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Premium for Degree in Engineering: Estimation of Returns to Field-Specific Education in Russia

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The question of the extent to which the labor market rewards general knowledge vs. specific got further attention in recent years. The rate of technological changes observed in the last two decades seems to reward flexibility of skills and ability to adapt new technologies. Nonhierarchical firms relying upon direct horizontal communication among workers and on task diversification reward multi-skilled agents. Both types of transferability of skills are likely to be accumulated as general knowledge rather than specific one.

Transition economies and Russia in particular pose an interesting case to study changes in returns to general vs. specific human capital as it passes through the period of serious changes driven by the necessity to catch-up with the technological progress and to move from the planned economy to a market one. Little is known about the changes in returns to particular fields of education in transition countries, however.

The nationally representative data on Russia used in the paper allow shed some light on the issue. In particular, we study variation in returns to five groups of majors - pedagogic, engineering, law or economics, humanities and medicine - in terms of wage and employment stability. We find significant variation in returns. Surprisingly, we find the highest positive wage premiums to major in engineering, both for males and females, and for higher and secondary degree holders. The year of graduation turns out to be statistically insignificant implying that the "new" degrees are not systematically better or worse than the "old" ones.

Key words: Human Capital, General Education, Field-Specific Education, Wage Premiums, Transition, Russia

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Вопрос о том, общие или специальные знания наиболее востребованы современным рынком труда, в последние годы находится в поле зрения многих исследователей. Экономический рост двух последних десятилетий в развитых странах был связан прежде всего с изменениями технологии, либерализацией торговли и возникновением новых организационных форм. Именно поощряющий квалифицированный труд тип технологического прогресса во многом объясняет возросшую отдачу на уровень образования в большинстве стран. В то же время стремительность технологических изменений приветствует, и значит, поощряет способности к быстрой адаптации к новым технологиям. Организационные изменения в экономиках развитых стран, а именно, появление неиерархических фирм, полагающихся преимущественно на горизонтальные связи между работниками и диверсификацию задач, также требуют разнообразия навыков, и тем самым поощряют тех, кто ими обладает. Такого рода гибкость и подвижность в значительной степени прививается в процессе получения общих знаний и навыков. Исследование отдачи на общее и специальное образование представляет особый интерес в России и других странах переходного периода, поскольку перед ними стоит задача повышения уровня технологического прогресса и перехода от плановой экономики к рыночной. Необходимо отметить, что исследования изменения отдачи на уровень образования с учетом специализации практически не проводились.В работе оценивается изменения в отдаче на число лет обучения/ступени образования и на получение диплома по определенным группам специальностей (педагогическим, экономическим, техническим, гуманитарным и медицинским специальностям) на основе данных Российского мониторинга экономического состояния и здоровья населения (РМЭЗ). В ходе исследования было выявлено, что внутри заданного уровня образования наблюдается существенная вариация отдачи на специализацию образования. Работа демонстрирует положительную оценку современным рынком труда среднего профессионального образования в области технических знаний (и для мужчин, и для женщин), и среднего профессионального экономического образования для женщин. Год получения диплома оказался статистически незначим. Тем самым, нельзя утверждать, что старые дипломы систематически хуже новых, или наоборот.

Ключевые слова: человеческий капитал, общее образование, специальное образование, отдача на образование, переходный период, Россия

1. Introduction.

The question of the extent to which the labor market rewards general knowledge vs. specific skills, and hence, what are the relative returns on the two types of human capital investment got further attention in recent years. It is maintained (Aghion et.al., e.g. (1999)) that it is the skill-biased nature of both technological and organizational changes observed in the past two decades that is likely to explain the increased returns to education *level* in many countries. At the same time the augmented rate of technological changes observed in the last two decades seems to reward flexibility of skills and ability to adapt new technologies. Moreover, appearance of nonhierarchical firms relying upon direct horizontal communication among workers and on task diversification requires multi-skilled agents. Both types of transferability of skills are likely to be accumulated as general knowledge rather than specific one. This is not to diminish the significance of natural abilities or natural possession of adaptation skills: the increased return to the natural ability is reported to explain a large share of the observed increase in within-education-group wage inequality over the past twenty years[1] (Aghion et.al. (1999)).

General education is believed to be especially valuable in periods of technological changes since it enables people to operate new technologies. Galor and Tsiddon (1997) argue that in periods of rapid technological changes returns to ability, and hence general education, tend to increase, while returns to field-specific human capital decrease. European education policies that favor specialized education are believed to contribute to the observed slow down of economic growth in the 80-ies and the 90-ies – periods of rapid technological changes (Krueger and Kumar (2002)). This is in contrast with the US which did better during the period due to many factors, and more general education as well.

Transition economies and Russia in particular pose an interesting case to study changes in returns to general vs. specific human capital as it passes through the period of serious changes driven by the necessity to catch-up with the technological progress. Transition from the planned economy to a market one also calls for new skills and knowledge. Moreover, transition is accompanied by the increased uncertainty about the results of the reforms, and about perspective labor market demand in particular. It is documented (Kodde (1986), e.g.) that not only demand for higher education increases but also return to general vs. specific education seems to rise in times of amplified uncertainty. Additionally, it is believed that general education increases chances to become an entrepreneur (Lazear (2002)) who is in extremely high demand during transition to a market. As a result, one may expect that the demanded composition of general and specific human capital has changed in transition countries in favor of the former.

Little is known about the changes in returns to particular fields of education in transition countries, however. The nationally representative data on Russia used in the paper allow shed some light on the issue. In particular, we study variation in returns to majors at secondary professional schools and universities in terms of wage or employment stability. This is the first step to approach estimation of relative returns to general vs. special skills[2]. The five groups of majors are considered: pedagogic, engineering, law or economics, humanities and medicine.

Market reforms encompass many areas, including education. The observed changes in education curricula, in selection rules, the appearance of new non-state educational institutions are likely to have changed the outcome of the education process. One of the questions we look at is whether the changes are rewarded by the current labor market. In particular, we test whether the new degrees are better valued than the old ones. Data from a nationally representative panel survey of households' members on a large number of issues - Russian Longitudinal Monitoring Survey (RLMS), Rounds 8-10 (1998-2001) - are used.

The paper is organized as follows. Section 2 briefly discusses the framework and methodology. Data and construction of variables are presented in Section 3. Results are discussed in Section 4. Section 5 concludes.

2. Framework, Research Questions and Methodology.

The general framework suggested by most scholars to discuss education decisions, and choice of major in particular, is as follows. Education is a risky investment since the lifetime earning profile is not known with certainty and largely depends on chances of finding a good match to skills obtained. Chances to slip into unemployment also seem to vary with education. From this perspective investment in general education is less risky than investment in more specialized one since there are more opportunities for job match. The risk of cyclical unemployment could be expected to be higher for specialized knowledge as well. At the same time, if a successful match to specialized education is accomplished its comparative advantage is fulfilled and rewarded. The labor market is likely to equalize the expected (corrected for probability of unemployment) return to education type. Hence, one would expect higher returns but higher risk of unemployment or downward occupational mobility for specialized education.

Montmaquette et.al. (1997) argue that students perceive college majors as leading to subsequent training that provides access to occupations that offer higher wages and more employment security. The authors show that

[1] Abound 60% of the total increase in wage inequality over the past twenty years is within groups of individuals with the same education and experience.

[2] Education in Russia is believed to favor specialized skills even more than the European one. The number of education fields or majors in Russia far exceeds the number of majors in Western countries. A large number of majors were designed so that to suit particular industries and could be thought as rather skill-specific. We plan to classify the education fields according to a rough share of general vs. special knowledge in the next version of the paper.

majoring in business and science are riskier with respect to drop-out and hence not graduating. They argue that there is significant self-selection in choosing major: more able people with less risk of drop-out choose major looking at relative expected earnings gain while less able people have to trade-off gains in earnings against the risk of drop-out. Family background, both cultural and material, is found to affect the choice of fields.

Heijke, Meng and Ramaekers (2002) show that field-specific skills are rewarded by the labor market if applied to work in field-specific domain. The authors distinguished between general and field-specific requirements of job context and found that the field-specific requirements of job context for those who got job within their field-specific domain are significantly higher than for those who did not. The authors pay special attention to management skills which are believed to be directly valued by the labor market. They show that the skills seem to be more effectively acquired by learning-by-doing rather than at a university. At the same time the probability of being a top manager could depend on the initial success of finding a job which requires field-specific knowledge.

It is well known that many people do not work in their field-specific domain. Some of those who do not work in their field-specific domain work at least at the same level of occupational ladder. There are many cases of downward occupational mobility, however (Sabirianova (2002)). Higher education seems to allow for better possibilities to find job than lower degrees. Hollenbeck (1992) show that the probability of on-the-job training is higher for more educated since they have higher ability and/or higher input in the learning process.

The following research questions are in the focus of our study:

- Is there variation in returns to majors at secondary professional schools and universities in terms of wage or employment stability?
- If yes, what are the relatively more rewarded majors in terms of wage and employment stability?
- Are "new" degrees significantly different from "old" ones?
- Who are those choosing downward occupation and is there an influence of major?
- Are there positive or negative returns to over-education?

To estimate returns to education we use Mincer-type equation. To take into account non-linearity in returns to a year of education we estimate the equation in terms of educational credentials. In particular, we estimate returns to junior professional (PTU, FZU), secondary professional (tekhnicum) and higher professional degrees as premiums over secondary school:

$$\ln W = a_0 + a_1 VOC + a_2 TEC + a_3 UNI + a_4 E + a_5 E^2 + a_6 X + \varepsilon \qquad (1)$$

where ln W – logarithm of hourly wage rate, VOC – junior professional degree, TEC – secondary professional degree, UNI - higher professional degree, E, E^2 – age and age squared as proxies for experience, X –regional variables.

To correct for selectivity bias we use Heckman procedure with participation equation depending on determinants of potential wage and of reservation wage: age and age squared, education degree, marital status, number of children below 3 years old, number of children from 4 to 16, number of adults in household.

To estimate returns to field of education, i.e. to understand how the current labor market values educational fields. We grouped educational specializations into 5 groups: pedagogic, law and economics, engineering, humanitarian and medical. The five specializations interacted to with the level of education – secondary professional and higher professional – generate, together with junior professional and secondary school dummies, the complete set of dummy variables characterizing education. In particular, we estimate the following equation:

(2)

$$\begin{aligned}\ln W = {} & a_0 + a_1 E + a_2 E^2 + \\ & + a_3 VOC + \\ & + a_4 TEC * Teach + a_5 TEC * Econ + a_6 TEC * Tech + a_7 TEC * Hym + a_8 TEC * Med + \\ & + a_9 UNI * Teach + a_{10} UNI * Econ + a_{11} UNI * Tech + a_{12} UNI * Hym + a_{13} UNI * Med + \\ & + a_{14} X + \varepsilon\end{aligned}$$

where VOC – dummy variable taking 1 if the highest achieved degree is junior professional degree; TEC*Teach – dummy variable taking 1 if the highest achieved degree is secondary professional in pedagogies; TEC*Econ - dummy variable taking 1 if the highest achieved degree is secondary professional in law or economics; TEC*Tech - dummy variable taking 1 if the highest achieved degree is secondary professional in engineering; TEC*Hym - dummy variable taking 1 if the highest achieved degree is secondary professional in humanities; TEC*Med - dummy variable taking 1 if the highest achieved degree is secondary professional in medicine; UNI*Teach - dummy variable taking 1 if the highest achieved degree is higher professional in pedagogies; UNI*Econ - dummy variable taking 1 if the highest achieved degree is higher professional in law or economics; UNI*Tech - dummy variable taking 1 if the highest achieved degree is higher professional in engineering; NI*Hym - dummy variable taking 1 if the highest achieved degree is higher professional in humanities; NI*Med - dummy variable taking 1 if the highest achieved degree is higher professional in medicine. The reference category is those with secondary school education but no further education.

To test for possible influence of the changes in the content of education, which is especially relevant in the context of the transition from a planned economy to a market one, we control for the year of graduation: it is quite plausible that the skills obtained under planned system are obsolete in a market economy. Heckman procedure is applied to correct for selectivity bias with participation equation the same as described above.

The influence of education and field of education in particular, on probability of unemployment is studied by running probit regression.

3. Data Description and Construction of Variables.

Data from Russian Longitudinal Monitoring Survey (RLMS), Rounds 8-10 (1998-2001) are used. RLMS is a nationally representative panel survey of households' members on a large number of issues. It is publicly available at http://www.cpc.unc.edu/project/rlms. The number of households surveyed fluctuate around 4,000. The data contains detailed information on education and labor market history of adult household members, as well as on the composition of households.

We restrict the sample to those older than 15 and younger than 55 and 60 for females and males respectively. Students, disabled and pensioners, both working and non-working, were excluded as well. The analysis was done separately for males and females thus taking into account the essential differences in the behavior of the two groups on the labor market. The list of variables used is presented in Table 1.

One of the main issues is how to measure general and specific education. There are several approaches in the literature. Some researchers consider higher education vs. professional vocational education. Others study field-specific vs. general content in different education degrees. Yet another approach is to study returns to specific field in addition to the level of education.

Starting from 1998, RLMS questionnaire includes a question on the field of education, or major, for each of the education degrees obtained. In particular, there is information on field of education for those with secondary professional degree, and for those on higher professional degree. The fields of education are coded using ISCO. Based on the information, we classified the fields of education into five broad categories, separately for secondary and higher professional education: pedagogic, law or economics, engineering, humanities and medicine.

The composition of 2001 sample with respect to the field of secondary and higher professional education is shown in Figures 4-7, males and females separately. It turns out that engineering is the majority field for males: 83% of males with secondary professional and 62% of males with higher professional degree report having

major in engineering. The rating of the rest of the majors among men is as follows: law and economics (6% and 16% among secondary and higher education respectively), humanities (6% and 7%), medicine (3% and 8%) and pedagogic (2% and 7%).

Law and economics and engineering are the most popular among females: 29% of females with secondary professional degree and 29% of females with higher professional degree report major in engineering; and 28% of females with secondary professional degree and 29% of females with higher professional degree report major in law and economics. Pedagogic degree is reported by 13% of females with secondary and 25% of females with higher education, major in medicine – by 21% and 9% respectively, and major in humanities – by 9% and 8% of females with secondary and higher education respectively.

It is necessary to take into account that those having a degree in engineering may not work in the same occupation. Moreover, those with higher professional degrees may be unlucky to find employment in the profession, and hence take a job in lower occupation. The question is discussed in Section 4.

To construct hourly wage rate variable we divided the sum of monthly wages from all the jobs held by individual by the sum of hours worked. To calculate the average monthly wage at each job we used the information from the question on average monthly wage for the last 12 months. In case the information is not available the last month payments are used as a proxy. Corrections for non-payments and in-kind payments are made. The key difficulty is to determine hours worked. The main source of information we used was the question on the average working week (in hours) at each job. If not available, we used the question on the number of actual hours worked at the job within the last 30 days, and at last, on the average duration of working day at the job. In the latter case we assumed 24 working days per month. Outliers – those who reported the sum of working hours more than 360 per month (1% of the sample) - were dropped from the sample.

Table 2 reports summary statistics for the three rounds, males and females separately. The mean age of a respondent is 36-37 years. As far as the highest educational degree is concerned, 19-20% of respondents completed secondary general school; 48-50% of males and 30% of females got junior professional degree; 14-15% of males and 30% of females report having completed secondary professional degree, and 17-20% and 20% of males and females respectively got higher education.

Marital status is known to affect labor market decision of males and females. In particular, having children implies strong motivation to search for high paid job or for multiple job holding. At the same time, having little children might prevent a female from searching for a job or could be a “negative” factor for employer. The table shows that about 80% of males and 70% of females are married, with every second family having children below 16, and every tenth – below three years old.

It is worth mentioning that, as seen from the Table, households in Russia are still of mixed type: the average number of adults in a household is about 3. The latter reflects the fact that several generations continue to live as one household. There are several channels of the influence of household composition on labor market behavior of their members: on the one hand, more adults in household seem to imply higher non-labor income, hence increasing reservation wage; on the other hand, grandmother tend to take look after children thus diminishing the reservation wage. The variable is used in participation equation.

Table 3 reports summary statistics for log wage rate by education categories. It is clear from the table that the higher the education the higher the average wage rate. This is true for both males and females. Moreover, variation in wage rates within education groups is significant, and is higher for junior professional degree group. The latter is even clearer from Figures 1-3 representing wage distributions by education categories (general secondary education - upper left graph, junior professional education – upper right graph, secondary professional – left bottom graph, and higher professional – right bottom graph). It is worth noting that wage distributions changed slightly across time. In particular, wage distribution for those with secondary school education became more compact at the mean by 2001 as compared with 1998. The opposite though very slight movement of loosening the distribution could be noticed for the rest groups of distributions. If look at wage distributions by fields of education one would notice that the average wage is higher for those with majors in engineering and law or economics, with variation being significant.

Tables 4 and 5 report the distribution of those working, males and females, with higher professional (Table 4) and secondary professional (Table 5) education by 1-digit occupation corresponding to their primary[3] job. It comes from the table that about 57% of people with higher professional education work as officials or professionals (ISCO codes 1 and 2), while the rest are distributed across other occupations (ISCO codes 3-9). The latter implies that a large share of those with high professional degrees took jobs for which they are overqualified. In the next section we try to identify the determinants of those who took low-occupation jobs being highly educated. As far as those with secondary professional degree, about twenty per cent of them hold jobs at the level of officials and professionals for which they seem to be unqualified, and the share is reported to increase. The majority is distributed across other occupations, however.

Table 6 reports education structure of those working at high-occupation jobs (ISCO codes 1 and 2), at low-occupation jobs (ISCO codes 3-9) and unemployed, males and females separately. It is seen from the table that 69% of males at high jobs have higher professional degree. The figure is bit lower for females – 63%. The majority education category at low jobs is primary professional (54% for males and 35% for females), with general secondary education coming next for males (18%) and secondary professional education for females

[3] Primary job is as defined by respondent. For about 90% of people primary job brings the highest wage.

(32%). It is noticeable that men - holders of primary professional and general education are the most frequent categories among unemployed, while for women the share of those with secondary professional degree is rather high in unemployment. It is also noticeable that the average age of those working at high jobs is 2-3 years higher than at low jobs, and the age of average unemployed is in turn 3-4 years younger.

4. Results

To generate reference point estimations, we first estimate wage equation not controlling for field of education (equation (1)) for 1995-2001. Heckman two-stage procedure was applied to sub-samples of males and females. Results of estimation are summarized in Table 9. In particular, returns to education credentials recalculated as percentage wage premium over the reference category are reported in the table (Heckman procedure, males and females separately). The results support earlier findings (Sabirianova (2003), e.g.) on the increasing returns to education during the 90-ies. It is noticeable that return to a year of schooling is not linear, and hence the form of equation we chose for estimation is supported.

Junior professional education which used to have negative wage premium at the beginning of the 90-ies tend to have no premium or just a slight positive premium (for females mainly) as compared with general school degree now. Return to secondary professional degree is positive in most cases (1998 crisis is a special case). Male wage premium for secondary professional education is at the level of 13-18% of reference group[4] wage (4-6% per year of education), while it is from 17% to 31% of reference group wage for females (6-10% per year of education).

Return to higher professional degree is positive during the whole period and is higher than for secondary professional degree. The wage premium for males is 15-35% (5-7% per year of education) of the reference group wage in various years, while the figures are significantly higher for females: 65-78% (13-15% per year of education). If one recalculates the wage premium for higher professional degree as compared with secondary professional category[5], it turns out to be higher for females but lower for males as compared to the corresponding wage premium of secondary professional degree over junior professional. This implies that the labor market values university degree holding by women even more than by men.

Return to experience is positive and decreasing for both males and females. Work in large cities has positive wage premium. Education and household composition are significant factors in participation equation with the former increasing potential wage and the latter escalating reservation wage.

[4] Males and females with general secondary school degree for males' and females' regressions respectively.
[5] By subtracting the second rows from the third rows.

To test whether there is variation in returns to field of education, holding education level fixed, we run Heckman procedures based on equation (2). The results are presented in Table 8, and returns are summarized in Table 10.

Surprisingly, the tables show that for holders of secondary professional degree it is rewarding to possess a degree in engineering. The wage premium is at the level of 19-23% (about 6-8% per year) of reference group wage for males and 31-46% (10-15% per year) for females. In addition, degree in law or economics is beneficial for women in many cases (34% or 11% per year). The rest specializations are not associated with wage premiums over general secondary education.

The situation is a bit different for holders of higher professional degrees. It is major in law or economics which is highly rewarded by the labor market: the wage premiums are 29-70% (6-13% per year) for males and 91-206% (15-40% per year) for females in various years. Degree in engineering come the next: 19-49% wage premium (4-9% per year) for males and 75-84% (15% per year) for females. Females are also rewarded for degree in humanities (59-65% or 11-12% per year), pedagogies (48-64% or 10-12 % per year) and medicine (40-81% or 9-15% per year).

The year of graduation turns out statistically insignificant. This implies that the "new" degrees are not systematically better or worse than the "old" ones.

Hence, controlling for other factors, we found significant variation in returns to different majors. In particular, we found positive wage premiums for major in engineering, both for males and females, and for higher and secondary degree holders. Major in law or economics is beneficial for holders of higher professional degree (with returns being higher for females) and for female holders of secondary professional degree.

Surprisingly, major in medicine does not show up as beneficial in terms of reported wage. That could be a result of underreporting and/or the widespread of in-kind payment extremely widespread in this area.

To characterize those who take low-occupation jobs we estimated logit regression. The probability of accepting low occupation job was estimated on the sample of those with higher professional education for 1998-2001. The results are presented in Table 7. It follows that holders of majors in engineering, law or economics and humanities are more likely to take low occupation jobs as compared with teachers and doctors. At least two explanations could be suggested: people who choose these professions are rather "sticky guys" or it is always possible to find a job in education and medical services, which together with the widespread of informal payments make the jobs attractive. Surprisingly, females are less likely to take low occupation jobs. Younger people tend to agree for low occupation more easily which is quite intuitive. Two explanations are plausible:

younger people without experience are less desirable for employers and hence have to agree for low jobs; the "new" degrees are worse than the "old" ones, and that is the reason for good jobs employers' choice.

To find out whether there is a wage premium or a wage loss from taking jobs for which you are overqualified for we estimate wage equation controlling for the downward shift. Typically one would expect a wage loss for those who moved downward as compared with those who managed to get high occupation jobs. Surprisingly this is not true for females for 2000 and 2001, with 1998 crisis being an exception (Tables 11-13). Males' pattern show to be unstable: those holders of higher professional degree who took high jobs tended to lose in terms of wages as compared with their low job colleagues up to 2001. In 2001, however, the situation got reversed: wage premium for holding high occupation jobs became positive. Returns to over-education within the occupation category show to be stable and positive: there is a premium for over-education for those with higher professional education working at low jobs as compared with those with secondary professional education for both males and females.

Higher education seems to allow for better possibilities to find job than lower degrees: Table 14 shows that the share of highly educated category among unemployed is significantly less than the relevant share in employment. To estimate the role of education, and field-specific degrees in particular, in determination the probability of unemployment probit estimations were run. The results are reported in Tables 15 and 16. It turns out that those with junior professional degree, both males and females, are less likely to get into unemployment. Holders of secondary professional degree with major in engineering and of higher professional degree in pedagogic, law or economics, engineering and medicine are less likely to be unemployed, with the ranking being in order of mentioning. It is higher education degree in humanities that is not beneficial in terms of employment stability neither for males or females.

5. Conclusions

To sum up, we found significant variation in returns to different majors. Surprisingly, we found the highest positive wage premiums for major in engineering, both for males and females, and for higher and secondary degree holders. Major in law or economics is beneficial for holders of higher professional degree (with returns being higher for females) and for female holders of secondary professional degree.

The year of graduation turns out statistically insignificant. This implies that the "new" degrees are not systematically better or worse than the "old" ones.

It turns out that holders of majors in engineering, law or economics and humanities are more likely to take low occupation jobs as compared with teachers and doctors. At least two explanations could be suggested: people

who choose these professions are rather “sticky guys” or it is always possible to find a job in education and medical services, which together with the widespread of informal payments make the jobs attractive. Surprisingly, females are less likely to take low occupation jobs. Younger people tend to agree for low occupation more easily which is quite intuitive.

Estimation of wage equation controlling for the downward occupational shift show surprisingly that there is a wage gain for females who chose to take low occupation jobs. Males’ pattern show to be unstable: those holders of higher professional degree who took high jobs tended to lose in terms of wages as compared with their low job colleagues up to 2001. In 2001, however, the situation got reversed: wage premium for holding high occupation jobs became positive. Returns to over-education within the occupation category show to be stable and positive: there is a premium for over-education for those with higher professional education working at low jobs as compared with those with secondary professional education for both males and females.

Holders of secondary professional degree with major in engineering and of higher professional degree in pedagogic, law or economics, engineering and medicine are less likely to be unemployed, with the ranking being in order of mentioning. It is higher education degree in humanities that is not beneficial in terms of employment stability.

There are three possible ways to interpret the results we got with respect to returns to education fields.

First, the higher return to particular degree could imply higher valuation by the labor market of particular skills accumulated while learning. This seems intuitively correct when premium to major in law or economics is concerned. This is less intuitive when return to major in engineering is concerned. Both specializations are the most conducive for downward occupational mobility, as we saw. There seems to be significant difference between the specializations with respect to the occupational mobility, however: there are many jobs in law and economics with secondary professional degree in the current labor market but there is much less jobs for engineers there. Hence, it could be that it is not the special knowledge accumulated by engineers while studying that is rewarded. The same could be true for lawyers and economists as well but there is at least demand for their specific professional skills in the labor market.

Second, major in engineering could have a significant component of general education rewarded by the current labor market. It is not from the very beginning that one would expect a degree in engineering to have a large general human capital component. Estimation of the share of general vs. specific component for each field is left for later versions of the paper. The results obtained here could be an indicator that general component in engineering degrees is significant.

Third, it could be that those who got a degree in engineering are those with higher abilities, and hence higher productivity. In this case the labor market rewards higher ability signaled by the degree. The explanation could also hold for law and economics. Indeed, degree in law and economics was always in high demand by school leavers implying pretty tough competition and selection at the entrance. Major in engineering was always associated with less competition at the entrance but with comparatively difficult curriculum, and hence pretty tough selection while studying. As a result, holding degree in law, economics or engineering could mean positive signal about ability to the labor market.

The three explanations agree on the fact that higher productivity is rewarded by higher wage. The difference is in the sources of productivity – accumulated human capital, general or specific, vs. abilities.

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7. Tables

Table 1. List of variables

Variable	*Content*	*Construction*
Age	Age of respondent in years	Only year of birth was used
Age2	Age squared	Only year of birth was used
Ch_03	Number of children below 3 years old	Household composition data are used
Ch_316	Number of children from 4 to 16 years old	Household composition data are used
Num_ad	Number of adults in households (older than 16)	Household composition data are used; proxy for non-labor income
Marsta	Marital status: 1 – married, 0 – other	Individual is considered married both if the marriage is registered and not
Edu0	Dummy variable : 1 – if the highest achieved degree is secondary school (irrespective of number of grades completed) 0 - otherwise	1 is assigned if individual did not study after school
Edu1[6]	Dummy variable : 1 – if the highest achieved degree is junior professional (PTU, FZU, vocational school) 0 - otherwise	1 is assigned if individual got junior professional degree but did not get either secondary or higher professional degree
Edu2	Dummy variable : 1 – if the highest achieved degree is secondary professional (tekhnikum, etc.) 0 – otherwise	1 is assigned if individual got secondary professional degree but did not get higher professional degree
Edu3	Dummy variable : 1 – if the highest achieved degree is higher professional (university) 0 – otherwise	1 is assigned if individual got higher professional degree
Teach2[7]	Dummy variable : 1 – if the highest achieved degree is secondary professional in pedagogic 0 – otherwise	1 is assigned if individual got secondary professional degree in pedagogic but did not get higher professional degree
Econ2	Dummy variable : 1 – if the highest achieved degree is secondary professional in law or economics 0 – otherwise	1 is assigned if individual got secondary professional degree in law or economics but did not get higher professional degree
Tech2	Dummy variable : 1 – if the highest achieved degree is secondary professional in engineering	1 is assigned if individual got secondary professional degree in engineering but did not get higher professional degree

[6] Possession of diploma or certificate is a necessary condition for assigning a degree.
[7] Information on the earliest field of education is used. If degree in medicine is the first degree, and the second degree is in law, then degree in medicine is assigned.

	0 – otherwise	
Hym2	Dummy variable : 1 – if the highest achieved degree is secondary professional in humanities 0 – otherwise	1 is assigned if individual got secondary professional degree in humanities but did not get higher professional degree
Med2	Dummy variable : 1 – if the highest achieved degree is secondary professional in medicine 0 – otherwise	1 is assigned if individual got secondary professional degree in medicine but did not get higher professional degree
Teach3	Dummy variable : 1 – if the highest achieved degree is higher professional in pedagogic 0 – otherwise	1 is assigned if individual got higher professional degree in pedagogic
Econ3	Dummy variable : 1 – if the highest achieved degree is higher professional in law or economics 0 – otherwise	1 is assigned if individual got higher professional degree in law and economics
Tech3	Dummy variable : 1 – if the highest achieved degree is higher professional in engineering 0 – otherwise	1 is assigned if individual got higher professional degree in engineering
Hym3	Dummy variable : 1 – if the highest achieved degree is higher professional in humanities 0 – otherwise	1 is assigned if individual got higher professional degree in humanities
Med3	Dummy variable : 1 – if the highest achieved degree is higher professional in medicine 0 – otherwise	1 is assigned if individual got higher professional degree in medicine
Mos	Dummy variable for living in Moscow, Moscow region or St. Petersburg	1 is assigned if individual lives in Moscow, Moscow region or St. Petersburg
Wage	Logarithm of per hour wage rate	Variable wage is constructed as logarithm of hourly wage at work with maximum monthly wage (in 90% cases respondents consider such a job as “primary” one)

Table 2. Summary statistics.

Variable	1998 (Round 8)		2000 (Round 9)		2001 г. (Round 10)	
	Males	Females	Males	Females	Males	Females
Age	37.24	36.21	36.96	36.55	36.64	36.73
Marital status (share of married)	0.80	0.72	0.79	0.72	0.78	0.70
Number of children below 3 years old	0.13	0.10	0.13	0.11	0.13	0.10
Number of children below 16 years old	0.60	0.71	0.53	0.65	0.50	0.60
Number of adults in household (older 16)	2.77	2.67	2.80	2.66	2.82	2.68
Live in metropolis	0.07	0.07	0.04	0.06	0.12	0.14
General secondary	0.19	0.19	0.19	0.20	0.19	0.19
Junior professional	0.50	0.29	0.48	0.28	0.47	0.28
Secondary professional	0.14	0.30	0.15	0.30	0.14	0.29
Higher professional	0.17	0.22	0.18	0.22	0.20	0.24
Number of observations	*2405*	*2554*	*2483*	*2738*	*2746*	*3128*

Table 3. Wage by educational groups, males and females, 1998-2001

	MALES		*FEMALES*	
	2001			
Educational group	Mean	Std. deviation	Mean	Std. deviation
General	2.46	0.87	2.09	0.85
Primary professional	2.52	0.96	2.21	0.92
Secondary professional	2.71	0.80	2.28	0.80
Higher professional	2.98	0.84	2.73	0.78
All groups	**2.64**	**0.92**	**2.36**	**0.87**
	2000			
General	2.20	0.91	1.72	0.90
Primary professional	2.23	0.97	1.93	0.87
Secondary professional	2.54	0.76	2.03	0.80
Higher professional	2.72	0.87	2.34	0.74
All groups	**2.37**	**0.93**	**2.03**	**0.84**
	1998			
General	1.73	0.87	1.38	0.84
Primary professional	1.83	0.92	1.50	0.79
Secondary professional	2.03	0.84	1.71	0.77
Higher professional	2.24	0.77	2.02	0.75
All groups	**1.93**	**0.89**	**1.68**	**0.81**

Figure 1 Wage distribution: school, junior professional, secondary professional, higher professional, 1998

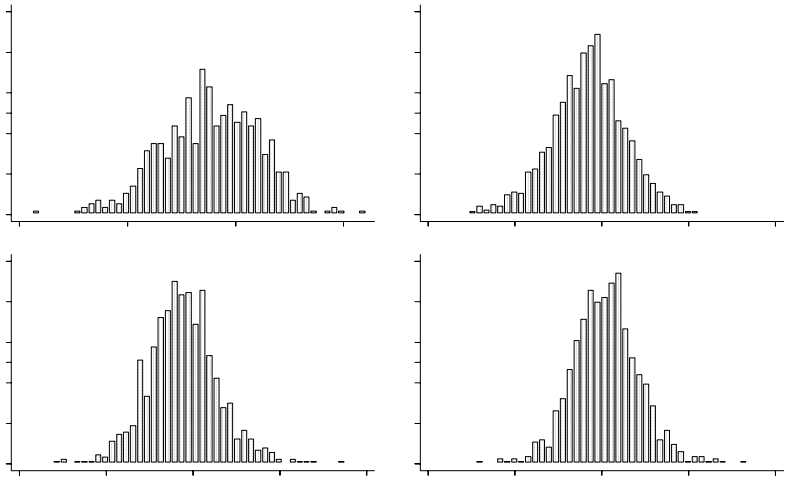


Figure 2 Wage distribution: school, junior professional, secondary professional, higher professional, 2000

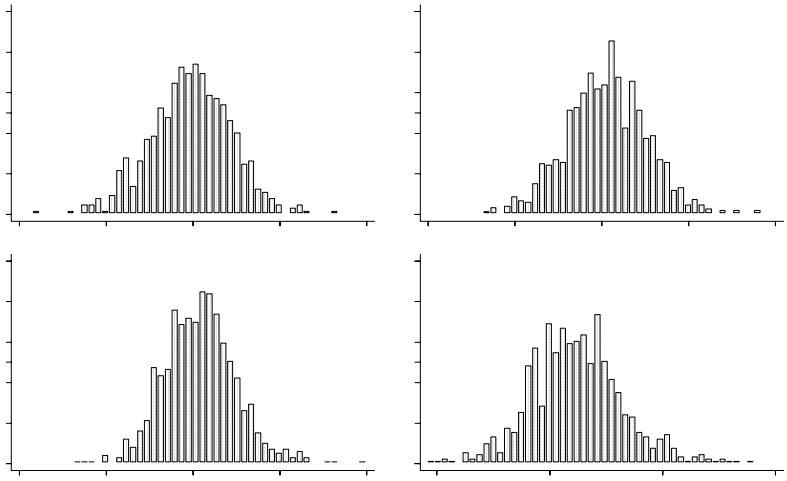
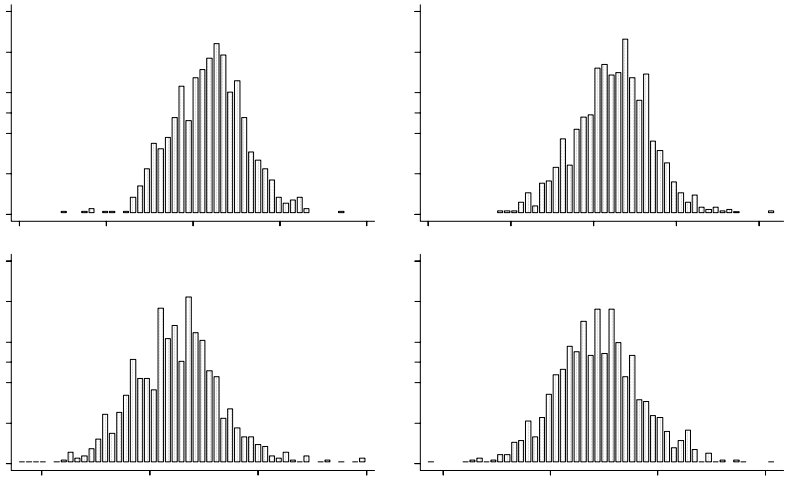


Figure 3 Wage distribution: school, junior professional, secondary professional, higher professional, 2001



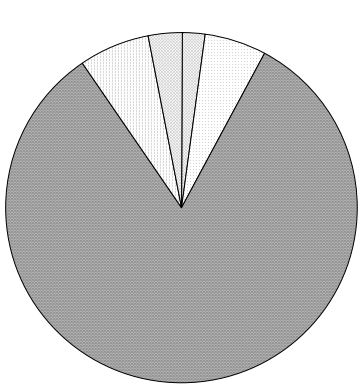


Figure.4 Field distribution, secondary professional, males, 2001.

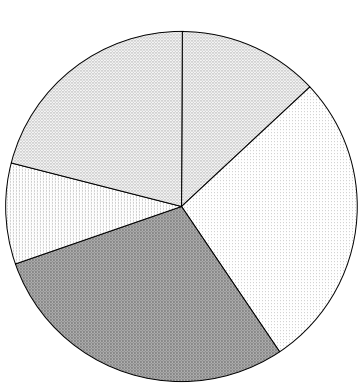
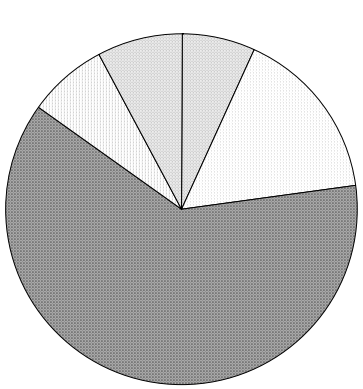
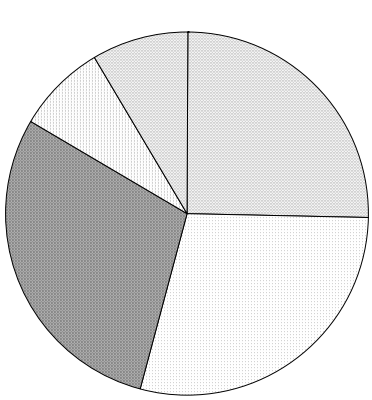


Figure.5 Field distribution, secondary professional, females, 2001.



7 % - pedagogic
16% - law and economics
62% - engineering
7% - humanities
8% - medicine

Figure.6 Field distribution, higher professional, males, 2001.



25 % - pedagogic
29% - law and economics
29% - engineering
8% - humanities
9% - medicine

Figure.7 Field distribution, higher professional, females, 2001.

Table 4. One-digit occupation code for workers with high professional education, 2000-2001

One-digit ISCO occupation code	Decoding	2001 (Round 10)		2000 (Round 9)	
		Frequency	Per cent	Frequency	Per cent
0	Army	8	0.72	9	1.01
1	**Legislators, Senior Managers, Officials**	**161**	**14.44**	**102**	**11.46**
2	**Professionals**	**478**	**42.87**	**414**	**46.52**
3	Technicians and Associate Professionals	172	15.43	156	17.53
4	Clerks	41	3.68	29	3.26
5	Service Workers and Market Workers	63	5.65	45	5.06
6	Skilled Agricultural and Fishery Workers	2	0.18	6	0.67
7	Craft and Related Trades	53	4.75	45	5.06
8	Plant and Machine Operators and Assemblers	35	3.14	29	3.26
9	Elementary (Unskilled) Occupations	33	2.96	22	2.47
Missing		69	6.19	33	3.71
Total		1115	100	890	100

Table 5. One-digit occupation code for workers with secondary professional education, 1998-2001

One-digit ISCO occupation code	Decoding	2001 (Round 10)		2000 (Round 9)		1998 (Round 8)	
		Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
0	Army	6	0.58	9	0.93	8	0.91
1	**Legislators, Senior Managers, Officials**	**79**	**7.62**	**63**	**6.5**	**29**	**3.3**
2	**Professionals**	**161**	**15.53**	**139**	**14.34**	**123**	**13.98**
3	Technicians and Associate Professionals	274	26.42	267	27.55	289	32.84
4	Clerks	73	7.04	77	7.95	76	8.64
5	Service Workers and Market Workers	109	10.51	104	10.73	82	9.32
6	Skilled Agricultural and Fishery Workers	4	0.39	4	0.41	0	0
7	Craft and Related Trades	111	10.7	117	12.07	100	11.36
8	Plant and Machine Operators and Assemblers	116	11.19	101	10.42	89	10.11
9	Elementary (Unskilled) Occupations	68	6.56	55	5.68	53	6.02
Missing		36	3.47	33	3.41	31	3.52
Total		1037	100	969	100	880	100

Table 6. Job types by educational groups, 1998-2001

	MALES				*FEMALES*	
	Low jobs	High jobs	W/o job	Low jobs	High jobs	W/o job
				2001		
Educational groups (%)						
General	17.8	4.0	31.7	19.6	3.5	29.9
Primary professional	54.1	9.2	48.3	34.7	5.8	32.8
Secondary professional	14.9	17.9	9.6	31.9	27.8	23.3
Higher professional	13.2	68.9	10.5	13.8	62.9	14.0
Age (years)	36.7	39.4	34.8	37.2	39.7	33.1
Wage (log)	2.57	2.96	----	2.27	2.53	----
				2000		
Educational groups (%)						
General	17.1	4.4	30.7	20.4	2.5	30.1
Primary professional	55.4	9.1	48.3	33.7	6.1	32.0
Secondary professional	15.9	17.5	11.3	34.1	29.2	23.7
Higher professional	11.6	69.0	9.7	11.8	62.2	14.2
Age (years)	37.1	39.7	34.9	37.0	39.6	33.3
Wage (log)	2.32	2.68	-----	1.98	2.18	-----
				1998		
Educational groups (%)						
General	17.1	4.0	30.3	19.1	2.5	30.1
Primary professional	55.9	8.4	51.5	33.5	5.4	35.5
Secondary professional	15.0	16.4	9.3	35.4	24.9	22.6
Higher professional	12.0	71.2	8.8	12.0	67.2	11.8
Age (years)	37.7	41.0	34.3	37.2	39.6	32.0
Wage (log)	1.87	2.28	-----	1.59	1.97	-----

Table 7. Probability of accepting low occupation job, 1998-2001, logit regression.

LOGIT	2001	2000	1998
gender	-0.475***	-0.393**	-0.482***
	[3.50]	[2.56]	[3.02]
age	-0.035***	-0.043***	-0.048***
	[5.13]	[5.43]	[5.89]
Engineering	1.320***	1.265***	1.276***
	[7.37]	[6.54]	[6.48]
Law and Economics	1.349***	1.390***	1.328***
	[6.88]	[6.46]	[5.78]
Humanities	0.962***	1.173***	1.180***
	[3.39]	[3.52]	[3.79]
Constant	0.301	0.574*	0.918**
	[0.99]	[1.65]	[2.52]
Observations	1105	881	830

Absolute value of z-statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%

Table 8. Wage Equation controlling for education fields (Heckman procedure), 1998-2001

	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
Wage equation	***2001***		***2000***		***1998***	
Age	0.029** (2.27)	0.057*** (4.44)	0.054*** (4.01)	0.070*** (4.92)	0.028** (2.02)	0.037** (2.07)
Age^2	-0.000** (2.48)	-0.001*** (4.20)	-0.001*** (4.01)	-0.001*** (4.47)	-0.000** (2.11)	-0.000* (1.90)
Junior professional education	0.013 (0.22)	0.089 (1.63)	-0.042 (0.68)	0.136** (2.40)	-0.009 (0.15)	0.102* (1.68)
Secondary professional education:						
Pedagogic	0.148 (0.44)	0.088 (0.90)	0.182 (0.66)	0.078 (0.76)	-0.267 (0.90)	0.233** (2.22)
Law and Economics	-0.249 (1.17)	0.270*** (3.61)	0.135 (0.60)	0.282*** (3.60)	-0.180 (0.72)	0.298*** (3.35)
Engineering	0.179** (2.36)	0.239*** (3.29)	0.206** (2.57)	0.376*** (5.02)	0.178** (2.14)	0.308*** (3.70)
Humanities	0.074 (0.37)	0.058 (0.52)	0.103 (0.54)	0.187 (1.54)	-0.025 (0.13)	0.142 (1.07)
Medicine	-0.503* (1.89)	-0.019 (0.24)	-0.230 (0.57)	0.122 (1.51)	-0.245 (0.82)	0.306*** (3.43)
Higher professional education:						
Pedagogic	-0.131 (0.82)	0.431*** (5.39)	0.220 (1.28)	0.384*** (4.64)	0.100 (0.60)	0.498*** (5.27)
Law and Economics	0.204* (1.79)	0.727*** (9.08)	0.527*** (4.18)	0.706*** (7.88)	0.253* (1.81)	0.648*** (6.23)
Engineering	0.393*** (5.20)	0.601*** (7.75)	0.385*** (4.59)	0.552*** (6.49)	0.368*** (4.34)	0.608*** (6.41)
Humanities	0.133 (0.77)	0.462*** (3.56)	0.238 (1.26)	0.486*** (3.08)	0.036 (0.17)	0.504*** (3.65)
Medicine	0.040 (0.27)	0.334*** (2.88)	-0.113 (0.70)	0.387*** (3.38)	0.190 (1.16)	0.596*** (4.76)
Moscow & St. Petersburg	0.462*** (8.17)	0.533*** (11.3)	0.435*** (4.58)	0.486*** (6.48)	0.259*** (3.28)	0.286*** (4.15)
Constant	2.247*** (9.04)	1.108*** (4.51)	1.422*** (5.50)	0.379 (1.34)	1.540*** (5.83)	0.681* (1.68)
Number of observations	2232	2376	2004	2066	1858	1880
Participation equation						
Age	0.009 (0.43)	0.045* (1.93)	-0.009 (0.41)	0.102*** (4.16)	0.015 (0.74)	0.144*** (5.51)
Age^2	0 (0.52)	0 (1.19)	0 (0.22)	-0.001*** (3.40)	0 (0.52)	-0.002*** (4.60)
Junior professional education	0.364*** (5.01)	0.283*** (3.92)	0.404*** (5.28)	0.112 (1.46)	0.294*** (3.93)	0.206*** (2.61)
Secondary professional education	0.613*** (5.85)	0.500*** (6.69)	0.467*** (4.51)	0.419*** (5.30)	0.514*** (4.88)	0.493*** (6.03)
Higher professional education	0.711*** (7.35)	0.728*** (8.86)	0.681*** (6.53)	0.517*** (5.89)	0.649*** (6.25)	0.643*** (6.98)
Marital status	0.604*** (7.84)	-0.073 (1.17)	0.843*** (10.07)	-0.241*** (3.53)	0.714*** (9.13)	-0.073 (1.00)
Number of children below 3 years old	-0.015 (0.16)	-0.770*** (9.37)	-0.104 (1.14)	-0.559*** (6.66)	0.032 (0.37)	-0.481*** (5.28)
Number of children of 4-16 years old	-0.053 (1.20)	-0.108*** (2.69)	-0.148*** (3.45)	-0.129*** (3.19)	-0.110*** (2.77)	-0.129*** (3.15)
Number of adults in household	-0.162*** (7.01)	-0.145*** (6.50)	-0.112*** (4.30)	-0.084*** (3.31)	-0.108*** (4.15)	-0.081*** (2.75)
Constant	0.462 (1.29)	-0.119 (0.31)	0.532 (1.42)	-1.042*** (2.60)	-0.074 (0.21)	-2.104*** (4.89)
Number of observations	2742	3125	2481	2734	2403	2552

z-statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. Returns to education credentials, not controlling for field, % (secondary school – reference)

Estimated returns	*males*					
	1995	1996	1997	1998	2000	2001
Junior professional	-29.4	-17.7	-17.8	same as reference	same as reference	same as reference
Secondary professional	same as reference	13.4	13.4	same as reference	18.1	12.9
Higher professional	same as reference	22.4	22.4	34.9	14.9	31.8
Estimated returns	*females*					
	1995	1996	1997	1998	2000	2001
Junior professional	-27.5	same as reference	same as reference	same as reference	14.9	9.9
Secondary professional	-25.4	26.5	26.5	31.4	28.3	16.8
Higher professional	same as reference	64.5	64.5	78.3	67.4	73.7

Table 10. Returns to education credentials, controlling for field, % (secondary school – reference)

Estimated returns	1998		2000		2001	
	males	*females*	*males*	*females*	*males*	*females*
Junior professional	same as reference	10.7	same as reference	15.0	same as reference	9.9
Secondary professional, pedagogic	same as reference	26.2	same as reference	same as reference	same as reference	same as reference
Secondary professional, law and economics	same as reference	34.7	same as reference	34.0	same as reference	same as reference
Secondary professional, engineering	19.5	36.0	22.8	46.4	same as reference	30.9
Secondary professional, humanities	same as reference	same as reference	same as reference	same as reference	same as reference	same as reference
Secondary professional, medicine	same as reference	35.7	same as reference	same as reference	-40	same as reference
Higher professional, pedagogic	same as reference	64.5	same as reference	47.7	same as reference	53.9
Higher professional, law and economics	28.8	91.2	69.6	203	22.9	206
Higher professional, engineering	19.5	83.7	46.9	74.7	48.6	82.4
Higher professional, humanities	same as reference	65.5	same as reference	63.6	same as reference	58.7
Higher professional, medicine	same as reference	81.5	same as reference	48.1	same as reference	39.6

Table 11. Wage equation controlling for downward occupational shift, 2001, Round10

2001 (Round 10)	FEMALES		MALES	
	Log wage rate	select	Log wage rate	select
age	0.053***	0.036	0.035***	-0.011
	[4.12]	[1.57]	[2.68]	[0.55]
Age^2	-0.001***	0	-0.001***	0
	[4.00]	[0.84]	[3.01]	[0.39]
Junior Professional	0.068	0.256***	-0.003	0.336***
	[1.24]	[3.58]	[0.06]	[4.75]
Secondary Professional	0.146***	0.475***	0.162**	0.552***
	[2.60]	[6.46]	[2.18]	[5.55]
Dummy for higher professional education & low occupation job	0.631***		0.244***	
	[8.51]		[3.03]	
Dummy for higher professional education & high occupation job	0.472***		0.413***	
	[7.35]		[5.05]	
Moscow & St. Petersburg	0.625***		0.556***	
	[13.41]		[9.79]	
Marital status		-0.05		0.672***
		[0.81]		[9.07]
Higher Professional		0.687***		0.616***
		[8.58]		[6.78]
Number of children below 3 years old		-0.733***		-0.128
		[8.96]		[1.57]
Number of children between 3 and 16		-0.135***		-0.121***
		[3.43]		[2.99]
Number of adult s in household		-0.161***		-0.157***
		[7.35]		[7.01]
Constant	1.121***	0.027	2.084***	0.712**
	[4.63]	[0.07]	[8.34]	[2.04]
Observations	3125	3125	2742	2742

Absolute value of z-statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 12. Wage equation controlling for downward occupational shift, 2000, Round 9

2000 (Round 9)	FEMALES		MALES	
	Log wage rate	select	Log wage rate	select
age	0.074***	0.094***	0.052***	-0.013
	[5.16]	[3.90]	[3.71]	[0.65]
Age^2	-0.001***	-0.001***	-0.001***	0
	[4.65]	[3.21]	[3.77]	[0.56]
Junior Professional	0.175***	0.196***	-0.058	0.380***
	[2.97]	[2.59]	[0.90]	[5.14]
Secondary Professional	0.275***	0.474***	0.208***	0.485***
	[4.48]	[6.11]	[2.58]	[4.86]
Dummy for higher professional education & low occupation job	0.694***		0.370***	
	[8.42]		[4.06]	
Dummy for higher professional education & high occupation job	0.467***		0.355***	
	[6.60]		[3.88]	
Moscow & St. Petersburg	0.522***		0.458***	
	[6.94]		[4.73]	
Marital status		-0.158**		0.697***
		[2.37]		[8.65]
Higher Professional		0.551***		0.599***
		[6.44]		[6.17]
Number of children below 3 years old		-0.592***		-0.174**
		[6.87]		[2.09]
Number of children between 3 and 16		-0.177***		-0.134***
		[4.46]		[3.29]
Number of adult s in household		-0.113***		-0.092***
		[4.49]		[3.65]
Constant	0.298	-0.951**	1.523***	0.488
	[1.06]	[2.40]	[5.69]	[1.35]
Observations	2734	2734	2481	2481

Absolute value of z-statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 13. Wage equation controlling for downward occupational shift, 1998, Round 8

1998 (Round 8)	FEMALES		MALES	
	Log wage rate	select	Log wage rate	select
age	0.043**	0.162***	0.028**	0.018
	[2.24]	[6.27]	[2.03]	[0.91]
Age^2	-0.000**	-0.002***	-0.000**	0
	[2.01]	[5.34]	[2.10]	[0.62]
Junior Professional	0.107*	0.143*	0.001	0.311***
	[1.77]	[1.82]	[0.01]	[4.20]
Secondary Professional	0.306***	0.466***	0.142*	0.485***
	[4.41]	[5.75]	[1.76]	[4.75]
Dummy for higher professional education & low occupation job	0.529***		0.203**	
	[5.77]		[2.23]	
Dummy for higher professional education & high occupation job	0.616***		0.365***	
	[7.50]		[4.00]	
Moscow & St. Petersburg	0.264***		0.263***	
	[3.80]		[3.32]	
Marital status		-0.069		0.669***
		[0.96]		[8.66]
Higher Professional		0.630***		0.664***
		[6.91]		[6.56]
Number of children below 3 years old		-0.429***		-0.046
		[4.72]		[0.57]
Number of children between 3 and 16		-0.126***		-0.108***
		[3.10]		[2.78]
Number of adult s in household		-0.070**		-0.097***
		[2.39]		[3.79]
Constant	0.534	-2.459***	1.553***	-0.248
	[1.22]	[5.81]	[5.78]	[0.70]
Observations	2552	2552	2403	2403

Absolute value of z-statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 14. Percentage of respondents without work by educational groups

Educational group	Round 10	Round 9	Round 8
General	36.6	37.3	40.0
Primary professional	24.1	24.2	27.6
Secondary professional	18.4	18.8	19.0
Higher professional	12.9	14.4	13.5
All groups	22.8	23.4	25.3

Table 15. Probability of being unemployed, Males, 1998-2001

	2001, Round 10	2000, Round 9	1998, Round 8
age	-0.013***	-0.016***	-0.027***
	[2.85]	[3.32]	[5.84]
Junior Professional	-0.592***	-0.652***	-0.538***
	[4.96]	[5.30]	[4.44]
Secondary Professional*Pedagogic	-0.291	-0.778	-0.795
	[0.34]	[0.99]	[0.99]
Secondary Professional*Law&Economics	-0.163	-0.193	-2.139**
	[0.33]	[0.42]	[2.04]
Secondary Professional*Engineering	-1.281***	-1.065***	-0.980***
	[6.24]	[5.50]	[5.13]
Secondary Professional*Humanities	-0.083	-1.050*	-1.317**
	[0.18]	[1.90]	[2.10]
Secondary Professional*Medicine	-1.035	-0.167	
	[1.30]	[0.20]	
Higher Professional*Pedagogic	-2.647***	-1.939***	
	[2.59]	[2.63]	
Higher Professional*Law&Economics	-1.663***	-1.537***	-0.689**
	[4.07]	[3.74]	[2.08]
Higher Professional*Engineering	-1.246***	-1.338***	-1.423***
	[6.03]	[6.02]	[6.21]
Higher Professional*Humanities	-0.22	-0.593	-0.72
	[0.57]	[1.34]	[1.39]
Higher Professional*Medicine	-1.428***	-1.238**	-1.440***
	[2.66]	[2.52]	[2.66]
Moscow & St. Petersburg	-0.283*	-0.322	-0.179
	[1.71]	[1.19]	[0.83]
Number of children below 3 years old	-0.484***	-0.101	-0.208
	[3.03]	[0.70]	[1.47]
Number of children between 3 and 16	-0.032	0.017	-0.058
	[0.47]	[0.26]	[0.90]
Number of adults in household	0.274***	0.163***	0.136***
	[6.82]	[3.64]	[2.94]
Constant	-1.000***	-0.568**	0.069
	[4.29]	[2.30]	[0.28]
Observations	2742	2481	2362

Absolute value of z-statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%

Table 16. Probability of being unemployed, Females, 1998-2001

	2001, Round 10	2000, Round 9	1998, Round 8
Age	-0.027***	-0.027***	-0.047***
	[5.87]	[5.64]	[9.18]
Junior Professional	-0.372***	-0.354***	-0.331***
	[3.14]	[2.84]	[2.61]
Secondary Professional*Pedagogic	-0.797***	-0.823***	-0.858***
	[3.23]	[3.14]	[3.44]
Secondary Professional*Law&Economics	-0.587***	-0.732***	-0.944***
	[3.28]	[3.81]	[4.50]
Secondary Professional*Engineering	-0.824***	-0.921***	-0.933***
	[4.28]	[4.64]	[4.66]
Secondary Professional*Humanities	-0.628**	0.201	-0.27
	[2.20]	[0.77]	[0.94]
Secondary Professional*Medicine	-1.053***	-1.444***	-1.318***
	[4.82]	[5.94]	[5.66]
Higher Professional*Pedagogic	-1.393***	-1.206***	-1.373***
	[5.68]	[4.96]	[5.35]
Higher Professional*Law&Economics	-0.913***	-0.771***	-1.482***
	[4.56]	[3.47]	[5.09]
Higher Professional*Engineering	-1.426***	-0.938***	-0.853***
	[5.84]	[4.08]	[3.76]
Higher Professional*Humanities	-0.425	-0.486	-1.173***
	[1.31]	[1.15]	[2.85]
Higher Professional*Medicine	-1.777***	-1.775***	-1.854***
	[3.98]	[3.97]	[3.84]
Moscow&St.Petersburg	-0.038	-0.116	-0.113
	[0.29]	[0.55]	[0.56]
Number of children below 3 years old	1.310***	1.092***	0.649***
	[9.69]	[7.80]	[4.52]
Number of children between 3 and 16	0.236***	0.204***	0.047
	[4.08]	[3.51]	[0.81]
Number of adults in household	0.271***	0.219***	0.151***
	[7.28]	[5.21]	[3.48]
Constant	-0.616***	-0.408*	0.752***
	[2.74]	[1.69]	[3.05]
Observations	3125	2734	2552

Absolute value of z-statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%