Labour Market in Urban Agglomerations:
A case from an Indian Global City

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ABSTRACT   We explore salient features of the link between labour market and urban agglomeration, using NSS unit level data, data from secondary sources, and field data. Our focus is laid on the context of India, witnessing the diverse processes of Urban Agglomeration (UA). The study is explorative in nature, aiming to point the distinct aspects of employment and labour market prevalent in large UAs, in particular the global cities. To capture the role of labour market in urban agglomeration, particularly pooling of labour and concentration of economic activities, we present a case study of *Peenya* Industrial Estate of Bangalore, the largest industrial estate in South Asia.   Taking cues from our case study, in organised manufacturing sector, in the context of competitive product and labour markets, we found evidence for high degree of flexibility existing in demand for and supply of labour. Indirectly, the factor which integrates both sets of actors –employees and employers- is they know that they reap economies arising from low search cost, due to possible agglomeration economies.

Key words: Labour market, Urban Agglomeration, economic activities

JEL Classification*: J47, O18*

1. Introduction

As economies go through discernible changes in the structural composition, primarily manifest in scenarios like tertiary sector emerging as the principal source of economic growth and employment, markets –product and labour- tend to respond to the trajectories of change. Quite important, change of this nature, albeit its contagious nature, may not generate equal pay offs to persons, firms, and institutions who participate in the process, resulting in visible uneven patterns of economic growth, in particular the concentration of benefits of growth in select spaces. Although it is quite logical to argue that economic growth is not necessarily an uneven game, viewing that a profit making exchange in a perfectly competitive market is a game of chances rather than being a determined one, participants in the market, as evident from the history of spaces or regions, tend to value location differently in commensurate with location's potential to generate advantages like closeness to the core space of the exchange. A stylized fact about economic growth, based on cues from the economic history across the globe is that the locations play pivotal role in shaping the economic growth, reflected in patterns like the production of goods and services getting concentrated in some cities or towns. As noted by Krugman[1], this process has its roots in the embedding between production and market, leading to complex forms of advantages which seep through production processes and transitions. Cumulative advantages which emanate from this 'embedding' may evolve to spatial organisations such as urban agglomeration (UA)[2]. It is important to note that UAs, while generating positive externalities for the product markets, provide advantages to the labour market as well, in particular when both product and labour markets are relatively more competitive. First, concentration of firms in these spatial units may significantly reduce cost incurred by workers to search for better job opportunities, and employers, incurring much lesser cost, can explore for more productive workers from a large diverse labour pool. Second, an expanding UA also paves way for effective formal and informal interaction processes between workers and employers.

The theme of urban agglomeration (UA) assumes greater significance in large transition economies such as India, though just 30% of population of India live in urban area. Assessing

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[1] "Production will tend to concentrate where there is a large market, but the market will be large where manufactures production is concentrated. (1991a, p 486)"
[2] World Bank (2009) provides conceptual background of UAs.

the trend during1975-2005 (Appendix 1), India is witnessing the trend of smaller cities becoming the urban spaces where more than a million people live; in 2007 there were 41 UAs in India. In the same year, three Indian UAs –Mumbai, Delhi and Kolkata-featured in the list of top ten most populous agglomerations in the world. The category UA is quite diverse; cities which are in the initial phase of agglomeration are placed in one end of the continuum while the large populous cities which have been experiencing different phases of UA, and evolving to complex forms spatial organisation, in particular in participating in the global business decision making, forming the other extreme. The UAs in the latter extreme –UAs with huge population and participation in global business decision making-, as viewed by Sassen (2006), tend to evolve to complex spatial-social-economic systems called global cities, sharing basic features like (p. 7): "command points in the organisation of the world economy; key locations and markets places for the leading industries of the current period-finance and specialised services for firms; and major sites of production, including production of innovations, for these industries. Quite important, this evolution, from simple spatial-social-economic systems to complex one brings mixed outcomes, in particular in labour market, manifest in wide gap between high pay and low pay occupations, in particular in transition economies (ibid); while the growth fuelled by global economy creates new league of well paid managerial-technical-scientific-service occupations, the strata of workers who are engaged in informal work, with no social security and neither decent pay, tend to grow exponentially, even substituting the formal employment in the formal sector[3]. Pointing the concurrence between evolution to global cities and transformations in the organisation of the labour process, Sassen notes (p 152-3) "the consolidation of new economic core of professional and servicing activities needs to be viewed alongside the general move to a service economy and the decline of manufacturing. New economic sectors are re-shaping the job supply. So, however, are new ways of organising work in both new and old sectors of the economy. The computer can now be used to do secretarial as well as manufacturing work.... much work that was once standardised mass production is today increasingly characterised by customization, even at times including sweatshops and industrial home work. In brief, the changes in job supply evident in major cities are a function of new sectors as well as of the reorganisation of work in both the new and old sectors." Viewing the growth processes in UA's in spatial-social-economic systems, more apparent in the labour market, it is important

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[3] This trend -informal work in formal sector substituting formal work in informal sector- is quite visible in the case of India. Post 2000, 'informal work in formal sector' as a labour market segment has been showing significant growth in employment opportunities, primarily emanating from the service sector (NCEUS, 2007).

to draw useful cues from the literature on fundamental aspects of labour market behaviour, in particular the linkage between demand for labour and supply of labour.

Although there exists a plethora of models in economics literature that explain how the various segments of labour markets operate in economic systems, which are dynamic and complex, two issues have received tremendous scholarly attention from diverse fields of social science disciplines. First, what factors determine the firms' decision on labour? Second, why do workers tend to look for new jobs? (Mortensen, 1970; Mortensen, 1986; Mortensen and Pissarides, 1999; Granovetter, 1973, 1985, 2005). Generally, labour market consists of two fundamental agents: workers and firms. Like the operation of a typical goods market, these two agents represent the two distinct axioms of the market –demand and supply-. More aptly, while the former constitutes the supply of labour, the latter represents the demand for labour. Interestingly, there is a conflicting interest between these two forces, implying that whilst the supply of labour shows a positive signal to the level of wages, the demand for labour provides an inverse relation to wages. In fact, tie between these two forces - demand for and supply of labour- is determined and controlled by wage, which has an immense power to balance these two conflicting interests, ultimately leading to what is generally known as labour market equilibrium. Moreover, conventional wisdom postulates that in such a market condition the assumption of perfect information pave the way for a smooth functioning of labour markets. It is worth noting that the assumption of perfect information in the interaction in effect discards the role of social structure in the labour market (Granovetter, 1973, 1985). Put it in a slightly different way, social structure that results from the investment in social capital has nothing to do with the labour market outcomes.

From a pragmatic point of view, as shown by Stigler (1961), a uniform price, even for homogeneous goods, is unlikely to occur because of the prevalence of uncertainty resulting from the imperfect information in the market structure. In other words, it implies that agents who are involved in the exchange possess different information. In the context of imperfect information, both agents often face difficulties in achieving their goals. Thus, information plays a vital role in the decision making process of both job seekers and job providers. For instance, from workers' point of view, labour market information is vital for choosing better employment opportunities, acquisition of new forms of skills, and so on. Further, Stigler 1962) shows that labour markets often face the problem of job shopping in which workers' criteria determines whether to accept a job or not. It is important to note that flow of information and networks –formal and informal- play pivotal role in shaping the labour

markets in the global cities, may be for perpetual growth or just for survival[4]. Against this backdrop, this paper outlines fundamental features of employment in UA and global cities. Further, the paper examines how firms in a UA, which is expanding as a global city primarily due to contemporary globalisation processes, make decision on labour, including sourcing of employment, and the determinants of workers' search for jobs.

The rest of this paper proceeds as follows. Section 2, drawing cues from National sample Survey 61st Round, gives an over view of basic features of employment in urban sector as a whole, UAs and global cities in India. Section 3 presents a case study of *Peenya* Industrial Area in Bangalore, showing the functioning of labour market in an urban agglomeration. Section 4 concludes the paper.

2. Employment in Urban Agglomeration (UA) in India

We examine salient features employment, drawn from unit level data of 61st Round of National Sample Survey, excluding persons below 15 years, in UAs in India, covering the following variables: employment status, economic activity, nature of work, sex, age intervals, educational attainment, monthly consumption expenditure and social category. In tables 1-3, we present percentage distribution of these variables across the following categories: sector – decomposed into urban and rural-, within the sector -UA and rest of the urban sector-, and within the UA-split into global city and rest of the UA-. We identified 41 UAs from United Nations (UN) (2007), subject to that the UA's population should be at least million. In our analysis, we have selected urban sector the district where UAs are located as UA; this implies that the UA definition covers not just the core of UA but nearby towns as well. Further, we selected, following the list of largest UAs in the world given by Sassen (2006)[5], six large UAs –Mumbai, Delhi, Kolkata, Chennai, Bangalore and Hyderabad- as global cities. As shown in table 1, proportion of regular salaried and wage employment is discernibly higher for global cities than the proportions reported by rest of the UAs i.e. 51%, while the aggregate for UAs is higher than that of the rest of urban sector. Across the urban sector categories, tertiary generates highest proportion of employment. While the proportion of *informal* work[6] is 80%, whether the urban space UA or not, the proportion for the category 'global city' is 76%, showing markedly better situation than the distribution for the whole country.

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[4] Sassen (2005) discusses global survival circuits, arguing that the globalisation gets localised in global cities, generating large pool of low wage workers.
[5] See Sassen (2005) p 208-9, Exhibit A.3, Largest Urban Agglomerations, 2003
[6] A work becomes informal if the worker is employed without entitlements like social security.

Table 1: Employment Status, Economic Activity and Nature of Work (2004-05)
(15 years and above)

	Sector		Within the Urban sector		Within the Urban Agglomeration	
	Rural	Urban	Rest of the Urban Sector	Urban Agglomeration	Rest of the Urban Agglomeration	Global City
Employment Status						
Self Employed	57.2%	43.8%	46.70%	42.90%	46.1%	37.4%
Regular Salaried & Wage	7.8%	41.2%	35.50%	42.80%	38.2%	50.9%
Casual Wage Labour	34.9%	15.0%	17.80%	14.20%	15.7%	11.6%
	100.0%	100.0%	100.00%	100.00%	100.0%	100.0%
Economic Activity						
Primary	70.0%	7.0%	9.30%	6.30%	8.4%	2.7%
Secondary	14.5%	33.9%	28.60%	35.50%	35.7%	35.0%
Tertiary	15.5%	59.1%	62.10%	58.20%	55.9%	62.3%
	100.0%	100.0%	100.00%	100.00%	100.0%	100.0%
Nature of Work						
Informal	96.9%	80.6%	80.10%	80.80%	83.5%	76.1%
Formal	3.1%	19.4%	19.90%	19.20%	16.5%	23.9%
	100.0%	100.0%	100.00%	100.00%	100.0%	100.0%

Source: Estimated by authors from NSS 61st Round Unit level data.

Table 2 gives percentage distribution of three variables: sex, age and educational attainment. It is important to note that, compared to the developed and some of large developing-transition urban economies, participation of women in employment tends to remain at abysmally lower rated i.e. lower than one fifth. Age interval does not appear to be sensitive to the type of UA –be it global or not-. However, as shown by the pattern of educational attainment, global cities show discernibly lower levels of illiteracy than the rest of UA. Moreover, the mode category, for the global cities, is graduation and above, while the same for UA is seven years of schooling i.e. middle.

As evident from Table 3, proportion of lowest quartile of the Monthly Per Capita Consumption Expenditure (MPCE), shows progressive decline as category changes from urban as a whole to UA and then to Global, while the top quartile shows increase across the same order of categories, implying that transition from urban to UA then to global city may have its roots, grounded in basic demographic pull and push forces which motivate persons to choose in favour of migration streams such as rural to urban and urban to urban. An

important factor which makes global cities quite distinct from other spatial identities –rural and urban-, as shown in Table 3, is the distribution of employed persons according to social categories. While 54% of employed persons in global cities form the category 'others', an aggregate for persons who are not socially backward, SC and ST, who are socially backward are relatively less represented in UAs and Global cities..

Table 2: Sex, Age and Educational Attainment (2004-05)
(15 years and above)

	Sector		Within the Urban sector		Within the Urban Agglomeration	
	Rural	Urban	Rest of the Urban Sector	Urban Agglomeration	Rest of the Urban Agglomeration	Global City
Sex						
Male	69.9%	81.5%	80.7%	81.8%	81.6%	82.1%
Female	30.1%	18.5%	19.3%	18.2%	18.4%	17.9%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Age Interval						
15-34	46.2%	47.5%	45.3%	48.1%	47.5%	49.2%
35-59	46.0%	48.1%	50.4%	47.5%	47.7%	47.1%
60 and Above	7.8%	4.4%	4.3%	4.4%	4.8%	3.7%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Educational Attainment						
Not Literate	44.3%	17.7%	20.2%	17.0%	19.6%	12.4%
Just Literate	12.2%	8.6%	9.2%	8.5%	8.6%	8.3%
Primary	14.0%	13.7%	12.7%	13.9%	14.4%	13.2%
Middle	15.0%	17.7%	17.5%	17.8%	17.2%	19.0%
Secondary	7.3%	13.4%	12.8%	13.6%	13.0%	14.6%
Higher Secondary/Diploma	4.3%	11.9%	12.1%	11.9%	12.0%	11.7%
Graduate and Above	2.9%	16.9%	15.5%	17.3%	15.3%	20.8%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Estimated by authors from NSS 61st Round Unit level data.

In order to explore the basic demographic push, resulting the growth and change in the labour market in the global cities in comparison with UAs, we ran a simple binary logistic regression using NSS 61st round unit level data, without extrapolating it for the population, taking formal/informal employment as dependent variable and educational attainment, age, age squared[7], whether technically trained or not, and being employed in global city or not. As shown in table 4, natural logarithm of odds to be in the formal employment against informal employment tends to go up, if the category of persons changes from non technical back-

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[7] This is mainly to capture the effect of diminishing returns to age.

ground to technical background, showing an odds ratio of 2.3. Being employed in global city turns out to be the second important factor impacting odds of employed in formal work against employed in informal work (with an odds ratio of 1.46). Other two variables (education and age) also positively determine odds in favour of formal employment, while squared age shows negative sign, perhaps implying that the outcomes is subject to decline when age exceeds 'feasible' range.

Table 3: Monthly Per Capita Consumption Expenditure and Social Category (2004-05)

(15 years and above)

	Sector		Within the Urban sector		Within the Urban Agglomeration	
	Rural	Urban	Rest of the Urban Sector	Urban Agglomeration	Rest of the Urban Agglomeration	Global City
Monthly Per Capita Consumption Expenditure (MPCE)						
First Quartile	29.1%	11.5%	14.6%	10.6%	11.6%	8.9%
Second Quartile	27.8%	15.8%	18.0%	15.1%	17.0%	12.0%
Third Quartile	24.8%	25.6%	26.4%	25.4%	26.5%	23.4%
Fourth Quartile	18.3%	47.0%	41.0%	48.8%	44.9%	55.6%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Social Category						
Scheduled Tribe	12.2%	3.1%	4.8%	2.7%	3.1%	1.8%
Scheduled Caste	21.2%	15.5%	17.6%	14.9%	14.3%	15.8%
Other Backward class	42.7%	37.0%	35.1%	37.6%	42.7%	28.5%
Others	23.8%	44.4%	42.5%	44.9%	39.8%	53.8%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Estimated by authors from NSS 61st Round Unit level data.

Table 4: Binary logistic estimates of Formal Employment$

Independent variables	Estimate	Wald test	Odds ratio
Constant	-9.41 (.18)*	2,735.672	
Eduscale#	0.18 (.00) *	3456.930	1.20
Age	0.28 (.01) *	993.891	1.31
Age square	-0.00 (.00) *	732.055	0.99
Techdum@	0.84 (.04) *	366.187	2.32
Globalcity^	0.38(.03) *	160.229	1.46
N= 41729			

-2 Log likelihood = 30538.61, Cox & Snell R Square = 0.19, Nagelkerke R Square =0.31

Figures in parenthesis represent standard error.   * Statistically significant at 1 per cent

$ Formal employment is a binary variable: 1 for formal employment and 0 for informal employment.
# Eduscale measures educational attainment by converting the data into years of schooling (see Thomas et al (2000) for similar procedure). @Techdum is a binary variable: 1 for Technical Education and 0 for no technical education. ^Globalcity is a binary variable: 1 for Global City and 0 for rest of the urban agglomeration.
Source: Estimated by authors from NSS 61st Round Unit level data.

3. The functioning of labour market in an Urban Agglomeration[8]: A case of *Peenya* Industrial Area

This case study is based on Peenya Industrial area[9] in Bangalore, Karnataka State. In this case study, we examine two core aspects of employment in industrial areas, particularly against the backdrop of dynamism of urban agglomerations like Bangalore: how firms make decision on labour, in particular demand for labour, and determinants of workers' search for jobs. The study area is spread across in three different stages. Table 5 provides basic features of this industrial area. The rationale for choosing this industrial area for this study is as follows. First, the Peenya Industrial Area, which is established in the beginning of 1970s[10] in Bangalore, is one of the oldest industrial areas in South Asia. Second, this industrial area is the largest in India consisting of several units with varying sizes of employment and investment in plant and machinery. Third, workers are engaged in diversified economic activities such as mechanical, electrical, electronics, automobile, civil, packaging, garments, lubricants, consumer items, pharmaceuticals, and machine tools provide better cues about the underlying structure of labour market. Fourth, being a growing urban agglomeration at the scale of global cities, which hosts new-age large enterprises in economic activities such as Information technology and related services, pulling workforce, be it skilled or unskilled, from different parts of India.

Table 5

Salient features of Peenya Industrial Unit	
Number of small-scale units	4000
Number of medium industries	25
Number of employees	0.3 million
Number of women employees	40 per cent
Annual turnover (Rs in 10 million)	15000
Exports per annum (Rs in 10 million)	6000

Source: Industrial directory, Peenya Industrial Association, 2007

Types of units, employment size, and sampling

As shown in table 5, there are slightly more than 4000 firms directly employing 0.3 million workers, of which 40 per cent workers are women. These features may not approximate the reality due to two principal reasons: first, firms often employ temporary and casual workers, who are not part of pay roll of the firm; and second, due to competitive conditions, resource scarcities and other reasons, some firms turned sick, leading to mortality of these firms. These factors pose major challenges for

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[8] Basically, Bangalore is a global city, subsumed within the super set of Urban Agglomeration (UA).
[9] Although words 'industrial area', 'industrial cluster', and 'industrial estate' are interchangeably used, area and cluster are conceptually different, albeit having several overlaps. While the cluster is more specialized in nature with obvious spillover, with distinct institutional structures, area is rather an activity specific zone. For instance, the case mentioned here *Peenya* , though sharing distinct features of cluster, with explicit and implicit industrial interaction structures, can rather be classified as industrial estate engaged in diversified manufacturing activities, combining small, medium, and large scale firms.
[10] This industrial area was formed by Karnataka Industrial Area Development Board and Karnataka State Small Industries Development Corporation (KSIDC).

researchers, in particular to arrive at appropriate sampling frames. Viewing these difficulties, we adopted a heuristics of multi-stage unit selection process in a sequential manner. First, taking cues from different secondary sources, such as directories and reports, on basic aspects of Peenya Industrial area, we initiated a communication process with different firms, close to hundred, to seek appointment for interview, generating 53 positive responses from firms. Second, we visited these 53 firms, and interviewed persons in decisions making roles such as owner and senior manager. While collecting the data from owners/managers, we could get data on the size of employment and list of employees, covering their name, occupation, and address. Fourth, from the list of employees, we created a random sample of 122[11] (Table 6).

Table 6
Summary description of the type of units and employment size

Type of units	NIC four digit code	No. of units	Employment size (N)	Sample size (n)
Manufacture of accumulators, primary cells and primary batteries	3140	1	06	Nil
Casting of iron and steel	2731	3	11	03
Manufacture of bearings, gears, gearing and driving elements	2913	2	13	Nil
Manufacture of cutlery, hand tools and general hardware	2893	1	07	Nil
Manufacture of domestic appliances, n.e.c	2930	2	14	02
Manufacture of electric lamps and lighting equipment	3150	3	31	Nil
Manufacture of electronic valves and tubes and other electronic components	3210	4	87	03
Manufacture of agricultural and forestry machines		2	63	12
Manufacture of fertilizers and nitrogen components	2412	1	114	07
Manufacture of footwear	1920	3	154	21
Manufacture of insulated wire and cable	3130	1	04	Nil
Manufacture of machine-tools	2922	7	109	15
Manufacture of luggage, handbags, and the like, saddler and harness	1912	4	26	06
Manufacture of made-up textile articles, except apparel	1721	2	284	32
Manufacture of plastic products	2520	1	84	09
Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	2511	2	48	01
Saw milling and planning of wood	2010	3	21	01
Manufacturing of other electrical equipments	3190	2	13	Nil
Manufacture of wooden containers	2033	1	43	05
Manufacture of soft drinks; production of mineral waters	1554	2	17	Nil
Manufacture of structural metal products	2812	5	27	03
Manufacture of soap and detergents, cleaning , and polishing preparations	2424	1	07	02
Total	---	53	1173	122

Source: Field Survey, Peenya Industrial Estate, 2011

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[11] To calculate the sample size, we apply the following definition $n^{'} = \dfrac{N Z^2 P (1 - P)}{d^2 (N - 1) + Z^2 P (1 - P)}$ where $n^{'}$=sample size, N=population size, Z=Z statistic for a level of confidence, P=expected proportion, and d=precision (Daniel, 1999). In this equation N = 1173, Z=1.96 (95 per cent confidence level), P=0.5, and d=0.1. This generates a sample of close to 100.

Results

How firms make decision on labour: key insights

We interviewed 53 persons who represent 53 different firms at Peenya Industrial estate in Bangalore, Karnataka. These firms are engaged in diverse fields of manufacturing such as manufacturing of machine tools, furniture, automobile components, and so on (Table 2). All persons whom we interviewed donned dual roles- one of manager and one of owner-, ranging between the ages 40 and 70. While 19 firms are sub-contracting units, which cater to the supply chain of larger firms, the remaining firms produce output, targeted for segments of demand such as local final consumption market, intermediate consumption market, and export. The employment size for this sample varies between 4 and 284; between these limits, most of the firms appear to employ, on average, 22 workers. Except three firms, as shown by responses, firms provide at least one social security provision to employees. While most of the firms provide social security benefits after inducting employees to the firm through formal or informal training, a few firms do not provide any form of social security benefits. All the firms in our sample use capital goods in the production process with varying capital-labour processes, which is manifest in type of employees being employed by these firms. While most of the employees in these firms have at least 12 years of education-ten years in school education and two years in technical education from sources like Industrial Training Institutes (ITI)-, who are engaged in occupational profiles requiring technical skills, the remaining workforce with lower educational attainment seem to be absorbed in non-technical occupations like 'office attendant', and 'helper'. In general, Peenya Industrial Estate appears to be a case for firms seemingly operating in more competitive product market conditions, which interact with nearly competitive and relatively flexible labour markets. Perhaps the case of Peenya is a sort of variant of neo-classical model of demand for labour in which firms in perfectly competitive product markets interact with perfectly competitive labour markets.

It is important note that industrial areas/clusters in urban agglomeration like Bangalore where firms of smaller or medium size which cater to final good market or intermediate demand or product market within a supply chain of large firms, tend to follow competitive behaviour which may approximate firms which operate in perfectly competitive product market conditions. Viewing that they are relatively price takers than price makers, they hardly advertise their products, incurring negligible selling costs; neither have they enjoyed critical market power in selling nor they invest in specific assets meant for research

and development, manifest in less emphasis being given to discernible innovations in product and process. Moreover, going by responses from firms, most of the firms seem to benefit from locational advantages. These advantages primarily emanate from two sources: first, being part of an industrial areas/clusters that generate scope for gaining benefits from information sharing, pooled labour market, and infrastructure, and, second, being located in an agglomeration like Bangalore, provides ample scope for building network of suppliers of inputs and buyers of products, generating economies from lower transport and search costs.

Taking cues from the background described above, these firms are likely to earn economic profit, which is significantly lower than what is seen as abnormal levels of profit. Against this backdrop, it is important to describe the salient features of the demand for labour by firms in Peenya Industrial Estate. Put differently, we assess, based on in-depth interviews with decision makers of the 53 firms at Peenya Industrial Estate, two important aspects: sourcing of employees from the labour market, basic aspects of employment such as wage, social security, and training.

Sourcing of employees

Across in-depth interviews, respondents remarked the prevalence of difference in employee sourcing with respect to occupational profile requiring skills that are more technical and those profiles that are less technical-intensive occupations like office assistant. While referral by employees of the firm seem to be popular strategy for sourcing candidates for skilled occupations, although two respondents viewed that their firms have never used recruitment through referral, firms tend to source employees for less-skilled occupations directly, using conventional filter mechanisms like personal interview. As viewed by managers, the dynamics of labour market for less-skilled occupations resemble the flexibility of perfectly competitive labour markets, well reflected in higher attrition rate and rate of vacancies. Considering the lower search costs and temporal consistency in job creation, which is quite expected in an industrial area/cluster located in the urban agglomeration, hiring of employees for low-skilled occupational profiles is often done through simple process like display of vacancies at the gate and conduct interviews of job aspirants. As noted by some respondents, employees, in particular persons getting their first job, who are recruited for low-skilled occupational profiles, tend to leave for a new job offered by another firm in the same industrial area, which gives higher wages, after being trained in necessary office related skills by the first employer.

However, the nature of labour market for high skilled occupations is distinct from the labour market for low-skilled occupations, showing discernibly different flexibility conditions. Contrary to relatively simple supply-demand match prevalent in the case of low-skilled occupations, based on cues generated from in-depth interviews decision makers in the firm, we find that employee sourcing for skilled occupations, barring a few exceptions, primarily depends on social networks of employees, called 'referral system'. Under this system, senior employees are induced to scout for the potential employees, viewing that this arrangement generates credible information about candidates' technical prowess and skills. Put differently, this behaviour, perhaps, emanates from firms' tendency to use short cuts for making decisions in relatively complex situations, which is quite similar to behaviour portrait by the school of bounded rationality. On probing the fundamental reason for this behaviour, a few respondents shared that the sustenance of firms' performance is relatively more dependent on skilled occupations, and therefore, there should be credible information about prospective employees who are expected to have longer tenure in the firm.

Basic aspects of employment

In situations where both products and labour markets are perfectly competitive, as shown the neoclassical micro economic theory, the interaction of these markets tend to generate efficient outcomes such as profit maximising employment and the corresponding wage rate, which integrate the interest of firms and job seekers. In this simple setting of firm and labour markets, efficient wage, the value of which harmonize the interests of both employees and firms, is defined as the marginal product of employee and the price of average revenue. Viewing these scenarios, which have been brought out in this case study, we combine the simple neo-classical frame and cues from the interviews, forming an alternative wage equation. In our formulation, based on in-depth interviews, firms tend to set compensation for new employees in the firm, combining information on employee efficiency level, performance measures related output such as consistency in average revenue, general and specific human capital, and managerial evaluation of competencies based on cues from referrals process. This wage should satisfy the constraints such as reservation wage, below which employees are not willing to participate in the labour market, and legal requirements such as minimum wage. While wage determination, as a process for low-skilled occupations, is not as complex as given in our alternate formulation, resembling the simplicity of competitive labour market-flexibility conditions, characterised by free entry and exit, our

formulation for industrial areas like *Peenya* is more appropriate to describe the behaviour of labour market for relatively skilled occupations in the manufacturing industry. However, this formulation has its variants, depending upon the consistency in business performance, in particular a few firms, which are sub-contracting units for supply chains of big firms that are external to the industrial area/cluster. In these circumstances, employers tend to make employment being sensitive to business performance, implying that significantly low business performance leads to job losses for skilled occupational categories.

Once the newly recruited employees in the skilled occupations enter firms, as captured from the in-depth interviews that we conducted, senior employees tend to mentor juniors. While the process of mentoring goes on, 'informal trainers' observe new employees capacity to learn and contribute to organisational performance, both in the short-run and long-run, leading to judgements about the match between new employee and firm. Going by responses, the informal training varies between three and twelve months. When they are inducting after the successful informal training period, the wage tends to go up. Primarily, this increment comes from two sources. While one source is social security benefits, the second source is incentive to motivate, quite akin to the incentive compatibility model in principal agent model.

Determinants of workers' search for jobs

Viewing workers who are in the job in a flexible labour market, as exists in an urban agglomeration setting, almost resembling conditions of pooled labour market, where wages are settled after internalising lower search costs and competitive conditions, tend to engage in active on-the-job search. Put differently, with the heterogeneity of characteristics prevalent in labour market, workers are likely to look for new jobs, driven by some basic determinants, represented by discernible patterns across cohorts. As explained previously, we drew a sample of 122 workers from *Peenya* Industrial estate, Bangalore, mainly to examine basic determinants of on-the-job search. Primarily, we use three types of measures: ratio scale, nominal, and interval. The ratio scale is used for measuring variables like age, wage etc, while nominal scale is used for measuring categorical variables like on-the-job search. Moreover, we have used interval scale for measuring job satisfaction and level of education.

While the scale used for job satisfaction varies between 5 and 1 (five for the highest and 1 for the lowest), the level of education is measured by a scale ranging between 4 and 1[12].

For assessing basic determinants of search, it is important to see if the core labour market features show discernibly different pattern for tendency to search, compared to the patterns for the category 'no search'. For this, we see if the means are different when variables representing labour market characteristics are decomposed with respect to categories used in on-the-job search, i.e., yes/no. While labour market characteristics are constituted by 5variables –age, present wage, job tenure, degree of satisfaction in the job, and level of education-, on-the-job search is a dichotomous variable, composed of yes or no responses.

As shown in table 7, except for level of education, all measures significantly different means for yes/no categories, showing lower means for age, present wage, tenure in present wage, and degree of satisfaction for the response category 'yes'. Put differently, the tendency to engage in on-the-job search seems to be inversely related to these four characteristics. Of those variables, means of which are significantly different for categories except for tenure in present job, standard deviations are much smaller than the mean, conveying lower degrees of dispersion in the distribution. However, the variable 'tenure in present job' reports standard deviation, which is higher than the mean.

Table 7 On-the-job search and labour market characteristics

	On-the-job search	Age* (Years)	Present Wage* (Monthly in INR)	Tenure in Present job* (Months)	Job satisfaction*	Level of Education
No	Mean	37.46	12,378.81	101.31	4.25	2.71
	N	59	59	59	59	59
	Std. Deviation	11.56	8,340.81	92.87	0.73	1.08
Yes	Mean	30.94	8,999.21	57.00	2.47	2.61
	N	63	63	63	63	63
	Std. Deviation	8.848	5,005.63	60.02	0.71	0.90
Total	Mean	34.09	10,633.61	78.43	3.33	2.66
	N	122	122	122	122	122
	Std. Deviation	10.71	7,004.42	80.46	1.14	0.95

*the difference between means for yes/no categories is statistically significant at 5%.
Source: survey data

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[12] 4 for graduation and above, i.e., at least 15 years of schooling; 3 for diploma/vocational training, i.e., 10 years of schooling and at least 2 to 3 years of vocational/technical training; 2 for 10 to 12 years of schooling; and 1 for less than 10 years of schooling. Although level of education is a discrete variable, it is different from conventional nominal variables, considering that there is an order implicit in the scale, which can be transformed to different magnitudes without affecting the order. This is also valid for variables like job satisfaction.

While more than 90 per cent of the sample is Hindu males, married persons constitute three fifth (Appendix 2, A1). Two predominant castes in Karnataka –*Vokkaliga* and *Lingayat*-form two fifth of the sample. Four fifth of the sample are from Karnataka, whilst closer to three fourth said that Kannada is the mother tongue (Table A2). Except five workers, rest of the sample belong to skilled or semi-skilled occupational profiles (Table A3). Quite interestingly, slightly above three fifth of the sample responded that they sourced job related information through informal channels such as family/relatives or personal contacts in order to attain their present job (Table A4). As shown in table A5, 52 per cent of the respondents who got informal sources are not engaged in on-the-job search at present, whilst 57 per cent of the respondents who obtained information through formal sources are doing on-the-job-search. Table 8 outlines bi-variate Bayesian conditional probabilities and odds ratios for on-the-job search and job source information.

Table 8
Bayesian conditional probability for on-the-job search and sources of job information for present job

$P(S/F)^{13}$	Chance of on-the-job search (S) given that the person is likely to avail job information through formal sources(F)	.55
$P(S/\neg F)$	Chance of on-the-job search (S) given that the person is likely to avail job information through informal sources($\neg$ F)	.48
$P(\neg S/F)$	Chance of no on-the-job search ($\neg$ S) given that the person is likely to avail job information through formal sources(F)	.45
$P(\neg S/\neg F)$	Chance of no on-the-job search ($\neg$ S) given that the person is likely to avail job information through informal sources($\neg$ F)	.52
$P(F/S)$	Chance of obtaining job information through formal sources (F) given that the person is engaged in on-the-job-search (S)	.42
$P(F/\neg S)$	Chance of obtaining job information through formal sources (F) given that the person is unlikely to be engaged in on-the-job-search ($\neg$ S)	.33
$P(\neg F/S)$	Chance of obtaining job information through informal sources ($\neg$ F) given that the person is unlikely to be engaged in on-the-job-search (S)	.58
$P(\neg F/\neg S)$	Chance of obtaining job information through informal sources ($\neg$ F) given that the person is unlikely to be engaged in on-the-job-search ($\neg$ S)	.66
Odds ratio	*$P(S/F)/P(\neg S/F) = 1.2$; $P(S/\neg F)/P(\neg S/\neg F) = 0.92$;* *$P(F/S)/P(\neg F/S) = .72$; $P(F/\neg S)/P(\neg F/\neg S) = .5$*	

Source: Based on table A5 (Appendix 2)

As shown in table 8, chance of on-the-job search given that the person is likely to avail job information through formal sources is .55, while **c**hance of on-the-job search given that the person is likely to avail job information through informal sources is .48. Interestingly, chance of obtaining job information through formal sources given that the person is engaged

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[13]

$$p\left(\frac{S}{F}\right) = \frac{p\left(F/S\right)p(S)}{p\left(F/S\right)p(S) + p\left(F/\neg S\right)p(\neg S)}$$

in on-the-job-search is .42 and chance of obtaining job information through formal sources given that the person is unlikely to be engaged in on-the-job-search is .33. Similarly, chance of not on-the-job search given that the person is likely to avail job information through formal sources is .45 while chance of no on-the-job search given that the person is likely to avail job information through informal sources is .52. Chance of obtaining job information through informal sources given that the person is unlikely to be engaged in on-the-job-search is .58, while Chance of obtaining job information through informal sources given that the person is unlikely to be engaged in on-the-job-search is .66. Quite important, given that persons have obtained job information through formal sources, chances of on-the-job-search is 1.33 times more than chances of not on-the-job-search, while the same odds ratio –chances of on-the-job-search to chances of not on-the-job-search, given that sourcing information through informal source, is 0.92.

Taking cues from tables 7 and 8, it is important to assess the relation between on-the-job search and its basic determinants. Considering that our samples size is not large enough to support a rigorous modelling effort, involving an exhaustive list of control and experimental variables, we explore a simple function, containing on-the-job search as dependent variable and age, level of education, present wage, job satisfaction, and job information as independent variables. In this equation, on-the-job search and job information are measured as binary variables. Age and present wage are measured in ratio scale, while education and degree of satisfaction, albeit discrete variables, are measured in interval. Estimates are presented in table 9. While satisfaction in the present job and age are significant at 5 per cent and 10 per cent respectively, other explanatory variables –education, present wage, and sources of job information- are not statistically significant. Both the statistically significant coefficients carry negative sign, implying that natural logarithm of odds ratio of chances of participation in on-the-job search to chances of no participation is likely to come down with higher levels of job satisfaction and higher age and vice-versa. Interestingly, this result is consistent with altered models, containing categories of nominal and interval scale variables and quartiles of ratio variable scale as well[14].

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[14]This result is obtained through SPSS procedure of binary logistic regression. However, running the same equation in STATA, with robust standard errors of estimates, coefficient of age turns insignificant.

Table 9
Binary logistic estimates of on-the-job search^

Independent variables	Estimate	Wald test	Odds ratio
Constant	10.57** (2.23)	22.5	
Age	-0.065* (0.04)	3.07	0.94
Education$	0.056 (0.39)	0.02	1.06
Present wage	0.000 (0.00)	0.32	1.00
Satisfaction in present job@	-2.44** (0.43)	31.85	0.09
Job information sources #	-0.767 (0.69)	1.24	0.46
N= 122			

-2 Log likelihood = 70.95, Cox & Snell R Square = 0.56, Nagelkerke R Square =0.73
Figures in parenthesis represent standard error. *Statistically significant at 10 per cent
** Statistically significant at 5 per cent

^ On-the- job-search is measured by binary variable (1 for search and 0 no search)
$ Education is measured by a scale, varying between 4 (highest level) and 1 (lowest level).
@ Degree is satisfaction is measured by a scale, varying between 5 (highest) and 1 (lowest)\
 # Job information sources is a binary variable (1 for informal 0 for formal)
Source: Estimated from survey data

Drawing cues from regression result and table 8, we find that obtaining job information through informal sources like social contacts, though the popular source of information, do not turn out to be the significant determinant of odds in favour of on-the-job-search, espousing that what appears the popular is not necessarily the credible.

4. Concluding remarks

Exploring salient aspects of employment in UAs, in particular employment in expanding global cities, we find great sense in seeing labour markets in large UAs different from the conventional aggregate 'urban sector'. Although new forms of inequalities evolve as new spatial arrangements shape the large UAs which rise as global cities, these spaces continue to lure jobseekers, since, being there, persons seems to have better chances of good outcomes such as escaping the worst quartile of MPCE and being in better employment. Taking cues from our case study of *Peenya* Industrial Area in Bangalore, even in organised manufacturing sector, in the context of competitive product and labour markets, we found evidence for high degree of flexibility existing in demand for and supply of labour. Indirectly, the factor which integrates both sets of actors –employees and employers- is that they know that they reap economies arising from low search cost, due to possible agglomeration economies. This study points to the need for public policy frames which can integrate decent work, providing entitlements like social security, and competitive-flexible product-labour market interactions in the context of emerging global cities.

Appendices

Appendix 1
Urban Agglomeration in India

Urban Agglomeration	Population (Millions)			Rank			Average annual rate of change		Population residing in agglomeration, 2007, as % of	
	1975	2007	2025	1975	2007	2025	2005-2010	2020-2025	Total Population	Urban Population
Agra	0.7	1.6	2.4	271	249	222	2.4	2.2	0.1	0.5
Ahmadabad	2.1	5.4	7.7	72	46	45	2.2	2.0	0.5	1.6
Allahabad	0.6	1.2	1.8	310	353	315	2.1	2.2	0.1	0.4
Amritsar	0.5	1.2	1.8	325	350	310	2.4	2.2	0.1	0.4
Asansol	0.3	1.3	2.0	404	321	282	2.5	2.2	0.1	0.4
Aurangabad	0.2	1.1	1.7	415	377	332	2.7	2.3	0.1	0.3
Bangalore	2.1	6.8	9.7	67	36	31	2.2	2.0	0.6	2.0
Bhopal	0.5	1.7	2.6	331	221	204	2.3	2.2	0.1	0.5
Chennai (Madras)	3.6	7.2	10.1	34	35	26	1.8	2.0	0.6	2.1
Coimbatore	0.8	1.7	2.5	237	231	212	2.2	2.2	0.1	0.5
Delhi	4.4	15.9	22.5	23	6	3	2.5	1.9	1.4	4.7
Dhanbad	0.5	1.2	1.9	322	343	305	2.2	2.2	0.1	0.4
Durg-Bhilainagar	0.3	1.1	1.6	390	386	339	2.4	2.3	0.1	0.3
Faridabad	0.2	1.4	2.1	423	306	263	3.1	2.2	0.1	0.4
Ghaziabad	0.2	1.3	2.0	421	317	276	3.4	2.2	0.1	0.4
Hyderabad	2.1	6.4	9.1	70	40	36	2.0	2.0	0.5	1.9
Indore	0.7	2.0	3.0	280	188	161	2.6	2.2	0.2	0.6
Jabalpur	0.6	1.3	1.9	293	331	296	2.1	2.2	0.1	0.4
Jaipur	0.8	2.9	4.3	246	118	92	2.6	2.1	0.3	0.9
Jamshedpur	0.5	1.3	1.9	314	327	291	2.3	2.2	0.1	0.4
Kanpur	1.4	3.2	4.6	120	103	83	2.2	2.1	0.3	0.9
Kochi (Cochin)	0.5	1.5	2.2	317	266	240	1.9	2.2	0.1	0.4
Kolkata (Calcutta)	7.9	14.8	20.6	9	8	8	1.7	1.9	1.3	4.3
Lucknow	0.9	2.7	3.9	211	130	111	2.3	2.1	0.2	0.8
Ludhiana	0.5	1.6	2.4	334	238	219	2.3	2.2	0.1	0.5
Madurai	0.8	1.3	1.9	241	329	298	1.7	2.2	0.1	0.4
Meerut	0.4	1.4	2.1	353	303	269	2.4	2.2	0.1	0.4
Mumbai (Bombay)	7.1	19.0	26.4	15	4	2	2.0	1.9	1.6	5.6
Nagpur	1.1	2.5	3.6	166	149	125	2.1	2.1	0.2	0.7
Nashik	0.3	1.5	2.2	389	276	244	2.8	2.2	0.1	0.4
Patna	0.6	2.2	3.2	286	173	151	2.7	2.2	0.2	0.6
Pune (Poona)	1.3	4.7	6.8	126	54	48	2.5	2.0	0.4	1.4
Rajkot	0.4	1.3	1.9	378	342	299	2.7	2.2	0.1	0.4
Ranchi	0.3	1.0	1.6	388	405	353	2.5	2.3	0.1	0.3
Solapur	0.4	1.1	1.6	347	400	348	2.5	2.3	0.1	0.3
Srinagar	0.5	1.1	1.7	329	367	326	2.3	2.2	0.1	0.3
Surat	0.6	3.8	5.7	287	74	63	3.2	2.1	0.3	1.1
Vadodara	0.6	1.8	2.6	309	214	199	2.3	2.2	0.2	0.5
Varanasi (Benares)	0.7	1.4	2.0	272	314	281	1.9	2.2	0.1	0.4
Vijayawada	0.4	1.1	1.7	359	368	329	2.0	2.3	0.1	0.3
Visakhapatnam	0.5	1.5	2.3	344	264	235	2.1	2.2	0.1	0.4

* Ranking among the urban agglomerations having 1 million inhabitants or more in 2007

Source: United Nations, Department of Economic and Social Affairs, Population Division (2008, World Urbanization Prospects: The 2007 Revision.

Urban Agglomeration	Country	Population (Millions)			Rank			Average annual rate of change		Population residing in agglomeration, 2007, as % of	
		1975	2007	2025	1975	2007	2025	2005-2010	2020-2025	Total Population	Urban Population
Tokyo	Japan	26.6	35.7	36.4	1	1	1	0.4	0.0	27.9	42.1
New York	USA	15.9	19.0	20.6	2	2	7	0.7	0.3	6.2	7.6
Mexico City	Mexico	10.7	19.0	21.0	3	3	6	0.8	0.3	17.9	23.2
Mumbai (Bombay)	India	7.1	19.0	26.4	15	4	2	2.0	1.9	1.6	5.6
São Paulo	Brazil	9.6	18.8	21.4	5	5	5	1.3	0.3	9.8	11.5
Delhi	India	4.4	15.9	22.5	23	6	3	2.5	1.9	1.4	4.7
Shanghai	China	7.3	15.0	19.4	13	7	9	1.7	1.0	1.1	2.7
Kolkata (Calcutta)	India	7.9	14.8	20.6	9	8	8	1.7	1.9	1.3	4.3
Dhaka	Bangladesh	2.2	13.5	22.0	65	9	4	3.3	2.5	8.5	32.0
Buenos Aires	Argentina	8.7	12.8	13.8	7	10	16	0.8	0.2	32.4	35.2

The ranks have arranged according to 2007 population

Source: United Nations, Department of Economic and Social Affairs, Population Division (2008, World Urbanization Prospects: The 2007 Revision.

Appendix 2

Table A1

Religion	
Hindu	92.6
Muslim	4.1
Christian	3.3
Sex	
Male	96.7
Female	3.3
Marital status	
Never married	39.3
Married	60.7
Caste	
Brahman	9.0
Vokkaliga	24.6
Lingayat	19.7
SC	4.9
ST	8.2
Others	32.0
Unspecified	1.6
N	*122*

Source: Survey data

Table A2

State of origin	
Andhra Pradesh	3.3
Bihar	0.8
Karnataka	81.9
Kerala	2.5
Orissa	3.3
Tamil Nadu	6.6
Uttar Pradesh	0.8
Uttaranchal	0.8
Mother-tongue	
Hindi	2.5
Kannada	72.1
Malayalam	3.3
Marathi	0.8
Oriya	3.3
Tamil	6.6
Telugu	6.6
Tulu	1.6
Urdu	3.3
N	*122*

Source: Survey data

Table A3

Occupation (Per cent)	
Accountant	3.3
Accounts Manager	0.8
Assembler	1.6
Designer	2.5
Engineer	1.6
Fabricator	2.5
Fitter	5.7
General Manager	7.4
Helper	4.1
Machine Operator	19.7
Maintenance Manager	4.9
Marketing Executive	0.8
Painter	0.8
Plant Head	2.5
Plant In charge	5.7
Production In charge	1.6
Production Manager	7.4
Purchasing Manager	1.6
Quality inspector	0.8
Quality Inspector	6.6
Quantity Inspector	0.8
Sales Executive	0.8
Shift Engineer	0.8
Supervisor	9.8
Turner	0.8
Welder	4.9
N	**122**

Source: Survey data

Table A4

Job Source Information	Per cent
Advertisement in Newspaper *(formal channel)*	1.6
Private agencies *(formal channel)*	0.8
Family/relatives *(informal channel)*	29.5
Personal contacts/friends *(informal channel)*	32.0
Directly sourcing from firm *(formal channel)*	18.9
Technology (e.g. website, social networking sites) *(formal channel)*	0.8
Notice at Firm *(formal channel)*	9.0
Other specify (e.g. campus recruitment) *(formal channel)*	7.4
N	**122**

Source: Survey data

Table A5

| On-the-job search | Source of Job information | | N |
	Formal	Informal	
No	43.5%	52.0%	59
Yes	56.5%	48.0%	63
Total	100	100	
N	**45**	**77**	**122**

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