Differences in wages of standard and non-standard workers in Russia[1]

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Abstract

The paper deals with probability and wages of non-standard workers in Russia. We focus only on two main types of non-standard arrangements here: non-permanent and part-time employment. Firstly the determinants of these two types of non-standard employment were identified. Such personal characteristics as education level, age and having a spouse have rather strong impact. Secondly we concentrated on wage differences between permanent and non-permanent and full-time and part-time employees. The results demonstrated that the wage gap went down (from -12% to -3,4%) when we apply advanced econometric techniques in order to take account of explicit influence of independent variables. The analysis was done with the help of representative huge data set (the sample consists of about 117 thousand people) – Household Survey of Welfare, conducted by Rosstat and World Bank in 2003.

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Introduction

In the XX century the most part of employees in all industrially developed countries worked on so called standard basis. Standard employment here means that employees are hired and work full-time on the base of the contract unlimited in time. If any of these conditions is not satisfied, then a person is considered to be a non-standard worker. Part-time employment, fixed-term contracts, and self-employment or casual work comprise non-standard employment. On the one hand the high proportion of non-standard employees is the evidence of the labour market flexibility, on the other hand it means high social risks and expenses for employees. One of the main tasks for social policy in all countries is the search of the optimal balance between flexibility and security on the labour market.

During the last thirty years absolute predominance of standard employment in the developed countries has become questionable. The percentage of non-standardly employed grows quickly. Such new changes in the labour force structure jeopardize the basis of traditional social policy and stimulate scientific disputes on "bad" and "good" jobs, where the former is associated with the non-standard employment.[2]

Non-standard employment existed in Soviet period but its rash growth was forced by market reforms. Firstly partial liberalization of labour legislation was implemented in Russia and this allowed to use different types of contracts, secondly the employment out of enterprises and self-employment increased.

There is lack of literature on the topic of non-standard employment in transitional countries. However there are some papers which discussed the peculiarities and the scope of non-standard employment in Russia[3], but they didn't touch the wage questions. We do not know exactly whether non-standard workers benefit or fall a prey to the deregulation of the labour market. If the wages do really differ then how much is the gap?

We do not have obvious answers on these obvious questions above. On the one hand the theory of segmented labour markets[4] claims that if non-standard jobs are occupied by those with weaker positions and worse characteristics then their wages should be lower then of those in standard employment. On the other hand the theory of equalizing differences says that all disadvantages of such precarious work should be compensated in wages.[5]

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[2] See for example Boeri, Del Boca, Pissarides, 2005; Tucker, 2002

[3] See Нестандартная занятость в российской экономике. Под ред. В.Е. Гимпельсона и Р.И. Капелюшникова. М.: Издательский дом ГУ-ВШЭ, 2006. And Заработная плата в России: эволюция и дифференциация. Под ред В.Е. Гимпельсона и Р.И. Капелюшникова, М.: Издательский дом ГУ-ВШЭ, 2007.

[4] Doeringer P. and M. Piore. Segmented Labor Markets and Manpower Analysis. Lexington: Mass., 1971.

[5] Rosen, S. "The Theory of Equalizing Differences", in Ashenfelter, O. and Layard, R. (eds.), Handbook of Labor Economics, Vol.1, pp. 641-692, North-Holland, 1986

We could easily compare the average wages of standard and non-standard employees but it is not enough to assert that these differences are stable in time. The following reasons could be listed here: 1) the structures of standard and non-standard employees differ in education, qualification and work experience, their territorial localization and many other aspect influencing wages. 2) There is nonrandom selection into these types of employment depending on observed and unobserved characteristics of employees and employers. The choice of employment type and associated wage could be done simultaneously. 3) The theory of equalizing differences assumes that we should consider all parts of the reward. For instance low wage could be compensated by good working conditions, comfortable working regime, and visa verse bad work conditions (health injury, bad climate and etc.) should be compensated by high wage remuneration. 4) The most possible alternative for non-standard workers could be not high wage (when shifting to standard employment) but unemployment benefit (when losing the job).

So in order to speak about wage differences we should estimate the alternative wage for each employee which he gets according to the present individual characteristics in case of standard employment. We also should keep in mind that the causality between wages and types of job is not so simple, the situation of endogenity could arise when type of contract and the level of wages are defined simultaneously.

The paper answers two main questions: 1) what determines non-standard arrangements and 2) how big is the wage gap between standard and non-standard workers. We focus here only on two types of non-standard employment which seemed to be more widespread in Russia. They are temporary employment and part-time employment.

Firstly we review the existed literature on the problem, and then we discuss our data and methodology. The third part is devoted to the factors of probability of being part-time or temporary employed. After that we turn to analyze wage differences of full-time/part time and permanent/temporary employees. The final part contains our main conclusions and policy implications.

Literature review

The literature review provides us with at least four groups of explanations, some of them are complimentary to each other:

a) Demand for non-standard employment. Employers need part-time or temporary employees when their business is connected with seasonal changes or not a full working regime. If there is lack of people willing to work part-time or on temporary basis, then employers have to raise hourly wage rates to meet the demand in such labour force. In case of enough non-standard labour supply the hourly wage rates will be low.

b) Supply of non-standard employment. The wage could be set up under the supply effect. For instance, many women prefer to work part-time as they are engaged in different family obligations or students wish to be partially employed to combine their studies with work. Their supply function differs from those who seek for full-time and permanent employment. Employers could benefit here by reducing wages but in case of great demand for such non-standard employees the wages become bigger.

c) The impact of labour market institutions. In case of very strict labour legislation the firing costs are high what makes employers prefer the fixed-term contractors. On the one hand the consolidation of the bargaining power of insiders will increase the wages of permanent workers (see the insider-outsider theory of Lindbeck and Snower[6]); in addition the over abundant supply of non-standard employees will decrease their wages. As a result we could see the wage premium of standard workers comparing to the earnings of non-standard workers with similar characteristics.

On the other hand temporary employees bare more risks of unemployment and uncertainty in future so they could claim for better payment as compensation for less job security.[7] Temporary employment could also be used as probationary period for screening and choosing the best applicants to take them into permanent staff. Then all low payments in temporary positions could be compensated later when an employee is given a permanent job. The research showed that in European countries temporary employment serves usually as a step to permanent employment rather then a trap to prolonged temporary work.[8] Unfortunately we cannot test such assumption on Russian data as we do not have long panel data sets with detailed biography.

Labour costs for part-time employees could influence their wages in both ways. Firstly the hiring and firing costs for full-timers and part-timers could be the same, then employers will benefit from taking only full-time workers. They could hire part-time employees only on smaller wages. Secondly labour legislation in some countries release employers from social commitments in case of hiring part-time employees. Then lower labour costs for part-timers allow them to apply for better payment.

d) Investment in human capital. According to classical theory of human capital the impact of non-standard employment can be only negative. There is no use and interest for

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[6] Lindbeck, A. and Snower, D. J. (1988): The insider-outsider theory of employment and unemployment, MIT-Press, Cambridge/Mass. and London

[7] M. de Graaf-Zijl. Compensation of On-Call and Fixed-Term Employment: The Role of Uncertainty. Tinbergen Institute Discussion Paper TI 2005-120/3, October 2005.

8 Axel Engellandt, Regina T. Riphahn. Temporary Contracts and Employee Effort. Labour Economics, 2005, 12 (3), 281-299; Alison L. Booth, Marco Francesconi, Jeff Frank. Temporary Jobs: Stepping Stones or Dead Ends? Economic Journal, 112 (480), 2002, F585-606

employers to invest in temporary staff. As for part-timers, they spend less time while working and learning so they accumulate less knowledge and specific human capital then full-timers do. These differences in accumulated human capital will affect their wages. It is worth mentioning that the standard indicator for measuring specific human capital – tenure – does not grasp these differences. A full-time permanent employee working for the same period of time as temporary employee or part-time employee will have richer human capital then those engaged in non-standard working arrangements.

To sum up this theoretical part we should say that temporary and part-time employment definitely refers to precarious jobs (at least in the discussion of "bad" and "good" jobs). So the employees working on such conditions are considered to be the victims of labour market flexibilization. They usually have no bargaining power to negotiate with employers, so the insiders maximize their profits at the expense of outsiders.[9] The wage gap is increasing while these barriers between outsiders and insiders are consolidating. Firstly, the employees comprise the "bad" segment due to self-selection, it means that those with low competitive power become part-time or temporary employed. Secondly they accumulate human capital more slowly than standard workers.

However there are theoretical arguments which speak for the premium of nonstandard employees comparing to the wages of standard workers. According to the theory of equalizing differences mentioned above, adverse characteristics of work places (like high risk of unemployment and uncertainty in the future) should be compensated by higher wages. Such quick glance on the possible theoretical explanations of the wage gaps between standard and non-standard employees shows that the factors influence payment in both ways. So the question who gets the benefits: standard or non-standard workers? - is mostly an empirical one. What is the practical result of all these effects in Russia? Only deep empirical analysis could answer this question.

Empirical studies

Despite the fact that discussion on good and bad jobs has been taking place during the last dozens of years there is no so much research on wage differences of standard and non-standard workers. One of the obvious reasons is the lack of statistical data. However the most part of the studies showed that non-standard workers get less than standard employees. Unfortunately these investigations usually neglect heterogeneity of workers and jobs. But if these observed and unobserved characteristics are taken into account then the wage gap is narrowing or even disappearing.

[9] Lindbeck A. and D.Snower (1988). The Insider-Outsider Theory of Employment and Unemployment, The MIT Press, Boston, MA. See also: S.Bentolila, J.Dolado. Labour Market Flexibility and Wages: Lessons from Spain. Economic Policy, Vol.9, No.18 (Apr., 1994).

The previous research on women engaged in part-time employment demonstrated that hourly wage rates of part-time employees are considerably lower than hourly wage rate of full-time employees.[10] But the latest papers in this field argue that part-timers do not suffer from the wage gap or even benefit in hourly payment comparing to full-timers.

Such results are much more important for the countries with big proportions of part-time workers in the labour force.[11] So the studies of Australian employees which consider the individual characteristics (observed and unobserved) demonstrate that the hourly wage is higher for part-timers. This is true both for men and women in Australia. For those part-time employees who at the same time are casually employed the size of the benefit is even higher. The authors give at least two explanations of the fact. According to the first explanation the part-time employees have better hourly payment due to the Australian tax-system which punishes the second and the third workers in the family. In order to attract such workers the employers have to pay more. The second explanation stems from the theory of effective hours: despite that pert-timers work less hours per week, their productiveness per hour is bigger.[12]

Barry T. Hirsch analyzed the differences in hourly wages of full-time and part-time workers in the USA, he used panel data of Current Population Survey. Rough assessments revealed the big gap which was higher for men than for women and was growing along with tenure increase. The control for the individual characteristics diminishes this wage gap. However the part-time employees of elder age still get less payment due to the fact that they have long tenure and did not have acquired the appropriate human capital. Barry T. Hirsch explained the differences in wages of employees with similar characteristics exactly by different qualifications and skills.[13]

Manning and Petrongolo have come to the same conclusions while analyzing the gap in women's payment engaged in part-time or full-time work in Britain. Part-time employed women on average earn 25% less than full-time employed women. More over this gap was rising greatly during the last 30 years. Its significant part could be explained by individual characteristics. If they account for the demographic characteristics the disparity halves, if they take into

[10] Ermisch J. and R. Wright. Wage Offers and Full-Time and Part-Time Employment by British Women. The Journal of Human Resources, Vol. 28, No.1 (Winter 1993); W.Simpson. Analysis of Part-Time Pay in Canada. The Canadian Journal of Economics, Vol. 19, No.4. (Nov., 1986).

[11] We will remind that Australia and Netherland are those countries with the highest rates of part-time employment.

[12] A.Booth, M.Wood. Back-to-front Down-under? Part-time/Full-time Wage Differentials in Australia. IZA DP No. 2268, August 2006

[13] Barry T. Hirsch. Why Do Part-Time Workers Earn Less? The Role of Worker and Job Skills. IZA DP No. 1261, August 2004.

consideration the variety of professional groups then this wage gap disappears. As the authors claim the main reason for this rough difference in earnings is the professional segmentation.[14]

The part-time employment has female features and the majority of empirical research papers are devoted to women. However the men's employment analysis gives the same results. According to the recent studies the average wage gap between part-time and full=time employees is 16% in Spain, 24% in Belgium, 28% in Denmark and Italy, 67% in Great Britain and 149% in Ireland. This gap began to shrink as soon as researchers control for individual and work place characteristics (such as profession, industry, enterprise size, trade union coverage and etc.).[15]

The empirical literature on wages of permanent and temporary workers is not so rich and big. However all the existed papers argue that temporary employees earn usually less than permanent ones.[16] For instance the same methodology applied to part-time/full-time wages and temporary/permanent wages in Netherlands disclosed benefits for part-timers and losses for temps.[17]

The research fellows from Tinbergen Institute illustrate that temporary workers in Germany earn one third less than permanent workers. Lesser wage differences but still significant were marked in the UK, Netherlands and Sweden. But the authors did not allow for possible self selection effect neglecting of which could lead to biased estimations.[18] Taking account of only observed workers' characteristics T.Hagen assessed the wage gap of temporary/permanent employees as 6-10%, while controlling for unobserved characteristics it rises up to 23%.[19] Addison and Surfild[20] claim that temporary workers suffer from 7-12% loss in payments which is defined by observed differences between workers. In case they take these unobserved characteristics into account the losses could change into wage benefits for temporary employees compensating the lack of social security.

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[14] Alan Manning and Barbara Petrongolo. The Part-Time Pay Penalty for Women in Britain. IZA DP No 2419, November 2006.

[15] Síle O'Dorchai, Robert Plasman, François Rycx. The Part-Time Wage Penalty in European Countries: How Large Is It for Men? IZA DP No. 2591, January 2007

16 Segal and Sullivan (1998), Booth, Francesconi and Frank (2002), Hagen (2002), Addison and Surfield (2005)

[17] M. de Graaf-Zijl. Compensation of On-Call and Fixed-Term Employment: The Role of Uncertainty. Tinbergen Institute Discussion Paper TI 2005-120/3, October 2005

[18] Siv Gustafsson, Eiko Kenjoh and Cecile Wetzels (2001), Employment Choices and Pay Differences between Non-Standard and Standard Work in Britain, Germany, Netherlands and Sweden. TI 2001-086/3

[19] T.Hagen. Do Temporary Workers Receive Risk Premiums? Assessing the Wage Effects of Fixed-Term Contracts in West Germany by a Matching Estimator Compared with Parametric Approaches. LABOUR, 16 (4), 667-705 (2002)

[20] Addison and Surfild

To sum up the literature review we would like to emphasize that usually we judge about the labour market functioning according to our prior expectations while empirical research shows that it is not always right. The explanation mechanism could be much more complex. We could also claim that compensational mechanisms do work on the labour markets and cope with their tasks. We need more information about how non-standard employees are paid. And finally there is no papers dealing with such problems in transitional countries.

Data and methodology

It is very important to identify those standard and non-standard workers in the data set correctly. Firstly we define hired employees (according to ILO definitions). Then we divide them for those who usually work less then 30 hours per week and those who usually work 30 hours per week and more, so we get part-time and full-time employees. We determine permanent workers as those who declare that they were employed by the contract unlimited in time. Temporary employees are those who said that they were hired by fixed-term contracts, contracts for particular tasks or by oral agreements.

We use micro-data NOBUS to conduct the study. It is a household survey representative for Russia which was hold by the World Bank and Rosstat in spring of 2003. Unfortunately the well-know RLMS data doesn't allow to identify temporary workers as there is no question about the contract type there. The most reliable and long-ran Russian data on labour market issues– Labour Force Survey – is not appropriate for us either, as it doesn't contain any information on wages.

So we restrict NOBUS sample by age of 15-65 years old and took only those who were hired. We do not take into consideration self-employed and army. Self-employed do not get any wage as they have entrepreneurial incomes which have different formation mechanism. The payment of the military personnel does not depend on labour market. More over the incomes of these two groups are not counted in the NOBUS data. One more thing to mention is that we account for the wage from the primary work place (marked by the individual) even in case a person has two or three jobs. To sum up we have 46 thousand of respondents who declare their earnings for the last month in the survey.

Answering the question about wages the respondents have to point out the size of wage for the last month subtracting tax payments. All non-standard jobs vary greatly in working hours so we deal with hourly wages. The respondents are also to answer the question about the number of hours worked usually per week, so we compute the hourly wages according to this two questions assuming that one month consists of 4 weeks. We take natural logarithm of hourly wage rates into our regression models.

It is worth to emphasize that we compare factual observed wage of non-standard worker with factual observed wage of standard worker who has similar observed characteristics. We could not have the exact estimations here as one person could not be standard and non-standard employee at the same time, and we could not control all the characteristics when we construct such alternative for him. We also should keep in mind that very often the alternative wage is not the higher wage in standard employment but unemployment with no income. There is one more restriction here - we are not able to include social security feeling into our analysis, so we take into account only the size of wages.

The logic of our analysis is the following. Firstly we analyze the differences in structures of permanent/temporary and full-time/part-time employment. Secondly we evaluate the significance of the observed characteristics influencing the probability of non-standard employment using probit regression model. And finally we assess the differences in wages of fulltime/part-time and permanent/temporary employees moving step by step from rough to modern econometric estimations (from simple means analysis to OLS regression, OLS plus Heckman correction and Propensity Score Matching).

The equation for the probability of non-standard employment looks like this:

$$\Pr(Y_i = 1) = F(a + X_i * b + K_i * h + Z_i * c + U_i * d + e), \quad (1)$$

a, h, b, c, d – vectors of coefficients,

Xi – set of personal characteristics of the respondent:
- dummies for five age groups of 10 years,
- dummies for four educational groups (primary, secondary, tertiary);

Ki – set of family characteristics:
- marital status (have a spouse -1; do not have a spouse- 0);
- number of children (under 15 years old)

Zi – set of work place characteristics:
- dummies for professional occupation (7)
- industry sector (9 dummies);
- type of enterprise's ownership (private or state)

Ui – set of the local labour market characteristics:
- type of the settlement (urban or rural);
- level of regional unemployment
- dummies for regions (43)

The next step is to estimate the determinants of wages and to evaluate the differences in wages, according to the regression models. The wage equation for the OLS regression is the following:

$$Ln(w_i) = a + bT_i + \sum_j \beta_j X_{ji} + \varepsilon_i. \quad (2)$$

a, b, β_j - coefficients;

Ln ($wage_i$) – natural logarithm of hourly wage;

T_i – dummy for temporary or part-time employment (1 – temporary, 0- permanent or 1- part-time, 0- full-time);

X_j – the list of personal and workplace characteristics explaining the wage rate (sex, age group, educational level, marital status, number of children, professional group, industry, type of the enterprise ownership, type of settlement, regional dummies);

ε - unexplained residual.

B-coefficients show the corresponding return for personal and work-place characteristics, b-coefficient equals the average wage gap of the individuals with similar characteristics but working by different type of contract (temporary/permanent) or regime (part-time/full-time)[21]. We assume that unexplained residual [E_i] distributes normally [$E_i \sim NID\ [0, \sigma^2]$].

After the OLS regression we estimate the regression with Heckman correction. The main regression has the same list of independent variables. The selection equation contains the following list of variables:

- sex
- 5 age groups
- Marital status
- 4 dummies for educational level
- *Number of children of 0-1 years old*
- *Number of children of 1-3 years old*
- *Number of children of 4-6 years old*
- *Getting pension*
- *Having studies*
- *Having a flat/house*

And finally we switch to the last model of estimating the wage gap - Propensity Score Matching. The method and its practical use was discussed in details by M.Caliendo, S.Kopeinig[22]. The approach has become very popular one to estimate casual treatment effects[23] and widely applied when evaluating labour market policies. Lately it has become widely used to evaluate the wage differences according to the effect of union membership, foreign firms, public sector and etc.[24] We use here this method to evaluate the effect of part-time and temporary

[21] As we estimate the natural logarithm of wage the effect of dummy variable is calculated as follows: $(e^D - 1) * 100\%$, where D – dummy coefficient (See Halvorsen, R., and R.Palmquist [1980] "The Interpretation of Dummy Variables in Semilogarithmic Equations", *American Economic Review*, Vol. 70 [3], pp.474-475).

[22] M.Caliendo, S.Kopeinig. Some Practical Guidance for the Implementation of Propensity Score Matching. IZA DP No.1588, May 2005

[23] It is the situation when one has a group of treated individuals and untreated individuals (M.Caliendo, S.Kopeinig. Some Practical Guidance for the Implementation of Propensity Score Matching. IZA DP No.1588, May 2005)

[24] A.Bryson. The Union Membership Wage Premium: An Analysis Using Propensity Score Matching. CEP LSE, May 2002; Pedro S. Martins. Do Foreign Firms Really Pay Higher Wages? Evidence from Different Estimators. IZA DP No. 1388, November 2004; E.Glinskaya and M.Lokshin. Wage Differentials Between the Public and Private Sectors in India. World Bank Policy Research Working Paper 3574, April 2005

employment. So the treated groups are those who engaged in part-time or temporary work and untreated individuals are those who work full-time or on permanent basis. The observed wage of treated people (part-time and temporary workers) is compared to the unobserved wage of untreated individuals (full-time and permanent workers) the characteristics of which are highly comparable to treated individuals. The effect is calculated as the difference between what a person really earn as part-time or temporary worker and what he could earn in case he was a full-time or permanent employee:

$$\Delta Wage_i^b = Wage_{1i}^b - Wage_{0i}^b \quad (3)$$

We estimate the average treatment effect on treated as we cannot afford too strict assumptions about the form of combined distribution of observed and non-observed wages:

$$\Delta Wage^b = ATT = E\{Wage_1 \mid D=1, X\} - E\{Wage_0 \mid D=1, X\} \quad (4)$$

where D=1 for part-timers and temps, D=0 for full-timers and permanent workers, X – the list of control individual characteristics (the same one as it was given above in OLS model). Then, $Wage_1 \mid D=1, X$ - is the observed wage of the treated people (part-time and temporary employees), and $Wage_0 \mid D=1, X$ - is the average wage of untreated persons with comparable (the same X) characteristics (full-time and permanent workers).

As we cannot observe the alternative wages the task is to select the untreated control group with the characteristics maximum similar to those of the treated group. The basis of the propensity score matching model is the index of *propensity score* which is specially constructed according to the probability of being a part of the treated group depending on many observed person's characteristics. The meanings of the index lie between 0 and 1 (as it is calculated with the help of probit or logit model) and describe the differences of individual characteristics among persons. Individuals with similar characteristics have very close meanings of these indexes (no matter if they were treated or not). So the *propensity scores* let us sort out a very similar control group and eliminate the bias due to the self-selection. The main advantage of the method is that it does not require any preliminary assumptions about function form of selection equation and wage equation and form of error's distribution in these equations.

We use special module for STATA in order to apply PSM regression to our data.[25]

Before starting to speak about the wage differences let us turn to social-demographic characteristics of standard and non-standard workers in Russia. This will help us to understand better the mechanisms of how the wage gaps are forming.

[25] Leuven, E. and B.Sianesi (2004), "PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. Version 2.0.8". The individuals were selected by the nearest neighbor method to sort out the control group.

Probability of being temporary or part-time employees

Number and dynamics

During the Soviet Union period labour allocation was strictly regulated by planned economic system. The most widespread type of employment then was full-time permanent contract. The use of other employment types was restricted by labour legislation. The market reforms of 1990-s launched the employment divergence by liberalizing the labour legislation from one hand and using new forms as means of adaptation by employers and employees from the other hand. Millions of people[26] become non-standard employees by the end of 1990-s.

During the economic fall (from 1992 till 1998) non-standard employment was like a safety pillow as it restrained the flow to non-activity and unemployment. During the economic growth (from 1999 till 2007) it became the major segment for employment growth. As it was already mentioned above we focus here only on two types of non-standard employment: part-time and temporary employment. They cover on average 8% and 13% percent of labour force correspondently in the developed countries although they vary greatly among these countries.

The non-permanent employees are very diverse as they consists of fixed-term workers, contractors for particular tasks, oral agreements and casual workers. The common thing here is that all of them have short tenure and highly mobile. The graph 1 shows that temporary employment was very low at the beginning of 1990s - around 2,5%. But during the whole period it has been constantly growing and now temporary employment is about 12% of all employed. The sharp increase is noticed in last years what is connected with changes in labour legislation. New Labour Code taken in 2002 enlarged the list of situations when temporary hiring is possible.

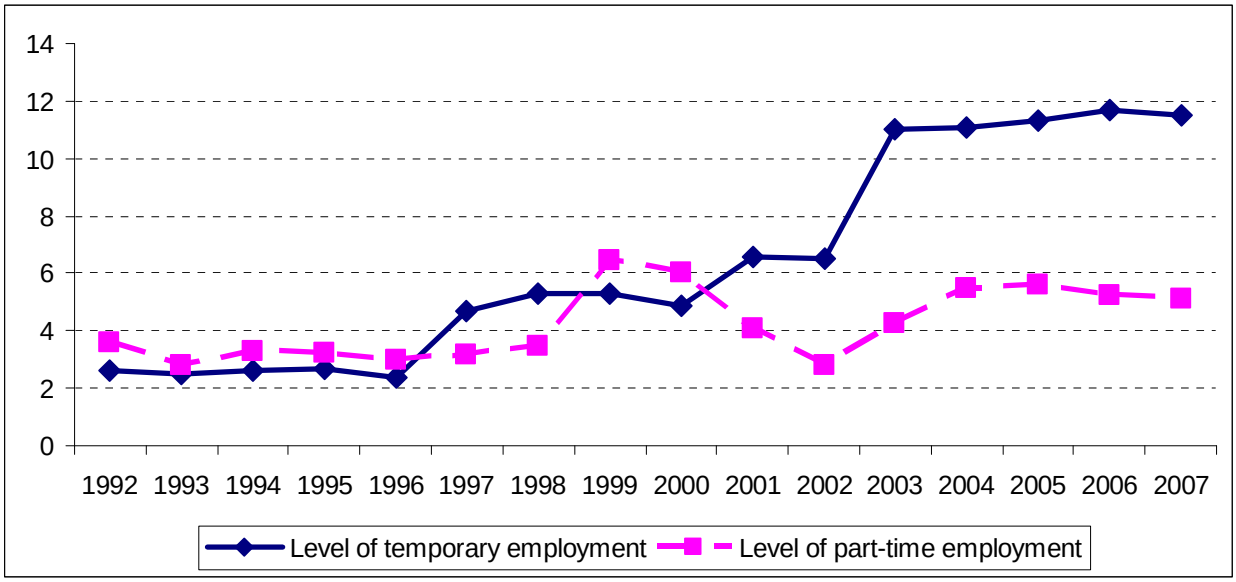
The proportion of part-time employees remains rather small in Russia. If we take those usually working less then 30 hours per week[27], we will get not more then 4-5%. In case we speak about those who worked less then 30 hours during last week we will have around 10%, what is close to European figures.

The structure of part-time employment in Russia has its peculiarities. The most part of such employees are forced to have part-time jobs due to different reasons (are not able to find full-time job, are obliged to work less hours by employers and etc). While in other countries part-time employees usually work voluntary in this regime. The number of those working part-time at their own account is rather small. It is very significant that the level of part-time employment reached its pick during 1999, the year after deep crisis, and started to decrease

[26] However we should mention that standard employment is still the dominant form of employment in Russia, especially for those engaged in industry and public sectors.

[27] We use this definition for part-time workers further in the paper.

during the economic growth (owing to forced part-timers). Now the percentage of part-time workers is even less then it was in early 1990-s.



Picture. 1. Dynamics of temporary and part-time employment in Russia, 1992-2006 гг. (% of total employment)

Table 1 shows the number and level of part-time and temporary employment according to LFS and NOBUS data. Both data sets demonstrate very similar figures: approximately 10-11% of all employed have temporary jobs and around 5% of all employed work part-time. Let us briefly describe the structural differences of these two types of non-standard employment by social and demographic characteristics.

Table 1

Level of temporary and part-time employment according to NOBUS and LFS data

	NOBUS data, 2003			LFS data, 2003		
	Total	Among men	Among women	Total	Among men	Among women
Level of part-time employment	4,5	2,6	6,3	5,3	3,5	7,3
Level of temporary employment	10,0	11,4	8,7	11,0	12,5	9,5

Description of structural differences of part-time and temporary workers.

Part-time employees. Women tend to be more engaged in part-time work them men do (6,3% VS 2,6 %), the situation is similar to other countries (see table 1 in the Annex). The rate of part-time employment is higher for younger and elder people: for group of 15-25 years old the level is 7,5%, for middle ages the rate of part-time employment is about 5-6%, and for those of 56-65 it equals 10,4%. Part-time jobs are more spread among workers with higher education (9,1%), while only 5,5% of those with lower education have part-time work. The level of part-time employment in the country side is around 8% while for the cities it is not more then 5%.

The workers engaged on higher and lowest positions of the professional ladder are more likely to be part-time employees (11,7% and 9,9% correspondently). Senior managers, operator and graft workers are less engaged in part-time work. Such industries as public sector (11,8%), trade/hotels/restraints (5,9%) and other activities (7,1%) are the leaders for the proportion of part-time workers. More over about halve (51%) of all part-timers concentrate in the public sector.

Temporary employees. Men have temporary jobs more frequently then women in Russia (11,4% and correspondently 8,7%). Temporary workers are rather young (about 50% of all temporary employees are under 35 years old) and less educated people (around 85% of temporary workers have lower education). The level of temporary employment for people with tertiary education is 7,1% and for those with secondary education is twice as much – 13,5%. The level of temporary employment does not differ very much by the type of settlement (10-11%). Two professional groups have the biggest proportion of temporary workers, they are clerks and service workers and trade and non-qualified workers on elementary occupations. Temporary staff is highly used in trade sector (29%), construction (19,7%) and agriculture (11,1%). On the contrary industry and budget sector have few temporary employees (5-6%). And finally about 70% of all temps have tenure less then 3 years what means that they are really less secure comparing to permanent workers.

Determinants of part-time and temporary employment

Tables 2 and 3 in the Annex contain the marginal effects of probit regression model. They show how much the probability of being a non-standard employee grows if a person has the particular characteristic comparing with the referent group. Let us start with the determinants of part-time employment (table 2 in the Annex).

The probability of part-time employment is higher for women, youngest age group, for those with tertiary education who live outside the cities and for those who have children. In case a person is a pensioner or student he/she is more likely to be part-time worker. Those employees engaged in public sector, transport, trade an agriculture have better chances to work part-time. Enterprises with public ownership decline the probability for part-time work while the high rate of regional unemployment raises this likelihood. Looking at professional segregation we will see that the highly skilled professionals are most likely to be part-time employees.

As for temporary jobs they are more relevant for men then women in Russia (see table 3 in the Annex). The probability of temporary employment is higher for younger people 915-35 years old) without families. Work in trade and construction increases the probability for being temporary employee. Pensions and studies increase the likelihood as well. Those who work at the enterprises with public ownership are less likely to have temporary contracts. Living in big

cities and high regional unemployment rate positively affect the probability of temporary employment. It is interesting that highly qualified professionals in this case have the lowest chance to be temporary workers comparing to other professional groups.

We could conclude that the spread of non-standard employment is wider in two cases. The first case is when the production activity is rather non-standard itself. The business of small firms and self-employers (in trade sector, construction, hotels and restaurants) is rather uncertain what requires flexibility on the market. Non-standard employment provides the opportunity to operate flexible for employers. Low enforcement of labour legislation in Russia and difficulties in controlling this segment of economy stimulate the demand for the non-standard labour. The second one is connected with labour supply. People with particular characteristics are looking for or have to take temporary or part time jobs (pensioners, students, mothers with children and graduates who cannot find full-time permanent jobs immediately after studies).

Wages of standard and non-standard workers

We began our wage analysis with comparing simple average monthly wages of standard and non-standard workers. The relative monthly wages and relative working hours of non-standard workers are placed in the table 2. It shows that in 2003 temporary employees got about 6% less then permanent workers, and part-time employees earned halve less then full-time employees (per month). If we control for working hours we will see another picture. Permanent and full time employees work 40,7 and 42,7 hours per day, while temporary and part-time employees work 43,3 and 21,9 correspondently. Comparing the average hourly wage rates we will realize that temporary workers got even lesser (about 12%) however they work more hours (6%). Another story we have with part-time workers, although they work halve less their hourly wage rate is 32% more then the full-time workers'. These results from comparing means slightly differ for men and women in Russia. We could conclude that temporary workers suffer from their non-standard employment while part-time employees benefit.

Table 2. Relative monthly wage and relative working hours of temporary and part-time employees, 2003, NOBUS data, % (wages and working hours of permanent workers and full-time employees = 100%)

	Monthly wage	Working hours per month	Hourly wage rate
	All employed		
Temporary/permanent	94,4	106,5	87,9
Part-time/full-time	61,2	51,3	133,3
	Women		
Temporary/permanent	87,8	105,5	86,7
Part-time/full-time	70,5	53,3	142,2
	Men		
Temporary/permanent	94,2	106	85,8
Part-time/full-time	59,3	48,5	145,1

Let us discuss the average wage differences in more details. Looking at the wage differences between part-time and full-time employees (Annex, table 7) we could see that hourly wage rate is always higher for part-timers. The gap is positive for every social-demographic group and the average wage gap is about +30-40%. It is worth mentioning that the lowest difference was noticed among professionals (+9%) and employees with tertiary education (+11,8%); and the highest one is among those engaged in agriculture (+85,5 %) and electricity (+82,3%) sectors and among senior managers (+72,1%). Such great variation could be explained by the fact that we have small numbers of part-time workers in the sample and the further subdivision increases standard errors. It is reasonable to discuss the sign of the gap and overall tendency here but not the concrete figures of gaps.

The first column of the table 7 (see annex) reflects differences in the average hourly wages of temporary and permanent workers by socio-demographic factors. Men have a bigger wage difference of temporary and permanent workers then women do (-14,2% and -13,3% correspondently). It is interesting, that married temporary and permanent workers have lesser wage gap (-6,7%) then not married employees do (16,4%). More over the difference is twice as higher for not married. The average wages of temporary and permanent workers differ greatly depending on age group. The highest wage gap is for employees of 26-35 years old while the smallest if for workers under 25 years old and for those of 36-45 years. One of the possible explanations could be the following: the youngest group of workers has the smallest difference in earnings because the most part of them start working on probationary period and on temporary contracts. They all have almost no working experience what really decreases their salaries. Temps of 26-35 years old still have small working experience and poor skills. While those who are engaged on permanent positions need to be motivated to stay with the firm, so their wages could be much higher. Temps of 36-45 years old are usually highly qualified specialists working on contracts and occupying high positions. That is why their wages do not differ greatly from permanent employees. The gap is growing for those elder then 46 years because temporary workers here are usually those who have lower skills and education, who engaged in the second labour market.

The difference in earning of temporary and permanent workers shrinks with the educational level, the higher the education the smaller is the gap. The same is for the professional grouping - the higher the position the narrower the disparity is. The exclusion is the group of elementary occupations. Temporary employees with the highest rank of the professional ladder even got benefits. The higher wages of senior managers, professionals and technicians reflects the importance of their social status. While the profit for elementary occupations means

that they have casual unstable work which costs much. There is also variation in payments depending on sector. Almost in every sector the permanent employees get bigger remuneration for their work except agriculture and budget sector where the temporary employees do receive higher wages. The considerable variation of wage gaps depending on profession and sector reflects the significant heterogeneity of temporary jobs. The difference in average wages of temporary and permanent workers does not vary very much depending on type of settlement (it is about -12-13%).

We should keep in mind that while we compare simple average wages we neglect workers heterogeneity and sample selection bias. So in order to get this into consideration we use regression analysis to asses the "pure" wage gaps between standard and non-standard workers.

All the results (OLS, OLS+Heckman and PSM) were placed in one table: table 6 for part-timers and table 7 for temporary employees. Everyone could see how they do differ depending on the model is used. Firstly we will throw some light on coefficients we got for temporary and part-time work in OLS wage regressions.

Let us remind that the dependant variable here was the logarithm of hourly wage rate and the main independent variables were temporary employment, part-time-employment and their crossing. At the same time we control for gender, age, education level, professional group, industry sector, type of ownership, type of settlement, regional rate of unemployment and region. Our results go in line with the results for some European countries: the temporary employment negatively affects wages, this is true both for men and women (see table 3 below).

Table 3.

Coefficients of temporary employment (as dummy variable) for logarithm of hourly wage rate in OLS regressions, 1997

	Men		*Women*	
Countries	*Number of observations*	*Coefficient*	*Number of observations*	*Coefficient*
Austria	1587	-0,06*	854	-0,12**
Belgium	1155	-0,12**	702	-0,02
Denmark (1996)	1427	-0,06**	1097	-0,05**
Finland	1550	-0,16**	1525	-0,12**
France	959	-0,14**	861	-0,20**
Germany (1996)	2994	-0,10**	1724	-0,18**
Greece	131	-0,12**	743	-0,20**
Ireland	1334	-0,12**	748	-0,20**
Italy	2501	-0,13**	1372	-0,15**
Holland	2270	-0,24**	862	-0,22**
Portugal	2322	-0,07**	1558	-0,14**
Spain	2582	-0,16**	1212	-0,19**
Great Britain	2088	-0,13**	1481	-0,13**
Россия (2003)	19 948	-0,03**	22972	-0,04**

Data source: OECD Employment outlook, 2002, p.157; authors estimations on NOBUS data for Russia

** Significant at 0,05; * -significant at 0,1.

The next step was to use Heckman correction in order to account for selection bias. Firstly we assessed the regressions both for temporary and part-time employment separately for men and women (specifications 1,3 and 5,7 in the table). Then we assessed the same models adding the crossing of temporary and part-time work (specifications 2,4,6,8 in the table). We assume that having both temporary and part-time work enhances the effect of non-standard employment As you can see rho–coefficient is significant for all specifications of regressions with Heckman correction for women and only for temporary employment for men.

Table .

Coefficients of temporary and part-time employment in wage regressions (OLS+Heckman correction for males and females), NOBUS data, 2003

Logarithm of hourly wage	Men				Women			
	1	2	3	4	5	6	7	8
Temporary employment	-0,032**	-0,052***			-0,037***	-0,060***		
Part-time employment			0,411**	0,419***			0,339***	0,341***
Temporary employment*part-time employment		0,415***		-0,036		0,343***		-0,016
Control variables	yes	yes	yes	yes	yes	yes	yes	yes
N	31838	31838	31977	31838	40185	40185	40313	40185
rho	0,054*	0,012	0,010	0,011	0,170***	0,144***	0,145***	0,143***

*, **, *** - 10%, 5% and 1% significance level correspondently

The list of control variables in the *main equation* contained*:* age groups, education level, marriage status, number of children, professional groups, industry sectors, type of ownership, type of settlement, regional rate of unemployment and regional dummies. The list of variables in the *selection equation* had: number of children under 1 year old, number of children of 1to 3 year old, number of children of 4-6 year old, getting pension, having studies and having a flat or a house.

The main conclusion is that temporary and part-time employment influence wages in the opposite direction: while temporary employment has negative impact on hourly wage rate, part-time employment positively affects hourly wage rate (application of the Heckman correction is statistically significant only for women). The crossing of temporary and part-time employment always gives the opposite sign comparing to dummy of non-standard employment. It means that adding the crossing to the specification with temporary employment decreases the negative effect of non-standard employment, while adding the crossing to the specification with part-time employment diminish the positive effect. Anyway we should keep in mind that the number of those with temporary contracts working part-time is rather small. So the total effect of crossing these two types of non-standard work is applied to a very small number of employees.

Russian men working part-time get 50% more (per hour) then those working full-time (see Annex: column 2 and 3 in the table 6). Women engaged in part-time employment earn more as well (+40%). We cannot say that we have the exact total tendency for decreasing the wage gaps among different social-demographic groups when taking into account the personal and work place characteristics. For some groups it is true – the wage gap becomes smaller comparing to the means difference (women, youngest age group and etc.) but for most part it even grows. It is interesting that such control for personal characteristics increases the wage premium for the most qualified workers – for those with tertiary education engaged on professional positions. It is possible when the demand for such highly professional employees is big but the supply is rather restricted. These professionals could be expensive consultancies or private teachers who offer a small number of their working hours for a very high price. Any way we should state that the positive effect of part-time employment is significant for all social-demographic groups and it is rater considerable.

So the temporary employees get 3,1%-3,7% less then permanent workers, this is true both for men and women (see Annex: column 2 and 3 in the table 6). We could see that the wage difference between temporary and permanent workers shrinks while we account for the personal and work-place characteristics: from -14% to -3,1% for men and from -13 to -3,7% for women. More over the gaps become not significant for some social-demographic groups (for age groups of 15-25 years old, 36-45 years old, 56-65 years old; for employees with lowest educational level and for those living in the countryside).

Now we have come to the results of the last method of evaluating wages applied in the paper - *Propensity Score Matching*. It is a non-parametric regression model assuming the comparison with the control group. The estimations are placed in the last column in the tables 6 and 7, in the annex.

The results showed that the wage gaps between temporary and permanent workers are lower almost for all social-demographic groups but at the same time they are not significant in the most cases. The new results of PSM regressions for temporary employment do not contradict with the results of means differences and OLS regressions they do reflect the global tendency for negative effect and considerable variation between social-demographic groups. So we got the steady negative result for those temporary workers who are not married, they get 6,7% less then those who have a spouse. The employees engaged in trade and hotel business and occupying clerks positions suffer a loss as well (-12; -10,6%). As it was showed before the budget sector employees working on temporary contracts get the significant benefit (+13,1%).

The new wage gap estimations of part-time and full-time employees are also in line with the previous results. They all are positive and significant but they considerably grow in values

comparing with the differences in average wages. For example for men the values grow from 45% to 82,4%, for workers with lowest education level the figures increase from 40% to 76%, and for senior managers they rise from 72% up to 135%.

Conclusion

The paper was devoted to the problem of wage differentiation of standard and non-standard workers in Russia. This is the first attempt to evaluate the wage gap between temporary and permanent, part-time and full-time employees using big survey of Russian households, conducted in 2003. Firstly we analyze the probability of being temporary and part-time workers in Russia. Secondly we apply several regression models to estimate the effects of temporary and part-time employment of hourly wage rate in Russia.

The main conclusion for the paper is that not everything is true what is clear from the first glance. The labour code implicitly or explicitly assumes that temporary and part-time employees suffer from the current labour market conditions. That is why they need to be protected by restriction of such contract type. In this way Russian labour legislation limits the labour supply of particular working groups and encourages the labour market to compensate their deficit and "inferiority".

The results we got are not absolutely certain. We understand that in order to get more reliable estimations we need the perfect data and more advanced econometric techniques. Nevertheless our analysis allows us to sum up that initial conclusion that temporary and part-time employees suffer a loss in wages is not absolutely true. The wage gap between standard and npn-standard workers often stems from their differences in educational level, qualifications, personal characteristics and even work place characteristics. To the contrary the labour market tries to compensate the disadvantages of such jobs (for example uncertainty) by higher hourly wage rate.

We cannot stop the growth of non-standard employment in the current economy. So the first task for the research fellows is not only to estimate the quantity of such employment but to analyze the mechanisms of wage formation for these non-standard workers. The understanding of such mechanisms will allow us to carry out the appropriate social policy.

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Annex

Table 1.

The level and structure of temporary and part-time employment in Russia, NOBUS data, 2003, %

	Temporary employment level	Temporary employment structure (100%)	Part-time employment level	Part-time employment structure (100%)
By gender				
men	12,4	54,9	3,8	28,6
women	9,2	45,1	8,7	71,4
By age				
15-25 years old	20,4	23,9	7,5	14,5
26-35 years old	12,6	27,4	6,3	23,3
36-45 years old	9,7	25,4	5,8	26,3
46-55 years old	6,7	18,1	5,4	24,6
56-65 years old	7,9	5,2	10,4	11,2
By marriage				
Married	13,5	40,3	5,6	28,6
Not married	10,5	45,3	5,5	40,2
By education	7,1	14,4	9,1	31,2
Lower then secondary				
Secondary	14,4	41,7	7,4	35,9
Tertiary	9,0	58,3	5,8	64,1
By professional groups				
Senior managers	6,1	1,6	3,8	2,1
Professionals	4,3	6,2	11,7	25,9
Technicians	5,5	10,8	7,0	21,2
Clerks and service workers	16,4	32,0	5,5	18,0
Skilled agricultural workers, graft workers	8,6	17,3	2,8	9,0
Operators	6,8	4,5	2,0	2,0
Elementary occupations	20,1	27,7	9,9	21,8
By industries				
Agriculture, hunting, forestry and fishing	11,1	9,8	5,1	8,4
Mining, quarrying and manufacturing	5,8	9,5	2,3	6,2
Electricity, gas and water supply	4,5	1,6	1,7	1,0
Construction	19,7	12,7	2,7	2,9
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	29,0	34,6	5,9	13,6
Transport, storage and communications	7,2	6,4	4,1	6,0
Financial intermediation, real estate, renting and business activities	7,6	1,7	4,2	1,6
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	5,5	15,1	11,8	50,9
Other activities	11,1	8,6	7,1	9,3
By tenure				
Less then 1 year	31,7	40,1	8,6	19,2
1-3 years	16,4	29,9	5,6	18,0
3-5 years	10,1	12,0	5,2	11,0
5-10 years	5,9	9,3	5,1	14,3
More then 10 years	2,5	8,7	6,1	37,6

By type of settlement				
City with more then 500 thousand people	10,2	18,8	5,1	15,7
City with 100-500 thousand people	11,8	28,0	5,6	22,4
Town with 20-100 thousand people	10,7	16,8	5,0	13,4
Country side, village	10,2	36,4	8,0	48,5
Having studies				
No	10,4	92,2	6,0	90,4
Yes	16,9	7,8	12,7	9,6
Getting pension				
No	11,0	91,4	5,7	80,0
Yes	8,3	8,6	11,8	20,0

Table 2.

Determinants of part-time employment (marginal effects of probit regression models, NOBUS data, 2003)

Independent variables	**1**		**2**	
	Coefficient	St.er.	Coefficient	St.er.
Temporary employment			***0,056****	***0,005***
Male	-0,023***	0,002	-0,025***	0,002
15-25 years old	0,010***	0,004	0,006*	0,004
26-35 years old	0,003	0,003	0,002	0,003
36-45 years old				
46-55 years old	-0,004	0,003	-0,004	0,003
56-65 years old	0,004	0,005	0,004	0,005
Lower then secondary education	-0,010***	0,003	-0,010***	0,003
Secondary education	-0,013***	0,003	-0,012***	0,003
Tertiary education				
Being married	-0,003	0,002	-0,002	0,002
Number of children	0,003**	0,001	0,003**	0,001
Senior managers	-0,035***	0,002	-0,035***	0,002
Professionals				
Technicians	-0,019***	0,003	-0,019***	0,003
Clerks and service workers	-0,027***	0,003	-0,027***	0,002
Skilled agricultural workers, graft workers	-0,029***	0,003	-0,028***	0,003
Operators	-0,030***	0,003	-0,029***	0,003
Elementary occupations	0,006	0,004	0,001	0,004
Agriculture, hunting, forestry and fishing	0,019***	0,006	0,015***	0,006
Mining, quarrying and manufacturing				
Electricity, gas and water supply	-0,004	0,007	-0,006	0,007
Construction	0,013**	0,007	0,004	0,006
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	0,037***	0,006	0,024***	0,006
Transport, storage and communications	0,039***	0,007	0,033***	0,007
Financial intermediation, real estate, renting and business activities	0,010	0,009	0,007	0,009
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	0,083***	0,006	0,075***	0,006
Other activities	0,058***	0,008	0,047***	0,007
Public ownership of the enterprise	-0,012***	0,003	-0,001	0,003
Getting pension	0,041***	0,006	0,038***	0,005

Having studies	0,050***	0,007	0,046***	0,006
Good health	-0,003*	0,002	-0,003	0,002
City with more then 500 thousand people	0,003	0,004	0,003	0,004
City with 100-500 thousand people	0,002	0,003	0,002	0,003
Town with 20-100 thousand people				
Country side, village	0,024***	0,003	0,024***	0,003
Unemployment rate in the region	0,002***	0,000	0,001***	0,000
Control for region				
Количество респондентов	43 907		43 624	
Pseudo R2	0,113		0,121	

***<0,001; ** <0,05; * <0,1

Table 3.

Determinants of temporary employment (marginal effects of probit regression models, NOBUS data, 2003)

Independent variables	**1**		**2**	
	Coefficient	St.er.	Coefficient	St.er.
Part-time employment			***0,068******	***0,007***
Male	0,023***	0,003	0,025***	0,003
15-25 years old	0,034***	0,005	0,033***	0,005
26-35 years old	0,011***	0,003	0,011***	0,003
36-45 years old				
46-55 years old	-0,016***	0,003	-0,015***	0,003
56-65 years old	-0,009	0,006	-0,009	0,006
Lower then secondary education	0,005	0,004	0,006	0,004
Secondary education	-0,001	0,004	0,000	0,004
Tertiary education				
Being married	-0,016***	0,003	-0,016***	0,003
Number of children	0,002	0,002	0,002	0,002
Senior managers	0,025**	0,012	0,029**	0,012
Professionals				
Technicians	0,011*	0,006	0,013**	0,006
Clerks and service workers	0,047***	0,007	0,050***	0,007
Skilled agricultural workers, graft workers	0,013**	0,006	0,014**	0,006
Operators	0,006	0,007	0,008	0,007
Elementary occupations	0,100***	0,010	0,098***	0,009
Agriculture, hunting, forestry and fishing	0,042***	0,007	0,040***	0,007
Mining, quarrying and manufacturing				
Electricity, gas and water supply	0,025**	0,010	0,025**	0,010
Construction	0,131***	0,010	0,129***	0,010
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	0,144***	0,009	0,140***	0,009
Transport, storage and communications	0,056***	0,008	0,053***	0,008
Financial intermediation, real estate, renting and business activities	0,057***	0,014	0,055***	0,014
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	0,061***	0,007	0,055***	0,007
Other activities	0,094***	0,010	0,087***	0,009
Public ownership of the enterprise	-0,150***	0,004	-0,149***	0,004
Getting pension	0,021***	0,006	0,018***	0,006
Having studies	0,023***	0,006	0,017***	0,006
Good health	0,000	0,003	0,000	0,003

City with more then 500 thousand people	0,007*	0,004	0,007	0,004
City with 100-500 thousand people	0,005	0,004	0,004	0,004
Town with 20-100 thousand people				
Country side, village	-0,000	0,004	-0,002	0,004
Unemployment rate in the region	0,003***	0,000	0,003***	0,000
Control for region				
Количество респондентов	43 631		43 624	
Pseudo R2	0,213		0,218	

***<0,001; ** <0,05; * <0,1

Table 4.

Determinants of wages, NOBUS data, 2003

	OLS		OLS+Heckman			
	Coefficient	St.er.	Coefficient	St.er.	Coefficient	St.er.
Part-time employment	***0,362****	***0,014***	***0,358****	***0,012***		
Male	0,254***	0,006	0,260***	0,007	0,153***	0,011
15-25 years old	-0,106***	0,010	-0,133***	0,012	-0,605***	0,020
26-35 years old	-0,013	0,008	-0,015*	0,008	-0,044**	0,018
36-45 years old						
46-55 years old	-0,009	0,008	-0,011	0,008	0,100***	0,017
56-65 years old	-0,118***	0,012	-0,162***	0,015	-0,395***	0,024
Lower then secondary education	-0,293***	0,010	-0,317***	0,012	-0,869***	0,017
Secondary education	-0,186***	0,009	-0,196***	0,010	-0,346***	0,017
Tertiary education						
Being married	0,041***	0,007	0,045***	0,007	0,128***	0,013
Number of children	-0,018***	0,005	-0,019***	0,004		
Senior managers	0,203***	0,020	0,202***	0,019		
Professionals						
Technicians	-0,137***	0,011	-0,137***	0,011		
Clerks and service workers	-0,289***	0,012	-0,288***	0,012		
Skilled agricultural workers, graft workers	-0,235***	0,013	-0,233***	0,013		
Operators	-0,227***	0,016	-0,225***	0,015		
Elementary occupations	-0,585***	0,013	-0,584***	0,013		
Agriculture, hunting, forestry and fishing	-0,629***	0,014	-0,628***	0,012		
Mining, quarrying and manufacturing						
Electricity, gas and water supply	0,128***	0,015	0,129***	0,016		
Construction	0,014	0,013	0,015	0,013		
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	-0,202***	0,012	-0,201***	0,012		
Transport, storage and communications	0,067***	0,012	0,068***	0,012		
Financial intermediation, real estate, renting and business activities	0,009	0,020	0,008	0,020		
Public administration and defense; compulsory social	-0,294***	0,010	-0,295***	0,010		

security, education, health, social work, other community, social and personal service activities						
Other activities	-0,207***	0,013	-0,207***	0,013		
Public ownership of the enterprise	0,029***	0,008	0,030***	0,007		
City with more then 500 thousand people	0,060***	0,010	0,060***	0,011		
City with 100-500 thousand people	0,012	0,009	0,013	0,009		
Town with 20-100 thousand people						
Unemployment rate in the region	-0,195***	0,009	-0,194***	0,009		
Country side, village	-0,017***	0,002	-0,018***	0,001	-0,036***	0,002
Number of children of less then 1 year old					-0,319***	0,026
Number of children of 1 to 3 years old					-0,142***	0,023
Number of children of 1 to 3 years old					-0,002	0,020
Getting pension					-1,194***	0,019
Having studies					-1,046***	0,020
Having own flat/house					-0,142***	0,026
Control for region	yes		yes		yes	
Constanta	3,318***	0,019	3,314***	0,017	1,774***	0,037
Athro			0,107***	0,021		
R2	0,407					
Rho			0,107			
N	43 187		72 290			

***<0,001; ** <0,05; * <0,1

Table 5.

Determinants of wages, NOBUS data, 2003

	OLS		OLS+Heckman			
			Main equation		Section equation	
	Coefficient	St.er.	Coefficient	St.er.	Coefficient	St.er.
Temporary employment	-0,038***	0,012	-0,039***	0,010		
Male	0,244***	0,007	0,251***	0,007	0,154***	0,011
15-25 years old	-0,098***	0,011	-0,133***	0,012	-0,608***	0,020
26-35 years old	-0,010	0,008	-0,013	0,008	-0,047**	0,018
36-45 years old						
46-55 years old	-0,008	0,008	-0,011	0,008	0,100***	0,017
56-65 years old	-0,102***	0,012	-0,159***	0,015	-0,396***	0,024
Lower then secondary education	-0,297***	0,011	-0,329***	0,012	-0,870***	0,017
Secondary education	-0,190***	0,009	-0,203***	0,010	-0,346***	0,017
Tertiary education						
Being married	0,038***	0,007	0,044***	0,007	0,129***	0,013
Number of children	-0,016***	0,005	-0,017***	0,004		
Senior managers	0,172***	0,020	0,170***	0,020		
Professionals						
Technicians	-0,153***	0,011	-0,152***	0,012		
Clerks and service workers	-0,309***	0,012	-0,307***	0,012		

Skilled agricultural workers, graft workers	-0,251***	0,013	-0,248***	0,013		
Operators	-0,247***	0,016	-0,244***	0,016		
Elementary occupations	-0,585***	0,014	-0,583***	0,013		
Agriculture, hunting, forestry and fishing	-0,627***	0,015	-0,626***	0,012		
Mining, quarrying and manufacturing						
Electricity, gas and water supply	0,131***	0,015	0,132***	0,016		
Construction	0,021	0,013	0,023*	0,013		
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	-0,187***	0,012	-0,186***	0,012		
Transport, storage and communications	0,077***	0,012	0,078***	0,012		
Financial intermediation, real estate, renting and business activities	0,013	0,020	0,011	0,020		
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	-0,263***	0,010	-0,265***	0,010		
Other activities	-0,190***	0,013	-0,190***	0,013		
Public ownership of the enterprise	0,019**	0,008	0,019**	0,007		
City with more then 500 thousand people	0,062***	0,010	0,061***	0,011		
City with 100-500 thousand people	0,014	0,009	0,014	0,009		
Town with 20-100 thousand people						
Country side, village	-0,185***	0,009	-0,184***	0,009		
Unemployment rate in the region	-0,015***	0,002	-0,017***	0,001	-0,036***	0,002
Number of children of less then 1 year old					-0,314***	0,026
Number of children of 1 to 3 years old					-0,141***	0,023
Number of children of 1 to 3 years old					-0,002	0,020
Getting pension					-1,193***	0,019
Having studies					-1,044***	0,020
Having own flat/house					-0,141***	0,026
Control for region	yes		yes		yes	
Constanta	3,342***	0,019	3,337***	0,018	1,771***	0,037
Athro			0,139***	0,021		
R2	0,396					
Rho			0,138			
N	42 920		72 023			

***<0,001; ** <0,05; * <0,1

Table 6.

Wage differences of part-time and full-time workers by socio-demographic factors, %

	Means differences	OLS	OLS with Heckman correction	PSM
Total	33,3	43,6*	43,1*	59,7*
By gender				
men	45,3	50,9*	50,8*	82,4*
women	42,2	40,8*	40,4*	46,6*
By age				
15-25 years old	47,1	45,8*	44,7*	71,0*
26-35 years old	42,3	52,6*	52,6*	66,9*
36-45 years old	26,5	37,0*	37,1*	48,8*
46-55 years old	23,9	40,0*	39,2*	52,3*
56-65 years old	42,6	45,1*	45,1*	52,2*
By marriage				
Married	35,0	45,4*	45,2*	63,4*
Not married	32,9	40,9*	40,1*	48,9*
By education				
Lower then secondary	40,6	44,1*	43,4*	76,3*
Secondary	34,3	46,8*	45,9*	63,4*
Tertiary	11,8	37,6*	37,9*	47,8*
By professional groups				
Senior managers	72,1	54,1*		135,7*
Professionals	9,0	37,7*		40,8*
Technicians	36,3	50,0*		74,7*
Clerks and service workers	58,8	44,6*		70,4*
Skilled agricultural workers, graft workers	60,2	42,9*		65,4*
Operators	40,8	45,6*		41,6*
Elementary occupations	45,9	35,2*		53,3*
By industries				
Agriculture, hunting, forestry and fishing	85,5	50,0*		108,0*
Mining, quarrying and manufacturing	43,3	38,0*		47,5*
Electricity, gas and water supply	82,3	70,1*		100,0*
Construction	51,7	41,3*		104,8*
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	57,5	56,1*		75,2*
Transport, storage and communications	30,3	21,6*		86,8*
Financial intermediation, real estate, renting and business activities	38,2	22,5		67,7*
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	41,5	40,9*		44,3*
Other activities	40,8	43,5*		65,9*
By type of settlement				
City with more then 500 thousand people	39,1	44,7*	45,5*	77,9*
City with 100-500 thousand people	27,4	43,5*	43,3*	55,3*
Town with 20-100 thousand people	27,4	39,4*	39,2*	47,9*
Country side, village	52,0	41,2*	40,6*	58,9*

**<0,05*

Table 7.

Wage differences of temporary and permanent workers by socio-demographic factors, %

	Means differences	OLS	OLS with Heckman correction	PSM
Total	-12,1	-3,7*	-3,8*	-3,4
By gender				
men	-14,2	-3,1*	-3,1*	-2,8
women	-13,3	-3,6*	-3,7*	-2,6
By age				
15-25 years old	-5,9	-2,2	-2,5	2,4
26-35 years old	-14,6	-5,4*	-5,4*	-2,2
36-45 years old	-7,6	-2,1	-2,0	-4,2
46-55 years old	-11,0	-6,8*	-6,9*	-2,1
56-65 years old	-9,5	-2,3	-2,1	5,1
By marriage				
Married	-6,7	-3,4*	-3,5*	-4,3
Not married	-16,4	-4,7*	-4,9*	-6,7*
By education				
Lower then secondary	-12,1	-1,4	-1,6	-4,6
Secondary	-8,6	-5,6*	-5,8*	-4,2
Tertiary	3,8	-4,3	-4,3*	-0,7
By professional groups				
Senior managers	33,4	-2,0		37,0
Professionals	4,8	-0,6		0,9
Technicians	9,0	0,5		-7,2
Clerks and service workers	-9,8	-6,8*		-10,6*
Skilled agricultural workers, graft workers	-3,8	-5,5*		4,1
Operators	-12,0	-11,5*		-10,7
Elementary occupations	14,5	2,1		9,8
By industries				
Agriculture, hunting, forestry and fishing	36,2	24,6*		15,3
Mining, quarrying and manufacturing	-5,2	-10,2*		3,5
Electricity, gas and water supply	-22,1	-19,5*		-16,9
Construction	-14,5	-4,5		-1,1
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	-20,5	-6,9*		-12,0*
Transport, storage and communications	-17,1	-15,4*		-13,2
Financial intermediation, real estate, renting and business activities	-20,3	-13,8*		1,4
Public administration and defense; compulsory social security, education, health, social work, other community, social and personal service activities	15,3	6,1*		13,1*
Other activities	-10,7	-11,3*		-18,3*
By type of settlement				
City with more then 500 thousand people	-13,3	-9,5*	-9,5*	-3,6
City with 100-500 thousand people	-11,2	-5,8*	-5,9*	-8,5
Town with 20-100 thousand people	-15,7	-7,7*	-7,7*	-6,5
Country side, village	-12,8	2,6	2,4	-1,5

* <0,05