Are Skills a Constraint on Firms?
New Evidence from Russia

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DISCUSSION PAPER SERIES

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ABSTRACT

Are Skills a Constraint on Firms? New Evidence from Russia[1]

The paper uses a unique survey of recruitment firms to look at how Russian firms perceive the supply of skills in the labour market and how well those skills match to their demand for labour. Firms invest significant amounts of time in search to fill vacancies and search time is unambiguously increasing in skills. These skill gaps are associated with significant wage premia and are perceived to have negative consequences for the output mix and productivity. A small job postings experiment also finds that search time increased yet further for activities considered relatively innovative. Further, using Russian Ministry of Labour data for all legal migrant applications in 2010 and matching the migrant to the sponsoring firm, we find that there is some – albeit limited - evidence of firms using migrants to address high skill shortages. However, the overwhelming majority of migrants are skilled or unskilled workers; a reflection of the low underlying rates of innovation and associated demand for high skill jobs.

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1. Introduction

An impression persists that despite lack of diversity in output and trade, Russia has a relative abundance of skills and a high quality of education, at least when compared with other comparable economies. Recent research suggests that this impression may be misleading[2]. In common with other countries with undiversified and unsophisticated product mixes, Russia has under-performed in terms of educational outcomes. This will be costly. Not only does good education and skills support and enhance innovation, but they also help the successful imitation and faster adaptation of existing modern technologies. Aside from affecting productivity and growth directly, the skills profile is also a significant factor in conditioning the ability to diversify; an announced policy objective of successive Russian governments. The skills present in an economy can be summarised in the products and services that they generate. The skills required for natural resource activities tend to be rather specialized and not easily redeployed to new activities. In policy terms, this would warrant an emphasis on improving diversity in the supply of skills. However, an alternative explanation for a failure to shift the skills profile would be to focus on the demand side where an adverse business environment and other policies might have been the main determining factors.

Survey evidence collected at firm level suggests that skill shortages are widely perceived to be a major impediment to growth. In manufacturing, shortages appear to be most acute for skilled workers and only to a lesser extent for higher skill groups, such as managers. However, the available evidence also points to large variation across firms and locations, with pervasive labour hoarding in manufacturing also distorting the aggregate picture. In short, not only is the overall picture far from clear, but a robust understanding of the disaggregated skills profile is still lacking. Consequently, the focus of our paper is on the supply of disaggregated skills in the Russian economy. In addition, we explore the possibility that firms address skill shortages by hiring migrant labour from other countries.

The paper is built on the findings of a unique survey of the leading recruitment or personnel firms operating in Russia. This approach was taken for the ability to cover a wide range of locations and markets without the very high costs associated with implementing representative firm surveys as well as the ability to identify efficiently the configuration of demand for skills in different types of firms, notably those engaged in relatively innovative activity. At the same time, we use a dataset released by the Federal Employment Service that provides a list of applications by firms for working permits for different types of migrant workers. This allows us to see whether firms are actively using migrant labour to address shortages and for what particular type of skills.

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[2] Amini and Commander (2012)

2. Data description

We implemented a survey of leading recruitment firms throughout Russia between August-December, 2010[3]. The sampling frame was a complete list of recruitment companies operating in Russia. Stratification was organised in terms of the size of the urban locations and their importance as regional centres. In the 23 selected locations, all recruitment companies currently operating – amounting to 1349 companies - were invited by email to respond to the survey. Of those, 584 companies were then called by telephone and invited to participate. Ultimately 257 firms participated and at this point, the survey was implemented face-to-face. *Table 1* gives the distribution of responses by location. It can be seen that of the 257 recruitment firms that were surveyed, just under a third were in Moscow and St. Petersburg. The questionnaire that was administered was organised in several blocs. These collected information on the respondent's company and any specialisation it might have before proceeding to questions concerning the time to fill vacancies for six skill categories, the salary levels considered necessary to ensure a match and the changes relative to 2008. Questions were then asked regarding employer needs disaggregated by the skill groups and, in the case of vacancies taking more than four weeks to fill, the reasons. A set of detailed questions concerned with the factors behind hard-to-fill vacancies was then asked, as well as with regards to the response of potential employers when faced with difficulties in recruitment – including the recruitment of migrants from other regions or countries. A final set of questions was asked about the quality of personnel available to companies.

There are some important caveats to be made concerning the sampling strategy that we have followed. In particular, selection issues could be expected when sampling recruitment firms. There is likely to be a different incidence across location and sector for which we cannot control. Further, evidence suggests that firms rely on recruitment firms for particular functions, notably filling specialised and/or hard to fill or unusual vacancies, as well as hiring in emergencies. However, these features are helpful to us if part of the objective is to identify sensitive shortages facing innovative or successful firms.

An additional exercise was carried in six of the locations. This involved setting up a small 'experiment' with the following design. European companies were represented as looking to invest in three broad innovation areas; high quality energy-conserving LED lights, engineering services for the electricity sector, including design of generation facilities and web technology aimed at social networking and marketing in several fields. Detailed job descriptions provided specifying educational, experience, language and other requirements

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were developed for a range of posts including Directors, Specialist Technical positions, Administrators and Skilled Workers. Eleven Recruitment Agencies in six locations - Moscow; St. Petersburg; Ekaterinburg; Novosibirsk; Vladivostok and Khabarovsk were approached and tasked with an initial scoping[4]. They were asked several key questions including required wage offer for each skill type; likely time to fill a vacancy and the degree of difficulty in filling a vacancy for each skill type. The responses were organised consistent with the skill brackets used in main survey.

Finally, in order to analyse the scale and deployment of migrant workers, we draw on a nationwide dataset recently made available by the Russia Federal Employment Service. Entitled, '*Job positions filled by migrants in 2010*', it gives a detailed breakdown by region or oblast of the number of applications for permits for migrants. The Federal Employment Service's role is to approve or reject an application. In almost all cases documented in this dataset, approval was granted and in 99% of cases the duration of the permitted contract was given as one year. The total number of applications for all-Russia in 2010 was just over 890,000 of which nearly 250,000 or 28% originated from firms in Moscow.

For the analysis, we merged data from four main sources; the migration dataset, our survey of recruitment firms, regional data from Rosstat – including regional FDI per capita , regional growth rates and region wage averages - and the firm level ORBIS dataset assembled by Bureau van Dijk. The migration dataset was mapped to the ORBIS firm observations using the unique national tax identification code (or INN). The ORBIS data includes information on firms' balance sheets and simple performance data, such as output per employee.

3. Descriptive statistics

The survey of recruitment firms was designed to identify the extent and variation in search time across skill types and regions in Russia. *Figure 1* plots reported average search time broken down by the five main skill categories as well as by the 27 *oblasts* or regions that were covered. It can be seen that not only is search time unambiguously increasing in skill level but that there is also large regional variation. For example, average search times for managers were in excess of 40 days while for less skilled categories this ranged between 13-19 days.

The wage offers required to fill vacancies are plotted in *Figure 2*, again by skill type and region. The wage data are presented in relative terms and compare the offers to regional average wages for the same broad skill groups and, as such, they measure the wage premium. It can be seen that not only is the premium generally increasing in skills – hence is particularly

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[4] 3 firms were tasked in Moscow and St. Petersburg, 2 in Ekaterinburg and 1 each in Novosibirsk, Vladivostok and Khabarovsk

large for higher skill categories – but that there is also variation across regions. For instance, Kaluga – with its large manufacturing cluster and incidence of foreign companies – has a particularly large premium for managers. Indeed, the data also indicate a weak correlation at region level between FDI per capita and wages, as also between lagged region growth rates and wage levels, either relative or absolute. The wage premium across all skill types may also indicate some of the selection issues associated with a survey of recruitment firms, namely that they are mostly involved in recruiting at the higher wage end of the labour market.

The survey also asked respondents about the criteria used for hiring staff, as well as the response to extended search times and/or difficulty in filling vacancies. With regard to the former, most respondents indicated that experience was the dominant criterion with education and/or ability ranked just below. The emphasis on experience is broadly consistent with the wider evidence on the Russian labour market, notably the predominance of job-to-job flows, rather than through unemployment.

The picture that has emerged so far is that it takes time for employers to fill vacancies and that, in our sample, matching is associated with a wage premium. However, the survey also indicated that employers find that matching is significantly impeded by the lack of particular skills among specific skill types. *Table 2* shows that for the higher skill categories, respondents indicate a lack of some fairly basic skills. For example, in the case of managers, lack of management and problem solving skills featured prominently and both problem solving and practical skills were widely seen as deficient for higher level professionals. For lower skill categories, literacy, communications and practical skills were also viewed as lacking.

Table 3 uses survey responses to document the perceived consequences of difficulties in filling vacancies. While the effects vary by skill category – as might be expected – both outsourcing, lack of modernisation in the activities of the firm as well as the non-introduction of new products, stand out. Interestingly, difficulties in filling lower skill jobs appear particularly to deter the introduction of new products. There was, however, significant regional variation. Further, while respondents noted that the most common barrier to filling vacancies was the discrepancy between desired and offered wages, while the dominant response in the case of higher skill types was to raise the wage offer, a significant minority of respondents either lowered requirements or left the vacancy unfilled. This response was even more marked in the case of lower skill types, such as clerks or skilled workers.

With respect to the small job postings experiment targeted at several innovative sectors, the selected recruitment agencies were asked to respond to three key questions namely, the wage for each skill category, the likely time to fill a vacancy and the degree of difficulty in filling a vacancy (scored in ascending order from 1-4). *Table 4* brings together the

main descriptive information. In line with the wider survey, it shows that filling higher skill jobs takes significantly longer than for the less skilled, although there was quite significant variation across locations. Respondents scored higher skill jobs as harder to recruit; the mean score ranged between 3.3-3.7 (/4) and between 36-57% of respondents actually scored recruitment as being very difficult (=4). A further 9% reported being unable to recruit high level professionals. The table also reports a range for the ratio of search times in this small innovative survey to those reported in the main recruiter survey. For managers, the ratio is 2.3-3.6 and is even larger in the case of high level professionals, ranging between 3-7.5. Not surprisingly, the ratio is larger outside the two largest labour markets - Moscow and St. Petersburg.

4. Migration as a response to skill gaps?

The descriptive evidence presented so far indicates that both in general and in specific, more innovative activity firms are likely to find difficulties in recruiting workers or, more exactly, that the search times and associated costs in recruitment are relatively high. An obvious and associated matter is whether attracting migrants to hard-to-fill vacancies is seen as a viable strategy. The recruiter survey asked respondents about migration. The reaction was mixed. Although language and other cultural factors were seen as inhibiting factors, particularly for the higher skill categories, migration was seen as a potential aid for both higher skill types as well as skilled workers. In addition, simplification of procedures for hiring migrants would help.

Using the migration dataset available for Russia for 2010, *Table 5* now gives a breakdown of the number of requests in 2010 by skill type – nine categories are given. For sake of brevity, the *oblasts* are grouped into broader regional groupings. The number of requests is also related to the stock of a region's employment in the previous year. The table shows that there was wide variation across regions not only in the aggregate amount of migrant permits requested, but also in the skill distribution. For example, in Moscow the total number of migrant requests was just over a quarter million, amounting to nearly 5% of employment in the region. Particularly high levels of request were put in for managers and legislators, but also for unskilled people. Indeed, in Moscow nearly 25% of requests were for unskilled workers and this share exceeded 40% in St. Petersburg.

Table 6 provides a summary breakdown of the 2010 migrants disaggregated using a three digit ISCO-88 classification. For the sample as a whole, over 80% of requests were for skilled and unskilled workers. Fewer than 14% of total migration requests were for higher level professionals and managers. Among managers, nearly nine out of ten requests were for

production or department managers with no more than 12% of managerial migration requests being for top level executives. Among the category of high level professionals, architects and engineers accounted for over two-fifths of requests. In sum, the migration profile given by this dataset shows that for legal migration to Russia in 2010 the great majority of migrants were either skilled manual workers or unskilled labourers. Is the situation any different in the main urban labour markets? In Moscow a lower proportion – around two thirds of migrant applications - were for skilled and unskilled workers but among managers and higher level professionals over 60% were applications for department or line managerial positions; directors and CEOs accounted for just under 10% of high skill applicants. The most stark difference was that professionals working in IT accounted for a minute share of total high level skill applications in Russia, but nearly 9% in Moscow. Thus, while there are some differences in the migration profile between Moscow and the rest of the country, the broad picture that emerges is one where migration policy and practice seem to be responding mainly to the apparent bottlenecks at the lower skill end of the labour market. Legal requests for migrants are massively dominated by low skill groups[5].

We now explore in some more detail the characteristics of migrants, notably the wage offers associated with the posted positions that have applied to fill. In particular, we are interested in what the wage offers say about the attributes of applicants as well as the types of firms that are applying to hire them. For the first component, wage offers for different categories of migrants are compared with wages paid in comparable occupations in the same region. The aim of the exercise is to see – particularly within the categories of higher skilled applicants – whether they command any wage premium that might reflect their scarcity value.

Figures 3-5 plot the relative reported wage for three migrant skill categories [6]. These are Managing Directors/CEOs, Departmental and Operational Managers and Computing Professionals. Each figure also contains the mean search wage from our survey. It is clear from all three distribution plots that the wage offer for migrants does not identify any unambiguously positive selection effect, in that migrants' wages mostly fall below the survey search mean comparators. This was the case for all three skill categories. Turning to the largest labour market – Moscow - migrant wages are found to fall mostly below the Moscow mean for managers and significantly below reported search wage levels in our survey. This was, interestingly, also the case for computing professionals. However, when looking only at

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[5] Clearly, the data that we use do not include illegal migrants. But anecdotal evidence suggests that illegal migrants are far more likely to be unskilled.
[6] The relative wage was computed as the wage offer for a migrant relative to the regional mean wage in a 1-digit occupational group. The data are presented in logs.

recruiting firms that lie in the top 10-20% of the productivity distribution[7], the picture looks somewhat different as wage offers tended mostly to lie above the average. In short, the data suggest there are a significant number of firms for whom use of migrant labour is mainly motivated by their relatively low cost. However, these relative wage plots also show that there are a fair number of firms that use migrants to fill skill gaps and to whom relatively high wages are paid.

The second component is to model the determinants of relative wages by identifying the characteristics of firms. *Table 7* reports the results of regressions relating the relative wage of a migrant to a set of firm and region characteristics, including measures of size and ownership, as well as the level and change in foreign direct investment in a given region since 2007 and a measure of recent growth in the region. We also control for the tightness of the local labour market, using our measure of search wages raised in our survey compared to average wages in a region. The estimates are run with and without region, industry and occupation controls. The table also contains summary statistics on the variables. What the results show is that relatively high wages tend to be associated with large and/or foreign owned firms. Growth in a region or the level of FDI per capita is not systematically associated with the relative wage once controls are entered, suggesting that it is more firm-level features that account for the relative wage. The measure of labour market tightness enters positively but is insignificant when controlling for industry, region and occupation.

5. Conclusion

There is very limited evidence available on the skill profile of the Russian labour force, let alone the effectiveness with which skills are matched to labour demand. There is, however, a common and strong assumption that the Russian labour market is relatively well situated in terms of the quality of skills. Yet, a range of firm-level surveys report that employers have difficulty in filling vacancies and that these difficulties are particularly acute among higher skilled workers. This paper is a unique attempt to measure the scale of difficulty that employers find in filling vacancies, controlling for occupation or skill level. Using a survey of leading recruitment companies operating in a sizeable number of Russian regions we have been able to get a better empirical sense of the labour market for particular skills in Russia. We find that – consistent with other perception surveys at firm level – firms have to invest significant amounts of time in search to fill vacancies and, moreover, that search time is unambiguously increasing in skills. A small job postings experiment using recruitment agencies in six regions also found that search time increased yet further for activities that can be

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[7] Productivity is calculated as output per worker.

considered relatively innovative. The consequences of difficulty in filling vacancies include limiting investment and modernization of plant but is also likely to affect the willingness to open new firms and lines of activity and hence to act as a dampener on entrepreneurial, let alone innovative, activity. However, as this is largely unobservable, this must remain more a conjecture than a finding.

Given the apparent difficulties in finding the appropriate people and skills, an obvious question is whether this might- at least in part – be addressed through increased immigration of personnel, particularly of a skilled nature. Using a large dataset from the Russian Ministry of Labour that documents all applications for migrants to Russia in 2010 and allows us to match the migrant to the sponsoring firm, we find that there is some – albeit limited - evidence of firms using migrants to address high skill shortages. However, the overwhelming majority of migrants were, in fact, skilled or unskilled workers, mostly originating in other states of the CIS. Further, most were hired at relatively low wages when compared with either occupation/region averages or wages reported in our own survey. The majority of posts filled by higher skill migrants – whether managerial or high level professional – appear to have been fairly generic, such as department or line managers. The data do not suggest that matching of migrants to specialist skills where search would be costly is the dominant part of the story. Migration certainly does not seem to be filling gaps in innovative sectors, except in a limited way. While we are unable to identify precisely why this might be the case, it seems plausible to think that part of the reason is due to a relatively restrictive migration policy regime[8]. It is also a reflection of an economy characterised by low rates of innovation and associated demand for high skill jobs.

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[8] See UNDP (2009) for a review of migration policy regimes, including Russia.

References

Aghion, P, H. Harmgart and N. Weisshaar (2008) "Fostering Growth in Transition

Countries", EBRD, mimeo

Amini, C and S. Commander (2012), 'Educational scores: how does Russia fare?', *Journal of Comparative Economics*, 2012

Economist Intelligence Unit, (2008), *'Global Migration Barometer'*, London

Hausmann, R & B. Klinger, 2008. "Structural Transformation in Eastern Europe and Central Asia", Harvard University, mimeo

Nelson, R and E. Phelps (1966), "Investment in humans, technological diffusion and economic growth", *American Economic Review*, Vol. 56, No. 1/2, pp. 69-75.

UNDP (2009), "Human Development Report: Overcoming barriers: Human mobility and development", New York

World Bank (2000), "Educational strategy in ECA – hidden challenges to education systems in transition economies", Washington DC

Table 1: Sample of recruitment firms by location

Location	Number
Moscow	38
St Petersburg	35
Ekaterinburg	10
Kazan	10
Nizhni Novgorod	14
Novosibirsk	12
Omsk	10
Rostov-on-don	11
Samara	10
Ufa	11
Cheliabinsk	10
Volgograd	7
Voronezh	7
Krasnodar	10
Krasnoyarsk	10
Perm	8
Saratov	7
Togliatti	7
Vladivostok	5
Kaliningrad	5
Irkutsk	5
Tyumen	5
Khabarovsk	5
Kaluga	1
Kemerovo	1
Nakhodka	1
Tula	1
Yuzhno-Sakhalinsk	1

Table 2: Skill deficits: Managers and high-level professionals

Missing skills	Managers		High-Level Professionals	
	Mean	Std	Mean	Std
Management skills	*0.88*	0.33	0.62	0.49
Problem solving	*0.80*	0.4	*0.8*	0.4
Practical skills	0.69	0.46	*0.86*	0.35
Admin skills	0.65	0.48	0.54	0.5
Team skills	0.61	0.49	0.65	0.48
Foreign Language	0.64	0.48	0.65	0.48
Communication	0.63	0.48	0.6	0.49

Table 3: Responses to Difficulties in Search

	Managers	High-level Professionals	Mid-level	Admin	Skilled workers
Loss of market share				X	
Deters introduction of new products			X	X	X
Quality problems	X				
Higher costs			X		X
No modernization		X	X	X	X
Outsourcing	X	X	X	X	X

[Note: Respondents responded in range 1-3 with 3=most probable. Table reports mean responses when >2]

Table 4: Innovative sectors: Wages and Recruitment

	Managers	Higher-level professionals	Mid-level professionals	Administrative staff
Mean wage	109	80	48	28
Min-max	65-250	40-150	15-90	15-50
Time to recruit	3.9	4.2	2.7	2
Range (months)	3-6	2-6	1-6	1-3
Difficulty in Recruiting: (1-4)				
Mean score	3.3	3.7	2.2	1.6
% reporting 4	36%	57%		
Ratio of mean recruitment times (innovative/main)				
Range	2.3-3.6	3-7.5		

Table 5. Distribution of migrant workers by region

REGION	Managers and legislators	High level professionals	Technicians and associate professionals	Clerks	Service workers	Skilled agricultural	Craft and related trade workers	Plant and machine operators	Unskilled
URAL	9637	1690	4269	49	3237	3934	26982	8635	35096
in percent of region's employment	0.225	0.039	0.100	0.001	0.076	0.092	0.629	0.201	0.819
NW	621	185	136	2	70	50	9911	1836	295
in percent of region's employment	0.187	0.056	0.041	0.001	0.021	0.015	2.991	0.554	0.089
SOUTH	3703	1656	1490	39	1337	14323	28498	4215	13596
in percent of region's employment	0.107	0.048	0.043	0.001	0.039	0.416	0.827	0.122	0.395
SIBERIA	1629	1660	2232	102	3905	7485	48797	10405	18291
in percent of region's employment	0.038	0.039	0.052	0.002	0.091	0.175	1.142	0.244	0.428
MOSCOW	55385	19388	11173	621	13107	161	65698	23938	61459
in percent of region's employment	1.084	0.379	0.219	0.012	0.256	0.003	1.286	0.468	1.203
VOLGA	2433	1376	1941	19	1993	8145	27111	4468	12908
in percent of region's employment	0.046	0.026	0.036	0.000	0.037	0.153	0.509	0.084	0.242
FE	2591	2176	4522	43	3014	5227	28910	5068	8341
in percent of region's employment	0.228	0.191	0.397	0.004	0.265	0.459	2.539	0.445	0.733
ST PETERBURG	10885	3580	4991	393	16138	273	55356	21879	76219
in percent of region's employment	0.540	0.178	0.248	0.019	0.801	0.014	2.746	1.086	3.782
CENTRAL	2130	1600	1371	122	1305	4551	22614	7349	18390
in percent of region's employment	0.136	0.102	0.088	0.008	0.084	0.291	1.448	0.471	1.177

Source: Rosstat and Survey data

Table 6: Breakdown of migration requests by 1 digit, ISCO-88 classification: 2010

Skill type	n	Share
Managers	86639	9.7%
Directors/CEOs	10108	
Production & Operational	44444	
Other Departmental	32087	
Legislators	2375	0.3%
High level professionals	33311	3.7%
Architects & engineers	13706	
Teaching professionals	7367	
Business professionals	3807	
Mid level professionals	32125	3.6%
Service workers	44106	5%
Skilled agricultural workers	44149	5%
Craft and trades workers	313877	35.2%
Plant and machine operators	87793	9.9%
Unskilled	244595	27.5%

Table 7: Determinants of relative wages

	(A)	(B)	(C)	(D)
Log_revenue_per_employee	0.105*** (0.032)	0.107*** (0.033)	0.082*** (0.017)	0.082*** (0.017)
Log_employment	0.092*** (0.015)	0.094*** (0.015)	0.083*** (0.012)	0.083*** (0.012)
Foreign	1.16*** (0.375)	1.17*** (0.364)	0.887** (0.317)	0.886** (0.318)
FDIpc2007		-0.040(0.029)		0.022(0.024)
dGRP2008_2006		-0.011 (0.033)		0.001(0.004)
Log_Wage_survey_to_average	0.585*** (0.095)	0.589*** (0.089)	0.159 (0.150)	0.155 (0.149)
Constant	2.44***(0.632)	3.95 (3.706)	-0.391***(0.106)	0.600(0.616)
Industry dummies	NO	NO	YES	YES
Regional dummies	NO	NO	YES	YES
Number of observations	27684	27684	27665	27665
R squared	0.157	0.163	0.279	0.279

Models estimated with robust standard errors clustered by region. *** denotes signficance at 1 percent level of signficance, ** at 5 percent level of significance and * at 10 percent level of significance.

Variables: summary statistics

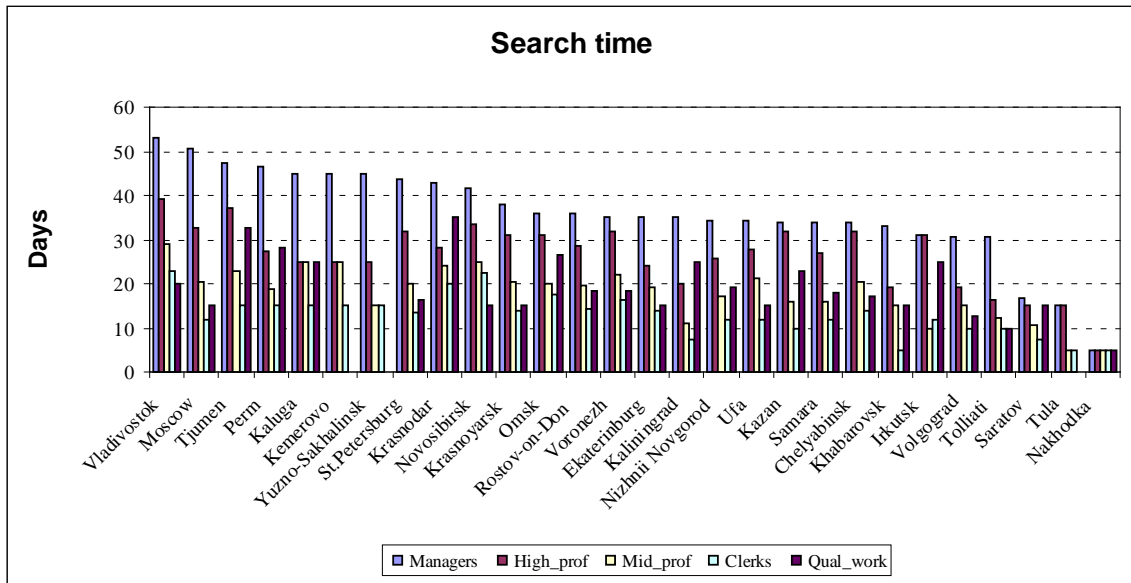|	Mean	SD	Min	Max	Number of observations
Log relative wage	-0.30	0.90	-10.178	5.89	27684
Log revenue per employee	4.34	1.92	-4.09	12.46	27684
Log employment	4.62	1.55	0	9.97	27684
Log Wage Survey to Average	0.71	0.35	-0.04	1.92	27684
Foreign	0.00	0.02	0	1	27684
GRP growth rate (dGRP2008_2006)	108.70	1.71	103.3	113.3	27684
FDIpc2007_2009	522.47	418.24	4.47	953.35	27684

Figure 1: Search time by region and skill group
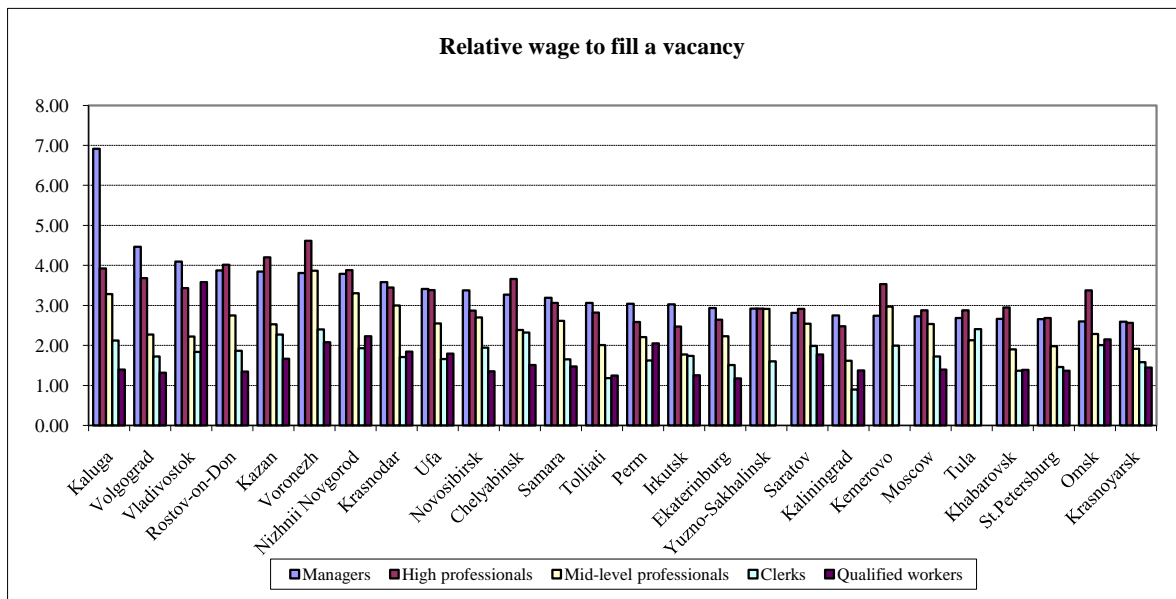
[Note: Relative wage computed as wage reported in survey relative to regional mean wage in occupation]

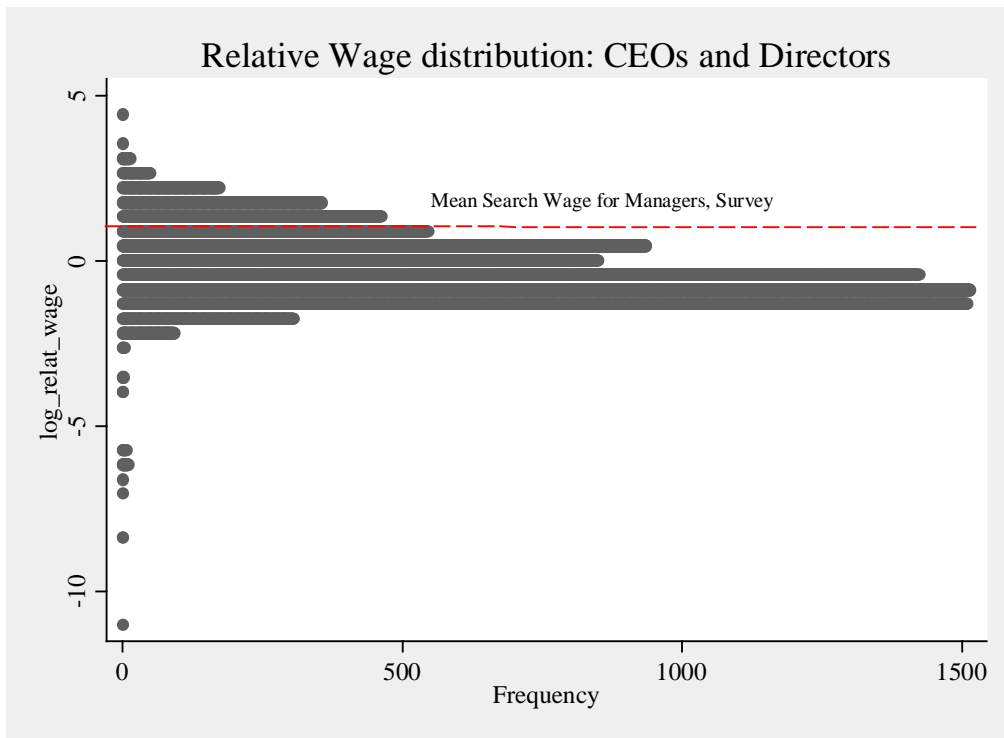**Figure 2: Relative wage to fill a vacancy – by region and skill group**

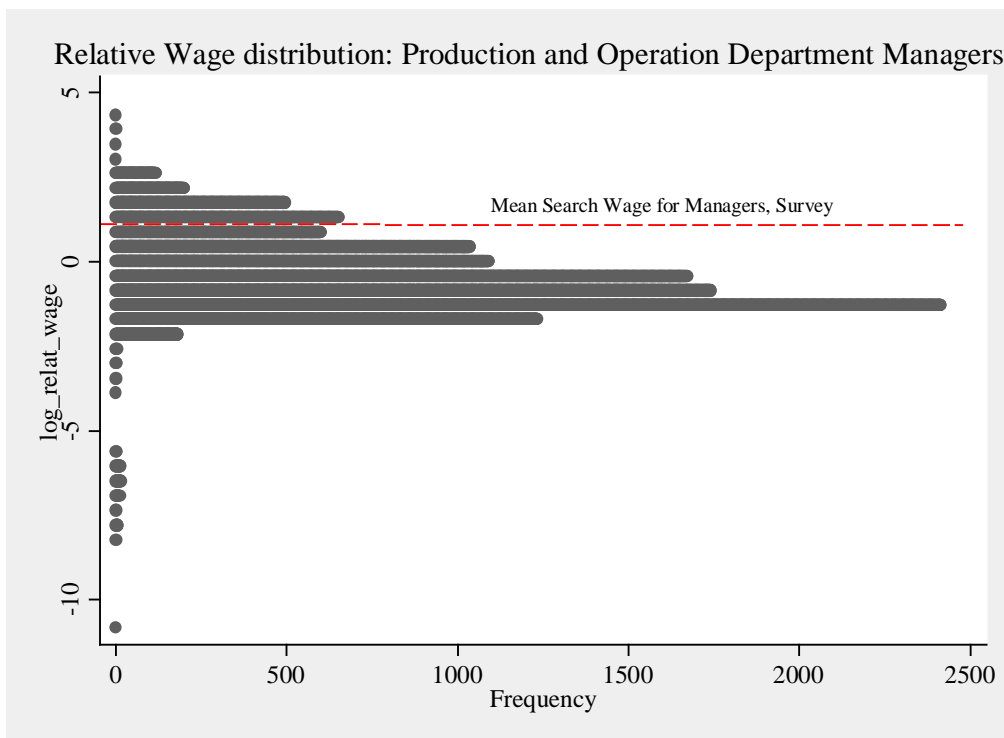**Figure 3: Wage distribution – CEOs and directors**
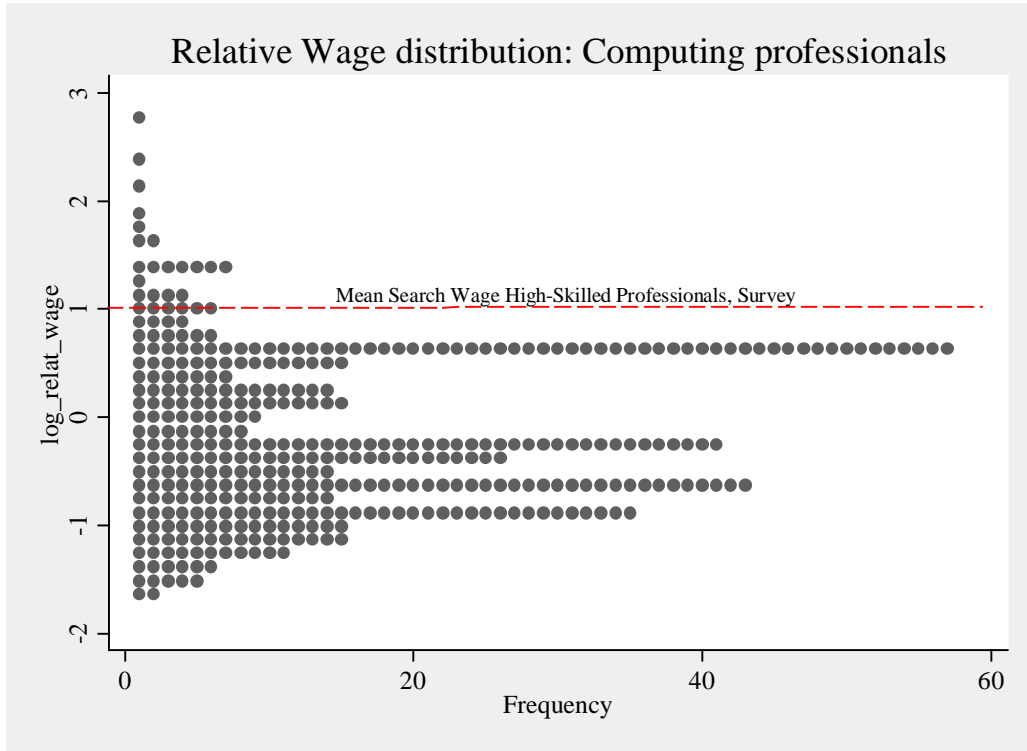

Figure 4: Wage distribution: department managers

Figure 5: Wage distribution – computing professionals