industrial Area, Bangalore, Karnataka, 2011-2012

It has already been established that workers with longer period of work are less likely to engage in job-to-job changes and on-the-job search. This negative relationship between job tenure and on-the-job search is due in large part to the workers' firm-specific skill, which yields relatively higher rate of returns. It is reasonable to argue that a long attachment with a firm would induce established workers to value their firm-specific skills and prospective returns -be it direct or indirect –emanating from the employer. In fact, new entrants with less firm-specific skills are unlikely to find a satisfactory job. Interestingly, the newly entered workers tend to change their jobs more frequently than that of workers with longer period of work. What factors motivate the newly entered workers to quit jobs? Nearly 18 per cent of our respondents in the sample, who changed their jobs more than two times, reported that they had seldom possessed perfect information about work environment and wages regarding their first job. It follows that the mismatch between ex-ante expectations and ex-post expectations about the labour markets is quite conspicuous for workers entering newly to the labour markets. The acquisition of a full-fledged knowledge about the prospective returns, nature of work, and opening up of new job opportunities requires investment of a great deal of time in social capital. Generally speaking, a good deal of learning takes place within a short span of time, albeit varying from workers to workers. Empirical evidence suggests that the proportion of employed workers in on-the-job search decreases as duration of work increases (Pissarides and Wadsworth 1994).

Using estimates of a probit model, we explore the major determinants of on-the-job search for workers in the sample. In this model, on-the-job search is a dependent variable and present monthly wage, occupational mobility within firm, job tenure, firm size and social security are independent variables. It is important to note that on-the-job search is a dichotomous variable, comprising either *yes* or *no*. While occupational mobility within firm and social security are measured as binary variables, monthly wages and firm size are measured in ratio scale. Job tenure, measured in months, is a categorical variable, consisting of three categories: less than 24, (this category is omitted in the model) greater or equal to 24 but less than or equal to 60, and greater than 60. Probit estimates are presented in table 6. Except intra-firm mobility and social security, all explanatory variables are statistically significant. The increase in monthly wage earnings and firm size discourage employed workers to engage in search activity. As a matter of fact, the coefficient of firm size is quite consistent with the result presented in table 2. Similarly, social security has no impact on the

search decision of workers employed in the manufacturing sector. Deriving cues from our above discussion, those who have longer job tenure are less likely to look for another job. It should be noted that intra-firm occupational mobility is not statistically significant as workers are more flexible in an industrial cluster.

Table 6

Probit estimates of on-the-job search: results from manufacturing workers

Independent variables	*Coefficient (B)*	*standard error of B*	*dO/dx*
Constant	1.419***	(.197)	
Monthly wage	-0.000***	(0.000)	-.000
Mobility within firm (1=mobility;0= otherwise)	-0.184	(0.165)	-.068
Job tenure			
24-60 months	.204	(.192)	-.077
> 60 months	-.321*	(0.190)	-.121
Firm size	-0.005**	(0.002)	.001
Social security	0.567	(.153)	.021

Total number of observations 367
Log likelihood = -210.24, Pseudo R^2 =0.129
Figures in parenthesis represent robust standard error.
***Statistically significant at 1per cent
** Statistically significant at 5 per cent
* Statistically significant at 10 per cent

4 Concluding remarks

Based on National Sample Survey (NSS) 66th round unit level data, we examined the factors that determine the decision of employed workers to engage in on-the-job search. Our probit estimates suggest that household, personal and labour market characteristics play a pivotal role in the determination of on-the-job search. It is worth noting that the attainment of general education has nothing to do with the employed search, but all the explanatory variables in the model significantly impact the search activity of employed workers. The two noteworthy findings of this models are: first, the coefficient of *economic activity* is positive, which indicates that employed workers in the manufacturing sector are more likely to look for jobs; second, most importantly, the coefficients of size of firm appears to be negative in the manufacturing sector and positive in the services sector. Drawing cues from these results, we conducted a field survey of 367 randomly selected employees from 346 manufacturing units located in an urban agglomeration. Interestingly, while our first exercise provides a macro view of the employed search in India, based on labour supply characteristics, devoid of organisation-person relation, the second exercise presents the behaviour of employed workers against the context of organisation, bringing some flavour of demand for labour. Moreover, by way of analysing the role of wage and job tenure, our second model emphasised the significance of variables omitted in the first model. Evidence from our survey suggests that wage, firm size, and job tenure have a negative impact on the on-the-job search.

Appendix 1

Probit estimates of on-the-job search in India: major determinants

Independent variables	*Coefficient (Whole sample)*	*dO/dx*	*Coefficient (Manufacturing)*	*Coefficient (Services)*
Constant	-1.909***		-1.77**	-2.01***
	(.272)		(.591)	(.315)
Male	.049	.004	.335***	.032
	(.037)		(126)	(.040)
Rural	-.054*	-.005	-.053	-.043
	(.031)		(.073)	(.035)
Age	.089***	.007	.069*	.094***
	(.017)		(.037)	(.020)
Age Squared	-.002***	-.000	-.001**	-.002***
	(.000)		(.001)	(.000)
Currently married	-.151***	-.014	-.237*	-.135***
	(.037)		(.087)	(.042)
Schooling (1-12 years)‡	.000	000	-.069	.010
	(.057)		(.110)	(.068)
Graduate and above	.024	.002	-.068	.045
	(.067)		(.140)	(.078)
Technical education	.129***	.012	.014	.142***
	(.047)		(.120)	(.052)
Firm size (number of workers)	.008	.000	-.240***	.094***
	(.032)		(.067)	(.036)
Social security benefits	-.540***	-.047	.050	-.701***
	(.037)		(.077)	(.042)
Manufacturing	.090**	.007	------	-----
	(.038)			
Full-time	-.631***	-.089	-.523*	-.639***
	(.079)		(.269)	(.083)
Registered in employment exchange	.312***	.032	.066	.330***
	(.037)		(.109)	(.040)
PMT workers (NCO 2004 one-digit)	-.053	-.004	-.408***	-.019
	(.038)		(.120)	(.042)
Scheduled tribe	-.031	-.002	-.032	-.008
	(.049)		(.167)	(.053)
Scheduled caste	-.111***	-.008	-.185**	-.072
	(.043)		(.093)	(.048)
Other backward class	-.165***	-.013	-.175**	-.153 ***
	(.033)		(.071)	(.039)
Sample size	24581		4226	20355
Pseudo R-squared	0.07		0.04	.096
Log-likelihood	-4552.12		-924.40	-3576.78

Dependent variable: on-the-job search
‡Diploma is included in this definition
Figures in parenthesis represent robust standard error.
****, **, * indicate that coefficients are statistically significant at 1, 5, and 10 per cent level respectively.*
Source: National Sample Survey, 66th round unit level data, 2009-2010

References

Banerjee, Biswajit and Gabriella A. Bucci (1995) On-the-Job Search in a Developing Country: An Analysis Based on Indian Data on Migrants, Economic Development and Cultural Change, Vol. 43 (3), pp. 565-583

Black, Matthew (1981) An Empirical Test of the Theory of On-The-Job Search, *The Journal of Human Resources*, Vol. 16 (1), pp. 129-140

Blau, David M and Philip K. Robins (1990) Job Search Outcomes for the Employed and Unemployed, *The Journal of Political Economy*, Vol. 98 (3), pp. 637-655

Burdett, K (1978), A Theory of Employee Job Search and Quit Rates, *The American Economic Review*, Vol. 68 (1), pp. 212-220

Clark, Kim and Lawrence Summers (1979) Labour Market Dynamics and Unemployment: A Reconsideration, *Brookings Papers on Economic Activity*, 1

Daniel, W. (1999), *Biostatistics: A Foundation for Analysis in the Health Sciences*. Seventh edition, New York, Jhon Wiley & sons

Fuentes, A (2002), The determinants of On-the-job search: An Empirical Explanation, IMF Working paper 156

Government of India (2011), National Sample Survey (NSS), 66th Round unit level data

Holzer, Harry J (1987) Job search by employed and unemployed youth, *Industrial and Labour Relations Review, 40*(4): 601-611

Pissarides, Christopher A. and Jonathan Wadsworth (1994), on-the-job-search, some empirical evidence from Britain, *European Economic Review*, 38, pp.385-401

Ponzo, Michela (2010), On-the-job search in Italian Labour Markets: An Empirical Analysis, MPRA paper, accessed from *mpra.ub.uni-muenchen.de/25485*

Tobin, J (1972), Inflation and Unemployment, *American Economic Review*, 62, 1-18.

Yankow JJ and MJ Horney (2004), Employed Job Search Among Youth Women: The Role of Marriage and Children, accessed from *irving.vassar.edu/MIEC/Yankow_Horney_GenderSearch.pdf*