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The dynamics of moonlighting in Russia[1]

What is happening in the Russian informal economy?

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Abstract

This paper uses the Russian Longitudinal Monitoring Survey (RLMS) to analyse the dynamics of moonlighting by the working-age population. We find that moonlighting is transitory and that a desire to switch jobs expressed in the past is positively related to moonlighting in the present and to actual job changes in the future. We also find that workers who moonlighted as self-employed in the past represent 26.5 percent of the new self-employed. These results suggest that moonlighting in Russia can be seen as an effective incubator for setting up new self-employed businesses, thereby providing long-term benefits for the economy.

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1. Introduction

Existing studies suggest that the informal economy in Russia is large. For example, focusing on the relationship between output and aggregate electricity consumption, Johnson *et al.* (1997) argue that the informal economy in Russia amounted to 41.6 percent of total gross domestic product (GDP) in 1995. Using households' electricity rather than aggregate consumption, Lacko (2000) provides estimates similar to those in Johnson *et al*. (1997). Although it provides much lower estimates of the size of the informal economy, the Russian State Committee on Statistics (Goskomstat) admits that the Russian informal economy is large and growing fast. According to its estimates, the share of the informal economy in GDP increased from 13 percent in 1993 to 23 percent in 1996 (Goskomstat, 1999).

In this paper, we define the informal economy as those legal production activities which should be registered with the relevant authorities by employers or self-employed, but are not, as well as those for which no registration requirements actually exist (the production of goods and services aimed primarily at generating employment and income for the households concerned). Although in theory the nation's GDP should include value added produced in the informal economy, in practice it does not because of measurement problems. Consequently, the authorities are unable to impose taxes on informal economy activities.[2]

In transition economies in general, and more specifically in Russia, informal economy activities are largely made up of moonlighting activities (second job holdings), and most moonlighting activities take place in the informal economy. According to the VCIOM data, moonlighting represents about 70 percent of Russian households' money income from the informal economy.[3] Moreover, using the same dataset, Kim (2002) found that in November 1998, 78 percent of

[2] The Organisation for Economic Cooperation and Development (OECD, 2002) defines the non-observed economy as those activities which should be included in a nation's GDP, but are in fact not covered in the statistical surveys or administrative records used in the compilation of the National Accounts. The non-observed economy is made up of the following three components: the underground economy that produces legal goods and services but conceals production activities deliberately in order to avoid paying taxes or social security contributions; the illegal economy that produces or distributes goods and services whose sale or possession is forbidden by laws; the informal economy that operates usually at the household level and legally produces goods and services in order to generate employment and income for the households concerned. Our definition of the informal economy is rather broader than the OECD's definition: it includes both the underground and the informal economy categories defined by the OECD.

[3] The VCIOM data are based on a series of regular (mostly bi-monthly) cross-sectional household surveys conducted since 1991 by the All-Russian Centre for Public Opinion Research (VCIOM is its Russian acronym). For a detailed description of the VCIOM data, see Brainerd (1998).

all additional jobs in Russia were in the informal economy. In contrast, only 4.7 percent of total main jobs could be considered to be informal.[4]

Is the informal economy harmful for the economy as a whole? Some studies, mainly based on aggregate data, suggest that it has negative effects. First, being untaxed by nature, it prevents overall tax revenue from increasing as much as it would if the activities undertaken in the informal economy were conducted in the formal sector (Johnson *et al.*, 1997). This is a significant limitation in transition economies, where the government needs to generate revenue to improve the social security system and the quality of public services. Second, because of its low productivity and high transaction costs, the informal economy is likely to restrict economic growth (Loayza, 1996). Third, as argued by Lacko (2000), it is harmful for the private sector growth, which is regarded as an engine of economic growth in transition countries (Blanchard, 1997). Fourth, increases in income inequality in transition economies are found to be positively associated with informal economy activities (Rosser *et al.*, 2000, 2003).[5] All these arguments suggest that the Russian economy has been badly hit by its soaring informal economy activities: weak economic growth, a persistent public budget deficit, and rising income inequality can all be seen as direct consequences of these activities. Thus, policies aiming at shrinking the size of the informal economy are particularly desirable.

However, an important disadvantage of the use of aggregate data for the study of the informal economy is widely recognized. These data can only show the overall picture without proper differentiation between the various types of informal economy activities (Thomas, 1992; Levenson and Maloney, 1998; Schneider and Enste, 2000). Given that the motivations for undertaking informal economy activities, as well as their effects, are extremely different depending upon the various types of such activities, failing to allow for heterogeneity across different kinds of informal economy activities could lead to gross and possibly misleading simplification of their motives and effects.

Research using micro-level data such as household budget surveys, enterprise surveys and labour force surveys has attempted to analyse particular sectors of the informal economy in transition countries.[6] Most microdata-based studies of the Russian informal economy have used household budget surveys (Braithwaite,

[4] In Russia, a primary (main) job is usually seen as the place where a person keeps his/her labour book – a document that traces the 'official' work history and salaries. Primary jobs are also in many cases connected with benefits such as medical and pension rights. In this regard, it is reasonable to assume that secondary jobs (moonlighting activities) are generally 'unreported', and are, therefore, part of the informal economy.

[5] Rosser *et al*. (2000) use aggregate data on income inequality and the size of the informal economy in transition countries and analyse a simple correlation between the two variables. They find that the coefficient of correlation between the level of the Gini coefficient (used as a proxy for inequality) and the share of the informal economy in 1993–94 is 0.76 and conclude that the larger the informal economy, the higher the income inequality. This conclusion is confirmed in Rosser *et al*. (2003), where a multiple regression framework based on data from 18 transition economies is used.

[6] Feige and Ott (1999) describe the results of this type of research for various transition countries.

1994; Foley, 1997; Kolev, 1998; Clarke, 1999) to study moonlighting. The studies generally confirm one of the findings based on aggregate data: the informal economy in Russia is positively associated with income inequality.

The main contribution of our paper is that it uses microdata to focus on an important dimension of the Russian informal economy, namely dynamics. This aspect has been largely neglected by the existing studies on moonlighting, which generally only show snapshot pictures of moonlighting, without looking at its changing nature. Although Klopov (1996) put forward the idea that moonlighting has a positive role in smoothing labour market transitions, the hypothesis has never been tested empirically. Understanding the dynamics of informal economy activities is extremely important for the implications it has on the economy as a whole. As Asea (1996) and Foley (1997) suggest, what matters for the economy as a whole is whether informal economy activities can evolve into formal activities, after having allowed participants in the informal economy to sufficiently develop their human capital. If this is the case, then the informal economy may provide a dynamic outlet for entrepreneurial talent, which can lead to a better formal economy as part of a natural evolution (Asea, 1996; Levenson and Maloney, 1998). This positive effect of the informal economy may offset the negative effects mentioned previously.

In this paper, we will try to answer the following questions: Are there frequent bi-directional movements between the formal and informal economies in Russia? For what purposes do people use informal jobs? Are such purposes associated with the enhancement of human capital? Is there any evidence that previous participants in the informal economy subsequently become registered self-employed workers or entrepreneurs? We will attempt to answer these questions by focusing on moonlighting, which represents an important component of the informal economy in Russia. More specifically, we will assess the degree of persistence of moonlighting and evaluate the rate of conversion of secondary jobs into primary jobs by analysing the relationship amongst current moonlighting, past moonlighting, and the desire to switch jobs, as well as the relationship amongst actual job changes, past moonlighting, and the desire to switch jobs. We will use a nationally representative longitudinal survey of Russian citizens, the Russian Longitudinal Monitoring Survey (RLMS) for the years 1994 to 1998 and exploit its panel dimension.[7]

Our findings suggest that moonlighting is transitory: previous moonlighting is negatively associated with present moonlighting. Moreover, an intention to shift

[7] The RLMS is a panel household-based survey representative of the Russian Federation as a whole. See Section 4 for more details on this survey. We limit our analysis to the period 1994–98 because, as we will discuss in Section 5.4, this paper investigates among other things the extent to which moonlighting was used by workers to smooth the transition towards a main job as self-employed. Self-employment was in fact strongly discouraged until the late 1980s. With the transition towards a market economy, the share of self-employed out of total employment increased substantially as households took advantage of the sudden opening of these new but rather uncertain opportunities (Earle and Sakova, 1999, 2000). This process, however, slowed down with the stabilization of the country which followed the 1998 crisis.

jobs has a positive impact on moonlighting. This may suggest that people who want to switch jobs use moonlighting as an experiment, before making a full commitment to another job. We also find that previous moonlighting and an intention to switch jobs are positively associated with an actual job change. Finally, self-employment is a popular choice as a main activity for previous moonlighters.

The structure of the paper is as follows. In Section 2, we review existing studies on the determinants of moonlighting. In Section 3, we explain our methodological framework and describe our estimation strategy. In Section 4, we present our dataset and some descriptive statistics. Section 5 illustrates our empirical results about the dynamics of moonlighting of the Russian working-age population. Section 6 presents our conclusions.

2. Existing work on moonlighting

A fairly large number of papers have been written on multiple job holding in Western countries. One group of economists attempts to explain the motives for moonlighting by looking at differences in returns between jobs in the formal sector and jobs in the informal sector (Ehrlich, 1973; Shishko and Rostker, 1976; Conway and Kimmel, 1998). If the latter jobs are associated with higher risk but higher returns compared to the former, households will allocate some of their time to jobs in the informal sector in order to maximize returns given risk. Another group of economists emphasizes the importance of unemployment or, more generally, working-hour constraints as causes of moonlighting (Shishko and Rostker, 1976; Krishnan, 1990; Paxson and Sicherman, 1996; Ahn and Rica, 1997).[8]

Rose (1994) suggests that there are two major motives for moonlighting in transition countries: survival and enterprising.[9] In line with the first motive, Kim (2005) argues that in Romania, moonlighting is driven by low income and by the gap between the needed and the actual consumption levels. Similarly, Desai and Idson (2000) claim that wage arrears, which increase the incidence of poverty, are positively correlated with the probability of holding a secondary job in Russia. On the other hand, Braithwaite (1994), Foley (1997), and Kolev (1998) find that wage rates in secondary jobs in Russia are higher compared to those of primary jobs, and that Russian households, which are not necessarily poor in terms of their income from legal sources, tend to participate in the informal economy to further increase their income. On the basis of surveys of households conducted in four Russian

[8] For instance, Paxson and Sicherman (1996) argue that a full-time employee is subject to a working hour constraint if he/she would like to work more, for instance because of a difficulty in making ends meet with only the income from his/her primary job, but is not able to do it.

[9] Enterprising is intended as the exploitation of opportunities. According to this motive, people moonlight not out of necessity, but because they want to avoid paying taxes, or to use their human capital to exploit the higher returns available in the informal economy, and hence to increase their income.

cities, Clarke (1999) claims that there is no correlation between economic hardship and moonlighting. Similarly, using the RLMS, Foley (1997) and Kolev (1998) suggest that higher education is positively correlated with holding a second job, while the effect of primary job wages is either insignificant or very small in terms of its magnitude. In line with the enterprising motive, their finding indicates that relatively well-off workers hold additional jobs to further increase their income without paying taxes, thereby increasing income inequality.

Other researchers have investigated further reasons why households might hold multiple jobs. Guariglia and Kim (2004) find that moonlighting in Russia is a self-insurance mechanism that can be used as an alternative to precautionary saving to smooth consumption in the presence of fluctuating earnings. Commander and Tolstopiatenko (1997) claim that the extent of moonlighting is also affected by demand factors. A firm can choose whether to employ part-time informal labour subject to some probability of being caught, or full-time formal labour that pays payroll taxes. Their findings suggest that the allocation of workers across formal full-time and informal part-time jobs depends on the scale of the subsidy provided to formal sector workers.

3. Methodological framework

Let us denote by T the time available to an individual for work or leisure; by h_1 and h_2, the number of hours that he spends on his main and secondary jobs, respectively;[10] by w_1 and w_2, the hourly wages on his primary and secondary jobs, respectively; by NLY, his non-labour income; and by Y, his total income.[11] The individual's utility function can be written as follows:

$$U = U(T - h_1 - h_2, Y). \tag{1}$$

The individual maximizes his utility function subject to the following constraints:

$$Y = w_1 h_1 + w_2 h_2 + NLY, \text{ and} \tag{2}$$

$$h_1 \geq 0, h_2 \geq 0. \tag{3}$$

Because the budget constraint is satisfied with equality, the utility function can be expressed as:

[10] The word 'he' will be used hereafter to refer to both genders.

[11] Models similar to the one outlined in the succeeding discussion were used in Shishko and Rostker (1976), Krishnan (1990), and Conway and Kimmel (1998). In our empirical analysis, we deflate all nominal variables using price deflators based on September 1992 roubles.

$$U = U(T - h_1 - h_2,\ w_1h_1 + w_2h_2 + NLY). \tag{4}$$

We can define the marginal utility with respect to the secondary job working hours as follows:

$$\frac{dU}{dh_2} = mu_2(h_1,\ w_1,\ w_2,\ NLY). \tag{5}$$

The first-order conditions for utility maximization can be obtained by setting equation (5) equal to 0, and then solving it for the labour supply relative to secondary jobs.

If we let P_2 denote the decision to have a secondary job, the Kuhn–Tucker slackness conditions yield the following:

$$P_2 = \begin{cases} 0 \text{ if } h_2 = 0 \text{ or } \dfrac{dU}{dh_2} < 0 \\ 1 \text{ if } h_2 > 0 \text{ or } \dfrac{dU}{dh_2} \geq 0 \end{cases}. \tag{6}$$

Assuming that $\dfrac{dU}{dh_2}$ is a function of all the exogenous variables included in the model, the following estimable participation equation can be derived:

$$P_{2,it} = \beta X_{it} + \gamma \ln w_{1,it} + \delta \ln \hat{w}_{2,it} + \phi \ln h_{1,it} + v_i + v_t + e_{it} \tag{7}$$

where X_{it} is a vector of exogenous variables relative to individual i at time t, which includes demographic, educational, and regional variables, as well as some variables related to the individual's main job, such as wage arrears. $w_{1,it}$ is the wage rate earned by individual i at time t in his primary job, and $\hat{w}_{2,it}$ the corresponding wage rate earned in his secondary job, which, as described in Appendix 1, will be obtained from the estimation of a wage rate equation using the Heckman (1976) procedure.[12] The error term in equation (7) is made up of three components: a time-invariant individual-specific effect (v_i), which can be viewed as a collection of factors that are specific to the individual but are not included in X_{it}; a time-specific effect (v_t), which accounts for possible business cycle effects; and an idiosyncratic component (e_{it}).

In order to test whether moonlighting is persistent, we will add previous moonlighting to the right-hand side of equation (7). In addition, we will test whether moonlighting is positively associated with a desire to switch jobs by also including a variable relating to the desire for a job change expressed in the previous period as a regressor. We will, therefore, estimate the following extended equation:

[12] As pointed out in Moffitt (1999), the Heckman procedure is extremely sensitive to the specification and non-normality of the errors. We tested the robustness of our main results by estimating different versions of all our equations, which omit the predicted variables. The results were very similar to those presented in the paper and are not reported for brevity. They are, however, available from the authors upon request.

$$P_{2,it} = \beta X_{it} + \gamma \ln w_{1,it} + \delta \ln \hat{w}_{2,it} + \phi \ln h_{1,it} + \eta P_{2,i(t-1)} + \lambda d_{i(t-1)} + v_i + v_t + e_{it} \quad (8)$$

where $P_{2,i(t-1)}$ denotes moonlighting for individual i at time $t-1$, and $d_{i(t-1)}$ is a dummy variable indicating whether respondent i expressed a desire to switch jobs at time $t-1$.

Equation (8) will be estimated using a random-effects Probit model. As the same individual appears up to three times in the sample, the use of a random-effects estimator will allow us to take into account unobserved heterogeneity (which appears in the v_i component of the error term).[13] We will take into account the v_t component of the error term by including time dummies in all specifications.

However, if the initial observation of moonlighting is correlated with the individual-specific component of the error term, then the estimation of equation (8) using a random-effects Probit specification is likely to lead to biased estimates.[14] We will, therefore, also use an Instrumental Variable (IV) approach, where lagged moonlighting will be instrumented using lagged local unemployment rates, lagged broad categories of primary occupations (managerial, professional, non-manual skilled, manual skilled, unskilled), lagged perceived economic rank,[15] and time dummies. These instruments are intended to capture both demand- and supply-side aspects of moonlighting.

We will subsequently test whether job changes follow spells of moonlighting and the declared intention to switch jobs. Following Roy (1951) and Lee (1978), the decision to change jobs can be reached after comparing the relative earnings expected in a new job and an old job with a certain 'reservation' wage ratio. In particular, if we denote by jc a binary choice variable indicating whether the individual changes jobs or stays with his old job, by w_{n1}, the wage that would be received in a new main job if $jc = 1$, by w_{o1}, the wage that would be received in the old main job if $jc = 0$, and by w_1^*, the ratio between the two corresponding reservation wages, then an individual would change jobs ($jc = 1$) if the following equation holds:

[13] Because the sample of individuals that we use in this paper is randomly drawn from a large population, it is appropriate to use a random-effects model (Baltagi, 1995).

[14] More generally, if there is a correlation between the regressors and the individual-specific component of the error term, then one should treat the v_i component of the error term as fixed. However, in the Probit case, because we cannot subtract the group means from all the variables and then work on the transformed data, it would not be possible to obtain consistent estimates of the individual-specific component of the error term under this scenario as the number of v_i s increases with the sample size. This is known as the incidental parameters problem (see Neyman and Scott, 1948). To check the robustness of our main random-effects Probit specification, we will use an alternative estimator, the conditional fixed-effects Logit estimator (Chamberlain, 1980), which is a conditional maximum likelihood estimator, where the conditioning is carried out with respect to a minimal sufficient statistic in order to eliminate the unobservable v_i s.

[15] The perceived economic rank variable is based on the following question asked in the RLMS: '*Imagine a 9-step ladder where on the bottom, the first step, stand the poorest people, and on the highest step, the 9th, stand the rich. On which step are you today?*'

$$\ln\left(\frac{w_{n1}}{w_{o1}}\right) > w_1^*. \tag{9}$$

Otherwise, the individual would choose to stay with the old job ($jc = 0$).

w_1^* is not directly observable. We will assume that it is a linear function of a set of individual characteristics, Z. Substituting w_1^* into (9) and rearranging yields the following estimable equation:

$$jc_{it} = \alpha' \ln\left(\frac{\hat{w}_{n1,it}}{\hat{w}_{o1,it}}\right) + \beta' Z_{it} + \eta' P_{2,i(t-1)} + \delta' d_{i(t-1)} + v_i + v_t + e_{it} \tag{10}$$

where the first element will be estimated using the Heckman (1976) procedure, and the last three elements represent the composite error term.

Finally, we will analyse which type of main job an individual chooses to hold after a period of moonlighting. Main jobs are categorized as self-employed, paid, or entrepreneurial jobs. The decision to acquire a self-employed main job is defined by the binary choice variable, se_{it}, which is modelled as follows:

$$se_{it} = \alpha'' \ln(\hat{w}_{s1,it}) + \beta'' K_{it} + \eta'' P_{2,i(t-1)} + v_i + v_t + e_{it} \tag{11}$$

$\hat{w}_{s1,it}$ is the wage that individual i would get at time t in self-employment: it will be estimated using the Heckman (1976) procedure. K_{it} is a set of characteristics of individual i at time t. The choice of having a paid job and engaging in entrepreneurial activities as a main occupation will be estimated in a similar way. Both equations (10) and (11) will be estimated using a random-effects probit model.

4. Data and descriptive statistics

The data used in this paper consist of rounds 5 to 8 of the Russian Longitudinal Monitoring Survey (RLMS), corresponding to household and individual interviews held in 1994, 1995, 1996 and 1998, respectively. The survey is based on a nationally representative sample of several thousands of households across the Russian Federation.[16] The RLMS contains detailed information on households' income and

[16] The RLMS is managed by the University of North Carolina at Chapel Hill Population Centre, in collaboration with five agencies which include Paragon Research and the Russian Institute of Sociology. The surveys from round 5 to round 8 took place in the following periods: November 1994–January 1995 for round 5, October–December 1995 for round 6, October–December 1996 for round 7, and October 1998–January 1999 for round 8. In round 5, a total of 3,973 households and 8,490 adult individuals (aged 18 or more) were interviewed. The corresponding numbers in 1995, 1996, and 1998 were 3,781 and 8,059; 3,750 and 7,946; and 3,831 and 8,179. Detailed information on the structure of the survey, the questionnaires, and the data can be found at the site http://www.cpc.unc.edu/rlms, from which the data can be downloaded. Also see Gregory *et al.* (1999) for a comprehensive description of the dataset.

expenditure, as well as on individuals' demographic characteristics, education, and labour force activities, including those related to secondary jobs. We restrict our sample to adult individuals who have a main job.[17] Given the fact that retirement ages for Russian men and women are 60 and 55 years, respectively, we also restrict our sample to individuals who are aged between 18 and 58 years for men, and between 18 and 54 years for women.[18]

We classify an individual as holding multiple jobs if he answered 'yes' to either of the following questions:[19]

'Tell me please, do you have some other kind of work?'[20] and

'Tell me please, in the last 30 days did you engage in some additional kind of work for which you got paid? Maybe you sewed someone a dress, gave someone a ride in a car, assisted someone with apartment or car repairs, purchased and delivered food, looked after a sick person, or did something else that you were paid for?'

The first question refers to a paid secondary job while the second refers to the so-called individual economic activities, which can be viewed as self-employment

[17] Individuals who have a main job are those who did not answer 'I do not work' to the survey question: *'Tell me please, do you now work, are you on paid or unpaid leave, or do you not work?'*

[18] We apply this specific restriction because we intend to avoid complications caused by moonlighting close to retirement ages. Our results did not change if we considered a sample of men aged 18 to 60 years old and women aged 18 to 55 years old. Note that by only considering workers far enough from retirement age, only 17 men and 10 women were excluded.

[19] One can distinguish moonlighters from multiple job holders: the former refer to people who hold a secondary job while working on a full-time basis in their main job. The latter refer to workers who hold several part-time jobs at the same time. According to our dataset, 78 percent of secondary job holders work more than 40 hours per week in their main job. This indicates that participants in the Russian secondary job market are, in general, moonlighters (that is full-time workers rather than part-timers in their main job). We included a dummy variable for lagged moonlighting together with one for lagged multiple job holding in our regression for present moonlighting. The coefficients on both dummy variables were negative and precisely determined. Moreover, the difference between the coefficients on the two variables was not statistically significant ($\chi^2(1) = 0.56$, *P*-value 0.45). In the remaining part of this paper, we therefore use the terms moonlighting and multiple job holding interchangeably.

[20] This first question was only asked to those respondents who, earlier in the questionnaire, reported having a main job. It was followed by other questions about the type of this secondary occupation and the characteristics of the enterprise/organization at which it was held, in terms of number of employees, ownership structure, and so on. These additional questions indicate that the secondary jobs referred to are more formal compared to the Individual Economic Activities (IEAs) to which the next question refers. Also note that, in our sample, these secondary jobs represent about 37 percent of the additional jobs held by Russian employees, whereas the IEAs represent the remaining 63 percent. The VCIOM data show that some individuals hold more than one secondary job: in November 1997, 14 percent and 10 percent of moonlighters held two second jobs and more than two second jobs, respectively. Unfortunately, the RLMS does not provide accurate information on the number of second jobs held by moonlighters.

activities.[21] In order to be classified as holding multiple jobs, an individual also needs to state that he worked a positive number of hours in the last 30 days on his additional job, and that he received a positive wage payment on that job.[22]

Although the second question on second-job holding seems to refer to unskilled types of occupations, the Russian labour market for moonlighting is not dominated by low-skilled and less-educated workers. For example, according to VCIOM data, 68 percent of the moonlighters declared that the qualifications required for their additional job were higher or equal to those required in their main job.

Table 1 reports variable means over the pooled sample for working-age population, together with standard errors and the ranges of the variables. Compared to non-moonlighters, multiple-job holders are slightly younger, more educated, and have a somewhat shorter primary job tenure. Monthly working hours of moonlighters in their main job are slightly lower than those of non-moonlighters, and real wage rates of moonlighters in their primary jobs are very similar to those of non-moonlighters. However, the moonlighters' real wage rates in the secondary jobs are more than four times higher than the wage rates in their primary jobs.[23] Regional differences are also noticeable: moonlighting is particularly high in

[21] The VCIOM dataset provides detailed information on the types of second jobs, which can be associated with self-employment (IEAs). According to the VCIOM, from 1994 to 1999, the most popular IEA was to provide consumer services such as repair work (this activity represented 28 percent of the total of IEA-type second jobs), followed by the sale of goods including shuttle trading (22 percent), professional work (translating, computer programming, etc., 16 percent), personal services (baby-sitting, nursing, cooking etc., 12 percent), private lessons (9 percent), business mediation (6 percent), production of consumer goods (5 percent), and work in own shop, café, and kiosks (3 percent). The RLMS provides details for paid second jobs. According to this dataset, the highest share of paid second jobs can be found in the occupational group of professionals: 26 percent of the individuals holding paid second jobs work as professionals on their second job. This is followed by the occupational group of plant and machine operators and assemblers (22 percent), unskilled occupations (19 percent), technical and associated professionals (14 percent), and service and market workers (13 percent).

[22] For self-employed workers, wages are meant as profits. Also note that the questions relative to IEAs and paid secondary jobs are not defined using the same time frame. In particular, the question in the survey relative to the latter variable asks whether a worker holds an additional paid job now, while the question regarding IEAs refers to a second job held *during the last 30 days*. This is why in our analysis, we defined a moonlighter as an individual who stated that he held an additional job (either paid or IEA-type), and who received positive income and worked positive hours on that job *during the last month*. Therefore, an individual who only started his last job now would not be considered as a moonlighter, as he would not have received a positive income from that job, nor worked a positive number of hours on that job in the last month.

[23] This comparison is based on money wages. Income in kind such as free or subsidized housing, health care, and nursery facilities are widely available for main jobs. If those fringe benefits were included, the difference between income from main jobs and secondary jobs would obviously become smaller. Friebel and Guriev (1999) analyse the negative effect of in-kind payments from enterprises on job mobility. Higher risk attached to secondary jobs and opportunities for using equipment available on main jobs can also explain why workers hold main jobs in spite of their far lower wage rates.

Table 1. Means of variables

Whether the individual holds an additional job	No (1)			Yes (2)		
	Mean	Standard deviation	Min/max	Mean	Standard deviation	Min/max
Number of observations	13,866			1,648		
Demographic characteristics						
Gender (woman = 0, man = 1)	0.49	0.50	0/1	0.62	0.49	0/1
Age	37.75	9.76	18/58	36.89	9.29	18/58
Marital status (single = 0; married = 1)	0.72	0.45	0/1	0.68	0.47	0/1
Number of children aged 0–6	0.34	0.59	0/5	0.36	0.60	0/3
Number of working-age males	1.13	0.58	0/4	1.09	0.57	0/3
Education						
Up to high school	0.81	0.39	0/1	0.83	0.37	0/1
Vocational training	0.26	0.44	0/1	0.26	0.44	0/1
Technical & medical school	0.28	0.45	0/1	0.28	0.45	0/1
University education	0.19	0.39	0/1	0.25	0.43	0/1
Postgraduate education	0.01	0.09	0/1	0.03	0.16	0/1
Main jobs						
Monthly real wages (> 0)	3,481	4,564	15.6/123,419	3,516	4,023	50.3/36,159
Working hours per month (> 0)	149.56	74.8	0/540	145.43	77.0	0/540
Wage rate (> 0)	24.62	49.45	1.0/2,678	25.79	42.27	0.1/790
Job tenure (> 0)	6.94	7.92	0/43	6.44	7.67	0/37
Wage arrears (0 = no; 1 = yes)	0.48	0.50	0/1	0.47	0.50	0/1

Table 1. (cont) Means of variables

Whether the individual holds an additional job	No (1)			Yes (2)		
	Mean	Standard deviation	Min/max	Mean	Standard deviation	Min/max
Additional jobs						
Monthly real wage (> 0)				2,139.99	3,563	15/50,272
Working hours per month (> 0)				44.80	63.31	0/390
Wage rate (> 0)				119.74	312.43	0.68/7,540
Other income (real) (> 0)	1,938.71	4,331.50	0/83,534	1,615.08	5,006	0/82,781
Settlement type						
Town	0.71	0.45	0/1	0.80	0.40	0/1
Rural non-agricultural	0.07	0.25	0/1	0.05	0.21	0/1
Rural agricultural	0.23	0.42	0/1	0.15	0.36	0/1
Regions						
Moscow, St. Petersburg	0.08	0.28	0/1	0.15	0.36	0/1
Northern and North Western	0.08	0.26	0/1	0.08	0.27	0/1
Central and Central Black-Earth	0.18	0.39	0/1	0.16	0.37	0/1
Volga-Vyatski and Volga Basin	0.18	0.39	0/1	0.14	0.35	0/1
North Caucasian	0.12	0.32	0/1	0.12	0.32	0/1
Ural	0.16	0.37	0/1	0.12	0.34	0/1
Western Siberian	0.10	0.30	0/1	0.09	0.28	0/1
Eastern Siberian and Far-Eastern	0.10	0.30	0/1	0.13	0.33	0/1

Table 1. (concluded) Means of variables

Whether the individual holds an additional job	No (1)			Yes (2)		
	Mean	Standard deviation	Min/max	Mean	Standard deviation	Min/max
Main job occupations						
Legislators, senior managers, officials	0.04	0.19	0/1	0.03	0.18	0/1
Professionals	0.16	0.37	0/1	0.23	0.42	0/1
Technicians and assoc. professionals	0.16	0.37	0/1	0.14	0.35	0/1
Clerks	0.07	0.25	0/1	0.04	0.20	0/1
Service workers, market workers	0.08	0.28	0/1	0.06	0.24	0/1
Skilled agriculture & fishery workers	0.01	0.07	0/1	0.06	0.10	0/1
Craft and related trades	0.17	0.37	0/1	0.22	0.41	0/1
Plant & machine operators assemblers	0.19	0.39	0/1	0.17	0.38	0/1
Unskilled occupations	0.12	0.32	0/1	0.09	0.29	0/1

***Note*:** The educational, occupational, and regional variables are dummy variables coded as 0 or 1. For instance, the variable 'up to high school' is coded as 1 if the individual's highest educational qualification is high school or anything lower, and as 0, otherwise. The minimum of some variables was rounded to zero when it was positive but very small in magnitude.
***Source*:** RLMS, rounds 5 to 8.

metropolitan cities. As for main occupations, professionals, as well as crafts and trade people, are highly active in holding multiple jobs.[24]

5. The dynamics of moonlighting: Empirical evidence

5.1 Is moonlighting persistent or transitory?

Given that moonlighting is highly associated with informal economy activities, an important question that arises is whether it is persistent or transitory. Persistent moonlighting suggests a limited rate of conversion of secondary jobs into primary ones. Although their secondary job may provide a higher wage rate, people may be reluctant to transform it into their primary occupation, because of the risk attached to it. Only if they become sufficiently confident about their secondary job will they transform it into their main occupation. Moreover, fringe benefits and wage arrears associated with their main job may deter workers from leaving it. Some moonlighting jobs may not be convertible to a main job because the demand for the good or service produced in these jobs is not sufficient to support full-time work, or because these are seasonal secondary jobs. In such cases, individuals will continue to moonlight, thus moonlighting could be persistent. Finally, moonlighters may be reluctant to convert their secondary job into their main job in order to continue to avoid taxes on the income from their secondary job.

Table 2 presents a mobility matrix of moonlighting. The table shows that multiple-job holding in Russia is not growing. The share of multiple-job holders as a proportion of the working-age adult population was 12.1 percent in 1994. It decreased to 10.2 percent in 1995 and stabilized at around 10 percent in 1996–98.[25] This stable share can be caused either by a frequent bi-directional movement between single-job holding and multiple-job holding, or by persistent moonlighting activities by certain groups of individuals. The table supports the former hypothesis, suggesting considerable mobility between single-job and multiple-job holding. For example, new moonlighters, defined as those who held a secondary job for the first time in the current year, amounted to 57 percent of total moonlighters, in 1995, before declining to 38 percent in 1998.

The transitory nature of moonlighting can be more clearly shown by looking at the conditional probability of continued moonlighting in the present period given moonlighting in the previous round: this probability is fairly stable over the period considered (37–38 percent). On the other hand, about 60 percent of the individuals who engaged in moonlighting in the previous period return to holding only one

[24] We used Hotelling's (1931) *t*-squared generalized means tests to see if the differences in the means of the variables discussed in the text were statistically significant. All differences referred to were significant. We did not present the tests for brevity.

[25] The VCIOM data also suggest that there is little evidence of a significant increase in the number of multiple job holders in the period 1994–99. According to the data, 14.2 percent of the adult population held a second job from 1994 to 1999, and moonlighting amounted to 11 percent of the adult population in January 1999.

Table 2. Transition probabilities of moonlighting

	1994	1995	1996	1998
Percentage of multiple job holders	12.1 (N = 4,188)	10.2 (N = 3,926)	10.1 (N = 3,745)	10.0 (N = 3,655)
Number of multiple job holders	505	399	377	367
Number of new multiple job holders ($m_t = 1/m_{t-1} = 0$)		229	186	138
Percentage of new moonlighters out of total		57.4	49.3	37.6
Percentage of moonlighting in the present period given moonlighting in the previous period ($m_t = 1/m_{t-1} = 1$)		37.1 (N = 275)	37.3 (N = 225)	38.1 (N = 181)
Percentage of no moonlighting in the present period given moonlighting in the previous period ($m_t = 0/m_{t-1} = 1$)		62.9 (N = 275)	62.7 (N = 225)	61.9 (N = 181)
Percentage of moonlighting in the present period given moonlighting in the previous period and two periods before ($m_t = 1/m_{t-1} = 1$ and $m_{t-2} = 1$)			51.9 (N = 81)	50.1 (N = 69)
Percentage of no moonlighting in the present period given moonlighting in the previous period and two periods before ($m_t = 0/m_{t-1} = 1$ and $m_{t-2} = 1$)			48.2 (N = 81)	49.3 (N = 69)
Percentage of moonlighting in the present period given moonlighting in the previous period, and two and three periods before ($m_t = 1/m_{t-1} = 1$ and $m_{t-2} = 1$ and $m_{t-3} = 1$)				68.9 (N = 32)
Percentage of no moonlighting in the present period given moonlighting in the previous period, and two and three periods before ($m_t = 0/m_{t-1} = 1$ and $m_{t-2} = 1$ and $m_{t-3} = 1$)				31.1 (N = 32)

***Note*:** The numbers in this table represent either percentages or numbers of individuals. The letter 'N' stands for the number of individuals.
***Source*:** RLMS, rounds 5 to 8.

job in the present.[26] Although these results do not control for other factors that can influence moonlighting, they suggest that moonlighting is not persistent in Russia. The table also shows that moonlighting becomes more persistent as the years of moonlighting increase. The probability of holding multiple jobs after having experienced moonlighting for the previous two and three rounds increases to 50–52 percent and 69 percent, respectively.

Although the analysis of the transition probabilities presented in Table 2 suggests the transitory nature of moonlighting, the result is only indicative because no controls are included. As we discussed in Section 3, we now estimate the following model:

$$P_{2,it} = \beta X_{it} + \gamma \ln w_{1,it} + \delta \ln \hat{w}_{2,it} + \phi \ln h_{1,it} + \eta P_{2,i(t-1)} + v_i + v_t + e_{it} \qquad (12)$$

where i indexes individuals and t indexes time,[27] $P_{2,it}$ represents moonlighting in the current round, and $P_{2,i(t-1)}$ is moonlighting in the previous round. X_{it} is a vector of socio-economic variables, which includes demographic, educational, and regional variables, $w_{1,it}$ is the wage rate in the main job, $\hat{w}_{2,it}$ is the predicted wage rate in the secondary job,[28] $h_{1,it}$ represents working hours on the main job, v_i, v_t and e_{it} make up the composite error terms.

Our primary concern is to investigate the extent to which previous moonlighting is associated with present moonlighting. For this purpose, we restrict our sample to respondents who moonlighted at least once before the present period. To give some indication of the duration of moonlighting, we also include in our specification two new dummy variables, one indicating whether the individual moonlighted in the previous two rounds, and another indicating whether he moonlighted in the previous three rounds. We estimate our equation for the probability of moonlighting at time t using a random-effects probit specification.

The results, reported in column 1 of Table 3, show that the coefficient on the estimated secondary job wage rate is positive and highly significant, suggesting that higher wages are positively correlated with moonlighting. On the other hand, the coefficients associated with the primary job wage and wage arrears are not precisely determined.[29] The coefficient on the variable indicating whether the

[26] We tested for the equality between these two probabilities. The test statistic was $t = 8.98$ and the equality was consequently rejected.

[27] t refers to the rounds of the RLMS used in estimation. The available rounds are 5 to 8, but round 5 is lost due to the presence of a lagged variable on the right-hand side of the estimating equation. Lagged variables refer to variables in the previous round. Time dummies are included in all regressions.

[28] The predicted secondary job wage rate is obtained using the Heckman (1976) procedure, which corrects for self-selection bias. See Appendix 1 for details on the calculation of this predicted wage.

[29] These results are different from those obtained by Desai and Idson (2000). This is because the sample that we use in our study when we analyse the determinants of moonlighting is different from the sample that they use. Because we focus on the dynamics of moonlighting while Desai and Idson (2000) investigate the determinants of moonlighting in a static context, we have to restrict our sample to respondents who moonlighted at least once before the present period. In contrast, Desai and Idson (2000) use a larger sample regardless of moonlighting experience. Furthermore, we use a random-effects probit specification while Desai and Idson (2000) and other researchers generally use pooled cross-section regressions.

Table 3. Effects of previous moonlighting and a desire for a job switch on present moonlighting

	Participation Equation (1)		Participation Equation (2)		Participation Equation (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Demographic characteristics						
Gender (woman = 0, man = 1)	–1.684	*–10.30*	–1.622	*–11.67*	–1.579	*–10.87*
Age	–0.386	*–7.16*	–0.394	*–8.53*	–0.364	*–7.52*
Age squared/1,000	0.005	*7.57*	0.005	*8.89*	0.005	*7.99*
Marital status (single = 0; married = 1)	–0.078	*–0.68*	–0.042	*–0.42*	–0.087	*–0.82*
Household characteristics						
Number of children aged 0–6	–0.059	*–0.77*	–0.053	*–0.80*	–0.044	*–0.63*
Number of working-age males	0.027	*0.32*	–0.016	*–0.21*	0.026	*0.33*
Education						
High school	Omitted category		Omitted category		Omitted category	
Vocational training	0.037	*0.32*	0.030	*0.30*	0.025	*0.24*
Technical & medical school	–0.376	*–3.45*	–0.356	*–3.74*	–0.372	*–3.76*
University education	–0.160	*–1.17*	–0.190	*–1.58*	–0.139	*–1.10*
Postgraduate education	–0.203	*–0.59*	–0.357	*–1.15*	–0.305	*–0.94*
Settlement type						
Town	–0.684	*–4.86*	–0.680	*–5.54*	–0.651	*–5.11*
Non-agricultural rural	–0.274	*–1.19*	–0.311	*–1.54*	–0.278	*–1.35*
Agricultural rural	Omitted category		Omitted category		Omitted category	
Regions						
Moscow, St. Petersburg	–1.324	*–5.94*	–0.956	*–4.09*	–1.180	*–5.91*
Northern and North Western	Omitted category		Omitted category		Omitted category	
Central and Central Black-Earth	–0.116	*–0.59*	–0.138	*–0.81*	–0.038	*–0.21*

Table 3. (cont) Effects of previous moonlighting and a desire for a job switch on present moonlighting

	Participation Equation (1)		Participation Equation (2)		Participation Equation (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Volga-Vyatski and Volga Basin	0.329	*1.67*	0.233	*1.33*	0.348	*1.93*
North Caucasian	–0.571	*–2.69*	–0.519	*–2.79*	–0.516	*–2.67*
Ural	0.142	*0.69*	0.111	*0.61*	0.208	*1.10*
Western Siberian	–0.123	*–0.58*	–0.181	*–0.96*	0.004	*0.02*
Eastern Siberian and Far-Eastern	–0.378	*–1.83*	–0.272	*–1.46*	–0.322	*–1.71*
Main job occupations						
Legislators, senior managers, officials	–0.569	*–1.92*	–0.464	*–1.72*	–0.516	*–1.90*
Professionals	–0.852	*–3.83*	–0.640	*–3.17*	–0.806	*–3.98*
Technicians and assoc. professionals	–0.127	*–0.63*	0.169	*0.09*	–0.131	*–0.70*
Clerks	Omitted category		Omitted category		Omitted category	
Service workers, market workers	–0.648	*–2.53*	–0.630	*–2.80*	–0.633	*–2.71*
Skilled agriculture & fishery workers	2.288	*3.21*	2.472	*3.70*	2.392	*3.38*
Craft and related trades	–0.796	*–3.66*	–0.607	*–3.03*	–0.769	*–3.89*
Plant & machine operators assemblers	–0.531	*–2.49*	–0.324	*–1.62*	–0.514	*–2.64*
Unskilled occupations	–0.035	*–0.15*	0.144	*0.72*	–0.036	*–0.17*
Failed to respond	0.122	*0.13*	0.112	*0.15*	0.271	*0.32*
Main job characteristics						
Wage/100	–0.016	*–1.33*	–0.014	*–1.29*	–0.014	*–1.25*
Working hours/100	–0.119	*–2.21*	–0.130	*–2.68*	–0.114	*–2.27*
Tenure	0.021	*3.47*	0.020	*3.59*	0.021	*3.66*
Other income	–0.009	*–0.62*	–0.008	*–0.56*	–0.012	*–0.83*

Table 3. (concluded) Effects of previous moonlighting and a desire for a job switch on present moonlighting

	Participation Equation (1)		Participation Equation (2)		Participation Equation (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Estimated secondary job wage rate	1.694	*13.97*	1.642	*16.57*	1.604	*15.52*
Moonlighted in the previous round	–0.459	*–4.62*	–0.672	*–2.48*	–0.409	*–4.87*
Moonlighted in the two previous rounds	0.640	*3.22*	0.433	*2.44*	0.703	*3.78*
Moonlighted in the three previous rounds	1.160	*3.87*	1.084	*3.93*	1.239	*4.43*
Wage arrears	0.108	*1.16*	0.062	*0.74*	0.080	*0.92*
Intention for a job shift in the previous period					0.165	*2.03*
Time dummies						
Round 6	–1.905	*–9.13*	–1.762	*–9.41*	–1.804	*–9.39*
Round 7	–0.265	*–2.18*	–0.234	*–2.06*	–0.265	*–2.26*
Round 8	Omitted category		Omitted category		Omitted category	
Wald test $\chi^2(39/40)$	268.50	$P > \chi^2 = 0.0$	370.56	$P > \chi^2 = 0.0$	352.21	$P > \chi^2 = 0.0$
Number of observations	1,401		1,455		1,359	

***Notes*:** Estimation results are obtained using a random-effects probit procedure with time dummies in columns 1 and 3; and with an Instrumental Variable (IV) random-effects probit approach in column 2, where the previous moonlighting variable is instrumented using lagged regional unemployment rates, lagged primary job categories (managerial, professional, non-manual skilled, manual skilled, unskilled), and lagged perceived economic rank.
***Source*:** RLMS, rounds 6 to 8.

individual experienced moonlighting in the previous period is precisely determined and its coefficient is negative. This implies that previous moonlighting is negatively associated with the probability of holding multiple jobs in the present period. In other words, in Russia, moonlighting is transitory rather than persistent.[30] In contrast, the positive and significant coefficients on the variables indicating whether the individual moonlighted in the two and three previous rounds suggest that the longer the period in which the individual engaged in moonlighting, the less likely he is to return to single-job holding.[31]

One problem with these estimates is that they could be biased if the initial observation of moonlighting is correlated with the individual-specific component of the error term. In column 2 of Table 3, we use an Instrumental Variable (IV) approach, which helps us to control for this problem. As we discussed previously, we instrument the previous moonlighting variable using lagged regional unemployment rates, lagged primary job categories, and lagged perceived economic rank. The coefficient on previous moonlighting is once more negative and precisely determined. To check for instrument validity, we performed a test as in Nickell and Nicolitsas (1999): we regressed our previous moonlighting variable on all the exogenous variables plus all the remaining instruments, using a random-effects specification. We then tested for the joint significance of the latter instruments, using a Wald test. The statistic suggests that the instruments are indeed valid [$\chi^2(13) = 105.81$, P-value: 0.0].[32]

We check the robustness of our results in three ways. First, one could argue that the inclusion of a generated regressor such as the predicted second job wage in our moonlighting regression might result in biased standard errors. In addition, given the fact that the RLMS is based on a stratified sampling procedure starting from the primary sampling units (PSUs), clustering can also have an impact on the standard errors.[33] The first column of Table A3 in Appendix 2 presents the estimation results

[30] Note that spells of moonlighting that are completed quickly have a lower probability of still being in existence when the stock of persons currently moonlighting is observed, whereas longer spells have a higher probability of appearing in the sample. This problem is known as 'length-biased sampling' (Kiefer, 1988). The possibility of a return of a moonlighter to holding one job between the surveys actually reinforces our finding that moonlighting is transitory in Russia.

[31] It has to be noted, however, that very few people moonlighted in the two or three previous rounds. Table 2 shows that in 1998, there were 367 moonlighters, 69 of which had also moonlighted in the previous round 35 of which had moonlighted in the previous two rounds; and only 22 of which had moonlighted in the previous three rounds.

[32] Although this joint significance test only tells us that the instruments are good predictors of lagged moonlighting, we also think that they can be reasonably excluded from the present moonlighting equation, as they are lagged one period. It makes sense to assume that lagged unemployment rates, lagged primary job categories, and lagged economic rank perceived by the individual are strongly related with past moonlighting, but not as strongly with present moonlighting. Dynan (2001) used a similar approach to estimate a consumption growth equation with lagged consumption growth as a regressor.

[33] For a description of the multilevel probability sample design of the RLMS, see Gregory *et al.* (1999). For an analysis of the impact of clustering on standard errors, see Deaton (1997).

of our moonlighting equation once the generated variable bias and clustering are taken into account.[34]

Second, we check whether the fact that we only use individuals who have positive income and have worked for positive hours in the last 30 days generates a sample-selection problem. We therefore use a larger sample of the Russian adult population that comprises both working individuals and individuals on leave. Note that non-working individuals cannot be included in the sample because the question on additional paid jobs is only asked to individuals who have a working status.[35] The result of the estimation of equation (12) based on the larger sample is presented in the second column of Table A3.[36]

Lastly, following Chamberlain (1980), a conditional fixed-effects logit model is used as an alternative method of estimation. An advantage of this method of estimation is that it allows the regressors and the individual-specific component of the error term to be correlated. A disadvantage is that all time invariant variables have to be dropped from the estimation. In addition, all the individuals for whom the dependent variable is either always 0 or always 1 are dropped from the sample used in estimation. Finally, the precision of some variables whose variance is negligible across time is compromised. Column 3 of Table A3 shows the results using this alternative estimation method.

The three columns of Table A3 show that in all cases the coefficient on the previous moonlighting variable is negative and statistically significant. This suggests that correcting the standard errors for clustering or generated variable bias, using an extended sample, and using a different estimation method do not affect our main results.

Given this transitory nature of moonlighting, three further interesting questions arise. Is moonlighting associated with the desire for a job shift? Do job changes effectively occur after moonlighting and a declared intention to switch jobs? What primary occupation do previous moonlighters choose? We analyse these issues in turn.

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[34] In order to take clustering and the generated regressor bias into account, the following procedure was used: first, a random sample of similar size to the original sample was drawn with replacement from the observed sample; second, the relevant regression was estimated on this new sample using the Stata 'svyprobit' command, with the option psu, in order to take clustering into account; third, the procedure was replicated 1,000 times and bootstrapped standard errors were calculated from the distribution of each of the 1,000 estimated parameters obtained in these replications. Note that bootstrapping the standard errors is specifically aimed at correcting for the generated variable bias.

[35] Individuals subject to wage arrears who were not paid their wage at all during the month prior to interview are also excluded from the sample used in estimation, as their primary job wage is recorded as missing. According to the VCIOM, however, in 1997 only 11 percent of the workers who suffered from wage arrears in the previous month did not receive any wage at all. The majority of workers subject to wage arrears received partial wages and are therefore included in our sample.

[36] The unpaid leave variable which we included in this specification is insignificant. This can be seen as further evidence that moonlighting is not associated with hardship faced by the individuals.

5.2 Is moonlighting associated with the desire for a job shift?

We initially test whether an individual's intention to switch jobs has an impact on his probability to hold an additional job. The intention of making a job switch is inferred from the answer given to the following question:

'*Would you like to find different work?*'

The responses are coded as 1 if the respondent answers 'yes' and 0 if the respondent answers 'no'. We use the first lag of the variable quantifying the intention to make a job switch, along with all other variables used in the regressions reported in the first two columns of Table 3 as independent variables in a random-effects probit model for the probability of moonlighting in the present. We use the lagged intention to make a job change to explain current period moonlighting because it is reasonable to assume that people take some time before they start to moonlight with a view to implementing their intention to switch jobs.[37] In addition, the use of the first lag of the variable relative to the individual's intention to change jobs avoids possible endogeneity biases that may arise when using the contemporaneous variable.

The results are presented in column 3 of Table 3. The coefficient associated with the variable indicating the intention of a job switch proves to be positive and statistically significant.[38] A possible explanation for this finding could be that moonlighting in Russia is used as a mechanism that enables workers to experiment with a different job, instead of immediately shifting to it. Moonlighting can, in fact, reduce the risk attached to a job change in two ways. First, it can make a reversal less costly when the prospects of the job tried turn out not to be bright. In such a way, moonlighting can help those individuals for whom changing jobs at once would be too costly and risky, to start a new job or business more smoothly. Second, it provides a period for obtaining the necessary skills and information. If

[37] Note that a lag of one year does not necessarily mean that the respondent starts moonlighting after one full year: moonlighting can begin at any time between the previous round and the present round, but it is just recorded in the present round survey. We checked whether our results are sensitive to which specific lag is used on the variable relative to the desire of changing jobs in two ways. First, we used the variable of an intention to change jobs lagged twice (instead of the same variable lagged once) as an explanatory variable in our regression for present moonlighting. This allows for a longer time interval between the intention and implementation. The coefficient and the *t*-value on the twice-lagged variable were 0.167 and 2.73, respectively. Second, we instrumented the variable relative to the intention for a job switch using regional unemployment rates, job categories, and perceived economic ranks and used the first lag of the predicted variable as a regressor. The coefficient on this predicted variable was still precisely determined (coefficient: 0.247, *t*-value: 3.05).

[38] As before, we checked the robustness of this result by using the extended sample and by taking clustering and the generated regressor bias into account. We found that the coefficient on the variable relative to the individual's intention to switch jobs was in both cases precisely determined and positive. We did not report these results for brevity, but they are available upon request.

this interpretation were true, then moonlighting could be viewed as a 'human capital-enhancing activity'.[39]

5.3 Does a job change follow an intention to switch jobs and/or previous moonlighting?

One may ask whether a declared intention to change jobs effectively ends in a job switch, and whether previous moonlighting contributes to the switch. We estimate equation (10) to test whether the prior intention to switch jobs and previous moonlighting have a statistically significant effect on actual job changes. Problematically, rounds 5 to 6 of the RLMS do not provide direct information on whether the respondent changed jobs. Sabirianova (2002) attempted to trace occupational mobility using the differences reported between rounds in the four-digit International Standard Classification of Occupations (ISCO) codes, which are available in the RLMS. Because of miscoding, however, she concluded that the result was hardly convincing. For example, she found that 50.3 percent of employed respondents changed their occupation between 1994 and 1995. We use an alternative method, which can provide a more reliable estimate of actual job changes. Our method is based on the answers given by respondents to the following question:

'Tell me, please, since what year and month have you been working at this place?'

We assume that a job change has occurred if the starting date of the current job is later than that reported in the previous year survey.[40] According to this methodology, 20 percent of the respondents switched jobs between 1994 and 1995, 20 percent between 1995 and 1996, and 27 percent between 1996 and 1998. The last two figures are fairly consistent with the subjective evaluations of job changes provided in rounds 7 and 8, according to which 19.5 percent and 27.6 percent of respondents declared to have changed their place of work over the periods 1995–96 and 1996–98, respectively.

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[39] Foley (1997) interprets his finding that secondary employment is most often in a different field than the main occupation in a similar way as ours. He in fact claims that workers may be exploring possible career shifts without having to make a full investment and leave their primary job.

[40] In this case, the job switch obviously occurred between the date of the previous survey and that of the present survey. We examined possible irregularities in the data and corrected them. For example, some observations were recorded as job changes while the individual was on leave. These were corrected because job changes are incompatible with paid/unpaid/maternity leave. We also looked at other information such as the number of employees in the enterprise/organization before and after the job change in order to check whether our variable of job change was reliable. One limitation with this methodology is that it can only capture inter-firm occupational mobility, but not changes in a respondent's occupation within the place of work. However, the number of respondents who switched jobs within the place of work is not large: according to round 8 of the RLMS, which specifically asks about job changes, only 3.3 percent of respondents said they had changed jobs while remaining within their place of work.

We now use the whole sample of working-age population because we deal with actual job changes, which are not restricted to moonlighters. We first estimate the wage rates of the new and old jobs using demographic, human capital, regional, and occupational dummies as explanatory variables. The differences between estimated wage rates at new and old jobs are incorporated as an independent variable in the regression for actual job changes, the results of which are presented in Table 4.[41]

We find that an intention to change jobs expressed in the previous period is positively associated with an actual job change. In addition, moonlighting in the previous period is also positively associated with job changes, suggesting that former moonlighters are more active in changing their jobs compared to non-moonlighters.[42] These findings may be explained by the fact that individuals who desired to switch jobs used moonlighting as an experimental mechanism, and actually changed their main job if the experiment was successful. We also find that the coefficient associated with the wage gap variable is positive but not precisely determined.[43] A further interesting result, which is consistent with Earle and Sabirianova (2002), is that wage arrears in the previous round are negatively associated with job changes in the present round.[44]

5.4 Which primary occupation do previous moonlighters choose?

We now discuss which types of primary job people who have moonlighted in the past and desired a job shift tend to choose in the present. In particular, we want to

[41] For the sake of brevity, the results from the wage regressions, estimated using the Heckman (1976) procedure, are omitted, but are available from the authors upon request.

[42] We obtained similar results using the information on actual job changes derived from the direct question asked in rounds 7 and 8. In other words, we combined job changes in round 6 measured indirectly using the method explained in the text with data on actual job changes available from the RLMS in rounds 7 and 8. In this case, the coefficient and *t*-value on the dummy indicating the intention to switch jobs were respectively equal to 0.498 and 9.99, and those on the previous moonlighting dummy were respectively 0.156 and 2.02.

[43] There may be cases in which workers who switch jobs end up with new jobs requiring lower qualifications than their old jobs. These types of job switches are likely to be involuntary. They may occur, for instance, as a consequence of the loss of the employee's main job. In these cases, the employee may be left with little choice, apart from taking an unskilled job. This may justify why the coefficient on the wage gap variable in the job change regression is positive but not statistically significant: voluntary movers exploiting higher wages on new jobs are likely to be mixed with non-voluntary movers who have to end up with jobs requiring only elementary skills. This hypothesis is confirmed by examining the ISCO codes associated with workers' main jobs before and after the job changes. The number of job movers who moved upward on the ladder of ISCO codes was similar to that of the individuals who moved downward. In addition, about 18 percent of job movers ended up with jobs requiring no skills (ISCO codes equal to 9,000 or above), moving from jobs that required higher level of skills according to the ISCO codes.

[44] For an extensive discussion on why wage arrears might be negatively associated with job changes, see Earle and Sabirianova (2002). They suggest that wage arrears affect the slope of the wage–tenure profile, thus increasing an incentive to remain longer with an employer. Other reasons include the fact that workers who quit a job generally lose any chance to receive back wages owed. Poor outside options and fringe benefits attached to a job can also explain the negative effect of wage arrears on job changes.

Table 4. Effects of previous moonlighting and of the intention of a job switch on actual job changes

Dependent variable: = 1 if a job change occurred since last period's interview; = 0 otherwise	Coefficient	*t*-value
Demographic characteristics		
Gender (woman = 0, man = 1)	0.339	*4.97*
Age	–0.008	*–0.33*
Age squared/1,000	0.005	*0.16*
Marital status (single = 0; married = 1)	–0.099	*–1.62*
Household characteristics		
Number of children aged 0–6	0.020	*0.45*
Number of working-age males	0.077	*1.72*
Education		
High school	Omitted category	
Vocational training	0.025	*0.41*
Technical & medical school	–0.113	*–1.56*
University/post graduate education	0.009	*0.11*
Town (town = 1, others = 0)	–0.018	*–0.41*
Regions		
Moscow, St. Petersburg	0.177	*1.49*
Northern and North Western	Omitted category	
Central and Central Black-Earth	0.102	*0.98*
Volga-Vyatski and Volga Basin	–0.018	*–0.16*
North Caucasian	0.046	*0.41*
Ural	0.354	*1.58*
Western Siberian	0.265	*1.95*
Eastern Siberian and Far-Eastern	0.193	*1.49*
New main job occupations		
Legislators, senior managers, officials	Omitted category	
Professionals, technicians, and associated professionals	–0.091	*–0.62*
Clerks, service workers, and market workers	0.109	*0.61*
Skilled agriculture & fishery workers, craft and related trades, plant & machine operators assemblers	–0.019	*–0.10*
Unskilled occupations	0.427	*1.98*
Other income	–0.002	*–0.16*
Differences in estimated wage rates in new jobs and old jobs	0.787	*1.46*
Intention for a job shift in previous round	0.448	*9.04*
Moonlighted in the previous round	0.183	*2.40*

Table 4. (cont) Effects of previous moonlighting and of the intention of a job switch on actual job changes

Dependent variable: = 1 if a job change occurred since last period's interview; = 0 otherwise	Coefficient	*t*-value
Moonlighted in the two previous rounds	–0.007	*–0.03*
Moonlighted in the three previous rounds	0.103	*0.29*
Wage arrears	–0.300	*–5.99*
Time dummies		
Round 6	–0.360	*–4.62*
Round 7	–0.354	*–6.32*
Round 8	Omitted category	
Wald test $\chi^2(30)$	304.14 (*P*-value: 0.00)	
Number of observations	7165	

Notes: Due to the relatively small number of respondents who changed jobs in this sample, we had to re-code some variables into broader categories. The 'town' variable is coded as follows: 1, for urban areas; 0, for villages where the majority of people are not engaged in agricultural activities and for villages where the majority of people are engaged in agricultural activities. Occupational variables are also re-coded as noted in the table. Estimation results are obtained using a random-effects probit procedure with time dummies. We checked the robustness of our results relative to the coefficients associated with the variables on the intention for a job shift and moonlighting in the previous round by taking the generated regressor bias and clustering into account. Once this was done, the *t*-values associated with these coefficients became respectively 10.82 and 2.72.
Source: RLMS, rounds 6 to 8.

test whether in the future, these people will hold main jobs as paid employees, entrepreneurs, or self-employed.[45] Some previous moonlighters may prefer jobs as paid employees in enterprises or public organizations because they found moonlighting too risky. Others might want to hold jobs as entrepreneurs after having acquired some experience and possibly some capital. Alternatively previous moonlighters may decide to work as self-employed on a full-time basis. To find which is the correct scenario, we estimate random-effects probit regressions for the probability that previous moonlighters now hold each of the three types of main occupations (paid employees, entrepreneurs, and self-employed).

Following Manser and Picot (1999), we differentiate the self-employed into incorporated and unincorporated. The unincorporated self-employed are defined as the currently working people who answered 'no' to the following question:

[45] Because, as we discussed in the introduction, only 4.7 percent of total main jobs in Russia in 1998 could be considered as informal (Kim, 2002), it is reasonable to assume that the main jobs referred to in this sub-section take place in the official economy.

'Please state if you work for an enterprise, organization, institution, collective farm, state farm, firm'.

Incorporated self-employed, on the other hand, are defined as those who answered 'yes' to the above question, work at their own enterprise, hold more than 50 percent of shares, and employ fewer than 10 workers.[46]

The classification as entrepreneur is based on the answer given by respondents not already classified as self-employed to the following question:

'Do you think you are doing entrepreneurial activities in this job?'

The respondents who answered 'yes' to this question were classified as entrepreneurs. Finally, paid employees are defined as currently working people who are neither self-employed, nor entrepreneurs.

The regression results are presented in Table 5.[47] Column 2 shows that there is no significant association between previous moonlighting and a main job as an entrepreneur. According to column 3, there is evidence that previous moonlighting is negatively related with the probability of holding a paid job. Column 1 suggests that there is a positive and precisely determined association between self-employment and previous moonlighting: the coefficient and the *t*-value on the moonlighting variable are 0.330 and 2.35, respectively.[48] As for the marginal effect, having been

[46] In more detail, the incorporated self-employed also answered 'yes' to the question: *'Do you work at your own enterprise?'* and answered 'from 51–100 percent' to the question: *'What percentage of this enterprise do you own?'*; and 'less than 10' to the question: *'How many people work in your enterprise?'* Given that self-employment is not clearly defined in the questionnaire, we used several definitions of self-employed, for instance including only the unincorporated, or only the incorporated. In all cases, we obtained results similar to those reported, which are available upon request.

[47] The results in Table 5 refer to the estimation of equation (11), where the dependent variable is a binary variable indicating whether people hold jobs as self-employed, entrepreneurs, or paid employees at time *t*. The results were obtained using a two-step estimation procedure as before. In the first step, we estimated selectivity-bias-corrected earning functions for self-employed, entrepreneurs, and paid employees using a Heckman (1976) procedure, and fitted values for wage rates were obtained. In the second step, the estimated wage rates were used as explanatory variables in the estimation of the equation for the participation in each of the three main occupations. Note that for the self-employed, we use wages to refer to the profits or revenues that they obtain from their business.

[48] The coefficient on the previous moonlighting variable is still marginally significant when we take the effect of clustering and the generated regressor bias into account (the *t*-value becomes 1.92). Considering the possibility of measurement error affecting the self-employed category, we pooled the self-employed and entrepreneurs together in a single category and looked at the effect of previous moonlighting on the probability of being an entrepreneur or self-employed as a primary job. The results, not reported for brevity, suggested that the coefficient associated with previous moonlighting was strongly significant both when clustering and the generated regressor bias were taken into account (*t*-value is 2.40) and when they were not (*t*-value is 2.72). Note that this broader classification is unlikely to suffer from measurement error because occupation as a self-employed worker or entrepreneur is directly observable from the data and is clearly differentiated from occupation as a paid employee.

Table 5. Effects of previous moonlighting on main job occupational choices

Dependent variable	Self-employed (1)	Entrepreneur (2)	Paid-employee (3)
Demographic characteristics			
Gender (woman = 0, man = 1)	0.744 *(3.28)*	–0.216 *(–1.05)*	0.288 *(2.27)*
Age	0.046 *(0.66)*	0.164 *(3.41)*	0.118 *(5.51)*
Age squared/1,000	–1.034 *(–1.08)*	–2.052 *(–3.41)*	–1.490 *(–5.46)*
Marital status (single = 0; married = 1)	0.200 *(1.49)*	0.161 *(1.21)*	–0.056 *(–0.89)*
Household characteristics			
Number of children aged 0–6	0.011 *(0.13)*	–0.064 *(–0.76)*	–0.263 *(–6.54)*
Number of working-age males	–0.086 *(–0.90)*	–0.056 *(–0.64)*	–0.012 *(–0.28)*
Education			
High school	Omitted category	Omitted category	Omitted category
Vocational training	–0.317 *(–1.51)*	0.089 *(0.72)*	–0.001 *(–0.02)*
Technical & medical school	0.072 *(0.56)*	–0.290 *(–1.75)*	0.097 *(1.56)*
University/post graduate education	0.349 *(1.31)*	–0.147 *(–0.52)*	0.151 *(1.24)*
Settlement type (town = 1; others = 0)	0.772 *(1.52)*	–1.156 *(–3.13)*	0.236 *(1.13)*
Job tenure	–0.039 *(–4.42)*	–0.002 *(–0.33)*	0.080 *(15.11)*
Regions			
Moscow, St. Petersburg	0.065 *(0.18)*	0.418 *(1.83)*	–0.003 *(–0.02)*
Northern and North Western	Omitted category	Omitted category	Omitted category
Central and Central Black-Earth	0.052 *(0.22)*	1.095 *(2.75)*	–0.155 *(–0.82)*
Volga-Vyatski and Volga Basin	–0.235 *(–0.78)*	1.753 *(2.73)*	–0.241 *(–0.93)*
North Caucasian	0.201 *(0.81)*	1.650 *(3.07)*	–0.438 *(–2.47)*

Table 5. (cont) Effects of previous moonlighting on main job occupational choices

Dependent variable	Self-employed (1)	Entrepreneur (2)	Paid-employee (3)
Ural	0.123 *(0.52)*	1.293 *(2.52)*	–0.105 *(–0.64)*
Western Siberian	0.410 *(1.32)*	0.289 *(0.98)*	0.002 *(0.02)*
Eastern Siberian and Far-Eastern	0.278 *(0.87)*	1.397 *(3.41)*	–0.066 *(–0.54)*
Estimated wage rate	–0.806 *(–1.28)*	2.727 *(3.65)*	–0.583 *(–1.42)*
Moonlighted in the previous round	0.330 *(2.35)*	0.181 *(1.51)*	–0.154 *(–2.14)*
Moonlighted in the two previous rounds	–0.246 *(–0.52)*	–0.272 *(–0.66)*	0.259 *(1.05)*
Moonlighted in the three previous rounds	–0.888 *(–1.06)*	0.099 *(0.18)*	0.425 *(1.15)*
Time dummies			
Round 6	–0.274 *(–0.84)*	–0.778 *(–2.57)*	0.599 *(4.11)*
Round 7	0.033 *(0.11)*	–1.028 *(–3.18)*	0.513 *(2.76)*
Round 8	Omitted category	Omitted category	Omitted category
Wald test $\chi^2(24)$ (*P*-value)	88.15 (0.00)	110.30 (0.00)	520.95 (0.00)
Number of observations	8,650	8,650	8,650

***Notes*:** Estimation is conducted using a random-effects probit procedure with time dummies. T-statistics are reported in parentheses. The robustness of our results relative to the coefficient on moonlighting in the previous round was checked by taking the generated regressor bias and clustering into account. The new *t*-values associated with the coefficient on moonlighting in the previous round became 1.92 for the self-employed; 2.06 for the entrepreneurs; and –2.25 for the paid-employees.
***Source*:** RLMS, rounds 6 to 8.

a moonlighter in the previous period is associated with a 35 percent higher probability of being self-employed in the present.[49] In other words, a popular first job choice of previous moonlighters appears to be self-employment.[50]

In order to put the marginal effects obtained before in a better context, Table 6 shows workers' transition to different types of primary jobs (self-employed, paid, and entrepreneurial jobs) after a spell of moonlighting as self-employed (individual economic activities). We only focus on those moonlighters who hold a self-employed second job because we are interested in seeing whether they convert their main job to self-employment following a moonlighting spell as self-employed.

Several observations can be drawn from the table. First, across the three different types of jobs, the conditional probability that an individual does not engage in moonlighting in the terminal period after an initial period of moonlighting is higher than the probability that he still moonlights (column 1).[51] This confirms our earlier finding of the transitory nature of moonlighting.

Column 5 of the table reports ratios obtained by dividing the number of workers who were moonlighting as self-employed at time t and hold a main job as self-employed, paid employees, or entrepreneurs in period $t + 1$ (column 1), by the total number of workers who hold a main job in each of the three groups of activities at time $t + 1$ (column 3). These ratios, which are 10.0 percent for the self-employed, 9.8 percent for the entrepreneurs, and 7.9 percent for the paid employees, suggest that following a spell of moonlighting as self-employed, people are most likely to hold a self-employed or entrepreneurial primary job.[52]

The ratios reported in column 5, however, do not take into account the fact that former moonlighters might have already held a main job as self-employed, paid employees, or entrepreneurs in period t. Column 6 takes this effect into account: it indicates the ratio between the number of workers who did not have a main job in one of the three main categories of activities, but who were moonlighting as self-employed in period t, and switched to a main job as self-employed, paid

[49] Note that although only 31 individuals in our sample moonlighted as self-employed in the period prior to effectively becoming self-employed, which represents only 8.4 percent of the pool of self-employed, these 31 individuals represent 26.5 percent of the inflow into self-employment (see Table 6 below and the associated discussion).

[50] One should also consider the possibility that some past moonlighters end up in unemployment or out of the labour force, instead of going into single job holding. We have tested this hypothesis by estimating a regression similar to those reported in Table 5, where the dependent variable is equal to 1 if the respondent is unemployed or out of the labour force, and 0 otherwise. We found that the coefficient associated with the previous moonlighting variable was marginally significant (t-value: 1.96). Moreover, its coefficient (0.12) was very small compared to the corresponding coefficient reported in column 1 of Table 5 relative to the probability of ending up as self-employed as a main occupation (0.33). These results, which are not reported for brevity, but are available from the authors upon request, suggest that the association between past moonlighting and becoming unemployed or exiting the labour force is not particularly strong.

[51] The difference between the two probabilities is statistically significant (t-value: 21.9).

[52] Note that the difference in the ratios relative to the self-employed and paid workers is statistically significant (t-value: 8.9), whereas the corresponding difference between self-employed and entrepreneurs is not (t-value: 0.12).

Table 6. Workers' transition following self-employment as moonlighting

Self-employment as a second job in initial period (t)	Terminal occupation in period $t+1$				Total number of workers	Inflow into jobs	(1) / (3) (%)	(1) – (2) / (4) (%)
	Occupation	Whether moonlighting or not	Number of workers	Number of workers who already had this occupation as main job				
			(1)	(2)	(3)	(4)	(5)	(6)
	Self-employed	No	31	6	369	117	8.4	26.5
		Yes	6				1.6	
	Paid employee	No	333	419	5,949	324	5.6	17.0
		Yes	141				2.3	
	Entrepreneur	No	24	14	346	130	6.9	15.4
		Yes	10				2.9	
Total number of workers			545	439	9,382	439		

Note: In column 1, the number of workers refers to those workers who were moonlighting as self-employed in period t, and who hold main jobs in turn as self-employed, paid employees, or entrepreneurs in period $(t+1)$. Column 2 gives the number of workers who were moonlighting as self-employed in period t and held main jobs as self-employed, paid employees, or entrepreneurs in that period, and continued to hold the same main jobs in period $(t+1)$. In column 3, total number of workers is defined as the number of workers who are in turn self-employed, paid workers, or entrepreneurs.
Source: RLMS, rounds 5 to 8.

employee, or entrepreneur at time $t+1$, and the number of inflows in the three main groups of activities in period $t+1$. The shares reported in column 6 show that self-employment moonlighting contributes to the expansion of self-employment in Russia, as it represents 26.5 percent of the new self-employed main jobs. In contrast, the contribution by previous moonlighters to the flows into the categories of paid employees or entrepreneurs is significantly lower.[53]

One possible interpretation of our findings is that self-employment activities were strongly discouraged until the late 1980s in the Soviet Union. Although those activities began to emerge in a new environment at the later stage of *perestroika*, the share of self-employment out of total employment was negligible. The transition towards a market economy in Russia provided households with the sudden opening of opportunities. Workers contemplating self-employment could experiment with it as a secondary form of employment, before leaving their main job and becoming full-time self-employed. Thus, secondary jobs could serve as the entry point of self-employment, which could evolve into entrepreneurships in the future.[54] If this interpretation were true, then moonlighting in Russia could be viewed as a low-cost seedbed for setting up new self-employed businesses, and moonlighting could be seen as a significant factor that contributed to the emergence of new self-employed businesses during the transition period.[55]

6. Conclusions

Using the RLMS, this paper has analysed the dynamics of moonlighting in Russia. We can summarize our findings as follows: First, previous moonlighting is

[53] Both the differences in shares between self-employed and paid worker, and between self-employed worker and entrepreneur are statistically significant (the t-values are 9.5 and 2.0, respectively).

[54] Earle and Sakova (1999) suggested that the considerable rise in self-employment after the transition can be seen as a 'quasi-experiment' for understanding the sources of entrepreneurship in transition economies. Due to the lack of capital and of a banking system to finance small businesses, the start-ups would nearly always have begun as self-employed activities.

[55] The positive correlation between past moonlighting and self-employment could also reflect the decision of workers who expect to lose their primary job to start self-employment as a coping mechanism and thus to combine it with their first job until they effectively lose their primary job, after which the secondary self-employment would become *de facto* the main activity (see Earle and Sakova, 2000). Although in some cases, this interpretation could be true, we think that because the unemployment rate in Russia was fairly low over the period considered, averaging only 7.2 percent (*Russian Economic Trends*, 1999), it is more likely that moonlighting was used as a stepping stone to setting up new self-employed businesses. Furthermore, over the period 1994–98, only 13.5 percent of respondents on average answered the question: '*How concerned are you that you might lose your job*?' with 'very concerned', the other possible answers being 'a little concerned', 'both concerned and not concerned', 'not very concerned', and 'not concerned at all'. We constructed a dummy equal to 1 for these respondents and equal to 0 otherwise and included it as an additional explanatory variable in equation (12). We found that the coefficient associated with this dummy was negative and precisely determined, suggesting that people who expect to lose their primary jobs are actually less likely to moonlight. This is in line with the enterprising motive for moonlighting discussed in Section 2.

negatively associated with present moonlighting, suggesting that moonlighting in Russia is transitory. Most working-aged Russians return to a single-job holding after a period of moonlighting.

Second, an intention for a job shift expressed in the past is positively correlated with present moonlighting and previous moonlighting is positively associated with present job changes. This may be due to the fact that Russians use moonlighting as a mechanism to smooth the process of changing jobs. Moonlighting can in fact allow individuals to transform their secondary job into the primary one without exposing them to the risk arising from an immediate shift from one job to the other. Moonlighting can also be used as a human capital-enhancing activity for a job mover, enabling him to accumulate the necessary skills and information about the new job. According to our results, an intention to change jobs tends to end up with an actual job change, suggesting that there is a significant association between the intention and the implementation. We can therefore conclude that there is a considerable interaction between the three key variables in our analysis: moonlighting, an intention to change jobs, and an actual job change.

Third, previous experience as a moonlighter is positively correlated with becoming self-employed as a main activity, and 26.5 percent of the inflow into self-employment is due to those people starting self-employment as a main job after a period of moonlighting as self-employed. In the early stages of the transition, many households worked in the informal economy because of turmoil, excessive regulations, high taxes, wage arrears, and so on. As the transition proceeded, the turmoil and some of the extreme distortions subsided. This appears to have encouraged former moonlighters to move into self-employment as a main job, emerging into the tax-paying official economy. After having experienced self-employment in the official economy for a while, some of the former moonlighters may eventually become entrepreneurs in the official sector. In this sense, moonlighting in Russia can be viewed as an effective incubator for setting up new self-employed/entrepreneurial businesses in the official economy, and might provide long-term benefits to the economy in spite of its possible negative effects, which have been widely discussed in the literature.

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Appendix 1

Estimation of secondary job wages

The estimated wage rates for secondary jobs included in Table 3 are the fitted values obtained from the estimation of a wage equation using the standard Heckman (1976) procedure, which corrects for selection bias. The dependent variable in the wage equation is the logarithm of real hourly wages received in the month prior to interview in the informal economy. The independent variables are standard: human capital variables such as education and main job tenure, demographic characteristics, location, main job occupational dummies captured by ISCO codes, and secondary job characteristics. Note that wage arrears in secondary jobs are not common: only 9 percent of moonlighters in our sample face unpaid wages. The identification variables in the participation equation include wage rates and working hours from the main job, income from non-job-related sources, marital status, and family characteristics. These variables are assumed to affect the participation decision through their effects on the individual's preference and his time constraints.

We estimate the wage and participation equations separately for each round for two reasons. First, this helps to avoid possible instability of equations across rounds. Second, the Heckman-type regression is not yet developed to take into account the panel nature of the data. The estimation results for the wage equations are presented in Tables A1 and A2.

Table A1. Self-selection corrected secondary job wage equations: Rounds 5 and 6

	Round 5				Round 6			
	Wage		Participation		Wage		Participation	
	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.
Demographic characteristics								
Gender (woman = 0, man = 1)	0.972	*6.195*	0.484	*8.261*	0.820	*5.411*	0.358	*5.810*
Age	0.112	*3.144*	0.060	*3.411*	0.202	*3.997*	0.102	*5.353*
Age squared/1,000	–1.696	*–3.457*	–0.874	*–3.728*	–2.600	*–3.995*	–1.274	*–5.049*
Education								
High school	Omitted category		Omitted category		Omitted category		Omitted category	
Vocational training	–0.072	*–0.525*	0.130	*2.065*	–0.204	*–1.296*	–0.008	*–0.123*
Technical & medical school	–0.249	*–1.802*	0.060	*0.928*	–0.055	*–0.372*	0.024	*0.352*
University education	0.020	*0.117*	0.031	*0.385*	0.264	*1.493*	0.074	*0.891*
Postgraduate education	–0.106	*–0.318*	0.025	*0.105*	0.380	*0.794*	0.232	*0.835*
Settlement type								
Town	0.480	*2.891*	0.202	*2.896*	0.641	*4.050*	0.128	*1.847*
Non-agricultural rural	0.751	*2.792*	0.195	*1.629*	0.697	*2.555*	0.186	*1.486*
Agricultural rural	Omitted category		Omitted category		Omitted category		Omitted category	
Regions								
Moscow, St. Petersburg	0.052	*0.215*	0.300	*2.638*	0.290	*1.051*	0.439	*3.411*
Northern and North Western	Omitted category		Omitted category		Omitted category		Omitted category	
Central and Central Black-Earth	–0.841	*–3.651*	–0.052	*–0.469*	0.015	*0.062*	0.072	*0.588*
Volga-Vyatski and Volga Basin	–1.163	*–4.921*	–0.074	*–0.668*	–0.377	*–1.571*	–0.029	*–0.239*
North Caucasian	–0.666	*–2.761*	0.152	*1.344*	0.112	*0.460*	0.355	*2.968*
Ural	–0.711	*–3.113*	0.019	*0.171*	–0.444	*–1.746*	0.030	*0.240*
Western Siberian	–0.637	*–2.231*	–0.124	*–0.994*	–0.277	*–0.956*	0.130	*0.986*
Eastern Siberian and Far-Eastern	–0.220	*–0.926*	0.248	*2.155*	0.163	*0.596*	0.386	*3.035*
Main job tenure	–0.013	*–1.448*	–0.004	*–1.005*	–0.006	*–0.639*	0.004	*0.816*

Table A1. (cont) Self-selection corrected secondary job wage equations: Rounds 5 and 6

	Round 5				Round 6			
	Wage		Participation		Wage		Participation	
	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.
Main job occupations								
Legislators, senior managers, officials	–0.833	*–1.371*	–0.546	*–2.041*	0.343	*0.884*	0.060	*0.291*
Professionals	0.254	*0.511*	0.275	*1.709*	0.351	*1.040*	0.229	*1.345*
Technicians and assoc. professionals	–0.057	*–0.118*	0.212	*1.322*	0.176	*0.560*	0.189	*1.144*
Clerks	Omitted category		Omitted category		Omitted category		Omitted category	
Service workers, market workers	–0.419	*–0.754*	–0.102	*–0.554*	0.344	*0.893*	0.051	*0.272*
Skilled agriculture & fishery workers	0.199	*0.293*	0.443	*1.341*	–1.449	*–2.341*	0.320	*0.740*
Craft and related trades	–0.233	*–0.495*	0.098	*0.607*	0.421	*1.344*	0.327	*2.003*
Plant & machine operators	0.013	*0.027*	0.070	*0.431*	0.032	*0.103*	0.147	*0.888*
Assemblers								
Unskilled occupations	–0.623	*–1.197*	–0.027	*–0.153*	0.059	*0.174*	0.206	1.199
Failed to respond	–0.438	*–0.907*	0.258	*1.597*	–0.125	*–0.379*	0.584	3.582
Individual economic activities as secondary job	0.611	*3.987*			0.986	*6.223*		
ρ			0.633				0.748	
Wald test of independent equations. ($\rho = 0$)			9.70				12.53	
P-value			0.00				0.00	
Number of observations	5,103				4,743			

***Note*:** The dependent variable for the wage equations is the log of the real hourly wage received last month in secondary jobs. Estimation results are obtained using the Heckman (1976) estimation procedure with time dummies. Variables used to correct for the selection bias are marital status, number of children aged 0–6, and number of working-age males present in the household, real monthly primary job wage, monthly primary job working hours, and monthly income from non-job-related sources. ρ represents the correlation coefficient between the error terms in the wage equation and in the participation (selection) equation. When ρ differs from 0, standard regression techniques applied to the wage equation yield biased results.

***Source*:** RLMS, rounds 5 and 6.

Table A2. Self-selection corrected secondary job wage equations: Rounds 7 and 8

	Round 7				Round 8			
	Wage		Participation		Wage		Participation	
	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.	Coeff.	*t*-val.
Demographic characteristics								
Gender (woman = 0, man = 1)	1.190	*7.162*	0.393	*6.307*	0.913	*5.642*	0.327	*5.361*
Age	0.285	*4.586*	0.120	*5.901*	0.222	*4.721*	0.077	*4.296*
Age squared/1,000	–3.919	*–4.632*	–1.688	*–6.122*	–3.186	*–5.074*	–0.998	*–4.148*
Education								
High school	Omitted category		Omitted category		Omitted category		Omitted category	
Vocational training	–0.086	*–0.511*	0.098	*1.508*	0.034	*0.197*	0.094	*1.490*
Technical & medical school	0.199	*1.096*	0.043	*0.597*	0.308	*1.798*	0.170	*2.463*
University education	0.064	*0.286*	–0.093	*–1.017*	–0.141	*–0.632*	–0.080	*–0.874*
Postgraduate education	0.636	*1.051*	0.382	*1.369*	0.342	*0.627*	0.549	*2.124*
Settlement type								
Town	0.535	*2.526*	0.331	*4.544*	0.508	*2.222*	0.293	*4.219*
Non-agricultural rural	0.118	*0.315*	0.092	*0.703*	0.099	*0.269*	0.031	*0.258*
Agricultural rural	Omitted category		Omitted category		Omitted category		Omitted category	
Regions								
Moscow, St. Petersburg	0.793	*2.349*	0.362	*2.793*	0.815	*2.308*	0.161	*1.171*
Northern and North Western	Omitted category		Omitted category		Omitted category		Omitted category	
Central and Central Black-Earth	–0.441	*–1.369*	–0.130	*–1.066*	–0.045	*–0.143*	–0.085	*–0.711*
Volga-Vyatski and Volga Basin	–0.681	*–1.981*	–0.105	*–0.861*	–0.117	*–0.402*	–0.002	*–0.019*
North Caucasian	0.221	*0.680*	0.159	*1.282*	0.502	*1.721*	0.269	*2.228*
Ural	–0.601	*–1.770*	–0.191	*–1.542*	0.110	*0.362*	–0.007	*–0.060*
Western Siberian	0.023	*0.066*	0.024	*0.181*	0.140	*0.413*	–0.114	*–0.876*
Eastern Siberian and Far-Eastern	–0.355	*–1.052*	–0.014	*–0.109*	0.646	*2.088*	0.207	*1.654*

Table A2. (cont) Self-selection corrected secondary job wage equations: Rounds 7 and 8

	Round 7				Round 8			
	Wage		Participation		Wage		Participation	
	Coeff.	***t*-val.**	**Coeff.**	***t*-val.**	**Coeff.**	***t*-val.**	**Coeff.**	***t*-val.**
Main job tenure	–0.018	*–1.396*	–0.001	*–0.104*	0.002	*0.197*	–0.007	*–1.461*
Main job occupations								
Legislators, senior managers, officials	–0.753	*–0.930*	–0.531	*–1.850*	0.076	0.156	–0.081	*–0.350*
Professionals	0.880	*1.902*	0.230	*1.396*	0.557	*1.447*	0.328	*1.894*
Technicians and assoc. professionals	0.373	*0.807*	–0.012	*–0.069*	–0.494	*–1.214*	–0.084	*–0.484*
Clerks	Omitted category		Omitted category		Omitted category		Omitted category	
Service workers, market workers	0.953	*1.712*	–0.026	*–0.135*	0.346	*0.662*	–0.008	*–0.039*
Skilled agriculture & fishery workers	–1.404	*–1.536*	–0.234	*–0.498*	–1.476	*–1.683*	0.006	*0.011*
Craft and related trades	1.007	*2.228*	0.111	*0.674*	0.073	*0.185*	0.184	*1.060*
Plant & machine operators/assemblers	0.513	*1.092*	–0.120	*–0.713*	0.018	0.045	–0.051	*–0.287*
Unskilled occupations	0.377	*0.792*	0.009	*0.051*	–0.334	*–0.850*	0.069	*0.387*
Failed to respond	0.590	*1.343*	0.228	*1.428*	0.013	*0.037*	0.271	*1.620*
Individual economic activities as secondary job	0.420	2.800			0.616	*4.032*		
ρ			0.914				0.892	
Wald test of independent equations. ($\rho = 0$)			41.79				67.51	
P-value			0.00				0.00	
Number of observations	4,909				4,712			

***Note*:** See note to Table A1.
***Source*:** RLMS, rounds 7 and 8.

Appendix 2

Robustness checks relative to the specification showing the effects of previous moonlighting on present moonlighting

Table A3 provides some robustness tests relative to the specification relating previous moonlighting to present moonlighting reported in the first two columns of Table 3. Column 1 presents the estimates of the specification once the generated variable bias and clustering are taken into consideration. Column 2 is based on a larger sample of the Russian population that comprises not only working individuals, but also individuals on leave. Column 3 uses a conditional fixed-effects logit model, instead of a random-effects probit specification.

Table A3. Effects of previous moonlighting on present moonlighting: Robustness checks

	Participation Equation (bootstrapped standard errors with clustering) (1)		Participation Equation (sample including individuals on leave) (2)		Participation Equation (conditional fixed effects logit) (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Demographic characteristics						
Gender (woman = 0, man = 1)	–1.622	*–9.79*	–2.373	*–14.87*		
Age	–0.394	*–8.20*	–0.534	*–10.94*	–0.482	*–0.76*
Age squared/1,000	0.005	*8.50*	0.007	*11.37*	0.000	*0.03*
Marital status (single = 0; married = 1)	–0.042	*–0.40*	–0.056	*–0.54*	0.181	*0.31*
Household characteristics						
Number of children aged 0–6	–0.053	*–0.80*	–0.059	*–0.86*	–0.330	*–0.92*
Number of working-age males	–0.016	*–0.20*	–0.010	*–0.13*	0.662	*1.52*
Education						
High school	Omitted category		Omitted category		Omitted category	
Vocational training	0.030	*0.30*	0.149	*1.48*	0.530	*0.35*
Technical & medical school	–0.396	*–3.99*	–0.421	*–4.35*	–0.268	*–0.22*
University education	–0.191	*–1.39*	–0.548	*–4.46*	–38.96	*–0.00*
Postgraduate education	–0.357	*–1.00*	–0.672	*–2.11*	–70.65	*–0.00*
Settlement type						
Town	–0.680	*–5.26*	–1.001	*–7.93*		
Non-agricultural rural	–0.311	*–1.34*	–0.441	*–2.16*		
Agricultural rural	Omitted category		Omitted category			
Regions						
Moscow, St. Petersburg	–0.956	*–3.79*	–1.143	*–4.81*		
Northern and North Western	Omitted category		Omitted category			
Central and Central Black-Earth	–0.138	*–0.71*	0.188	*1.06*		

Table A3 (cont). Effects of previous moonlighting on present moonlighting: Robustness checks

	Participation Equation (bootstrapped standard errors with clustering) (1)		Participation Equation (sample including individuals on leave) (2)		Participation Equation (conditional fixed effects logit) (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Volga-Vyatski and Volga Basin	0.233	*1.18*	0.794	*4.23*		
North Caucasian	–0.519	*–2.50*	–0.319	*–1.67*		
Ural	0.111	*0.55*	0.700	*3.67*		
Western Siberian	–0.181	*–0.84*	0.122	*0.62*		
Eastern Siberian and Far-Eastern	–0.272	*–1.38*	–0.233	*–1.21*		
Main job occupations						
Legislators, senior managers, officials	–0.464	*–1.30*	–0.205	*–0.77*	–2.799	*–2.38*
Professionals	–0.640	*–3.00*	0.451	*2.28*	–2.745	*–2.73*
Technicians and assoc. professionals	0.017	*0.08*	0.125	*0.90*	–1.426	*–1.56*
Clerks	Omitted category		Omitted category		Omitted category	
Service workers, market workers	–0.630	*–2.63*	0.197	*0.90*	0.810	*0.61*
Skilled agriculture & fishery workers	2.472	*2.96*	0.633	*1.26*	–34.57	*–0.00*
Craft and related trades	–0.607	*–2.88*	0.398	*2.01*	–3.679	*–3.19*
Plant & machine operators assemblers	–0.324	*–1.57*	0.079	*0.38*	–3.091	*–2.73*
Unskilled occupations	0.144	*0.70*	0.404	*1.94*	–0.968	*–0.92*
Failed to respond	0.112	*0.20*	0.957	*1.33*	–3.993	*–2.17*
Main job characteristics						
Wage/100	–0.139	*–12.04*			–0.132	*–3.12*
Working hours/100	–0.130	*–2.57*			–0.132	*–0.72*
Tenure	0.020	*3.39*	0.008	*1.46*	0.036	*1.28*
Other income*	–0.008	*–0.52*	0.005	*0.48*	0.022	*0.68*
Estimated secondary job wage rate**	1.642	*13.85*	2.386	*18.59*	2.699	*8.69*
Moonlighted in the previous round	–0.672	*–2.37*	–0.682	*–2.51*	–2.650	*–2.43*

Table A3 (concluded). Effects of previous moonlighting on present moonlighting: Robustness checks

	Participation Equation (bootstrapped standard errors with clustering) (1)		Participation Equation (sample including individuals on leave) (2)		Participation Equation (conditional fixed effects logit) (3)	
	Coeff.	***t*-value**	**Coeff.**	***t*-value**	**Coeff.**	***t*-value**
Moonlighted in the two previous rounds	0.433	*2.14*	0.377	*2.17*	60.58	*0.00*
Moonlighted in the three previous rounds	1.084	*3.45*	1.121	*4.28*	95.94	*0.00*
Wage arrears	0.062	*0.71*	0.062	*0.74*	0.339	*1.12*
Working status on main job						
Currently working			Omitted category			
Paid leave			0.294	*0.80*		
Unpaid leave			0.469	*1.16*		
Maternity leave			0.484	*1.71*		
Time dummies (Round 8 is omitted category)						
Round 6	–1.762	*–8.27*	3.169	*17.80*	–3.972	*–2.45*
Round 7	–0.234	*–1.96*	0.342	*3.35*	–0.609	*–0.58*
Wald (or LR for fixed effects) χ^2 test			417.46	$P > \chi^2 = 0.0$	310.57	$P > \chi^2 = 0.0$
Number of observations	1,455		1,527		780	

***Notes*:** In column 1, the estimation results are obtained using a pooled probit model with time dummies. Standard errors are corrected for the generated regressor bias and clustering. In column 2, the results are obtained using a random-effects probit model with time dummies. In column 3, the results are obtained using a conditional fixed-effects logit model (Chamberlain, 1980). In all specifications, the previous moonlighting variable is instrumented using lagged regional unemployment rates, lagged primary job categories (managerial, professional, non-manual skilled, manual skilled, unskilled), and lagged perceived economic rank.

*Other income for the estimation using the whole sample (column 2) is defined as income not originated from the secondary job.

**The estimated wage rate on the second job is estimated using the Heckman (1976) method. In columns 1 and 3, this method is applied to those individuals who received a positive income from a main job and who moonlighted at least once before the present period. In column 2, it is applied to all individuals who held a main job (regardless of whether they received any income from it) and who moonlighted at least once before the present period.

***Source*:** RLMS, rounds 6 to 8.