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Perceptions and Behavior:
Analyzing Wage Arrears in Russia

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Abstract

We investigate the link between perceptions and behavior using the wage arrears phenomenon in Russia as our case study. To measure perception, we utilize assessments of ‘marketability’ – what we call perceived demand. For behavior, we first consider the behavior of managers in the allocation of wage arrears, and second, the response by workers to wage arrears. Using Russian Longitudinal Monitoring Survey data collected between 1994 and 2004 and controlling for regional macroeconomic conditions, firm characteristics and worker characteristics in the probit and Poisson regressions, we find that managers avoid allocating wage arrears to workers with high perceived demand. We argue that this happens because workers with high perceived demand tend to have more employment options and consequently are more likely to quit their jobs. Managers try to retain these workers by reducing their wage arrears. Our empirical results support this argument, as we find that job change is reduced by lowering arrears.

Key Words: perceived demand, wage arrears, perceptions, behavior, Russia

JEL Classification: A12, J24, J30, J50, P20

Perceptions and Behavior: Analyzing Wage Arrears in Russia

Bad things happening to good workers in Russia is old news. Russia's wage arrears phenomenon represents a case in point.¹ The proportion of workers experiencing wage arrears rose from over 46% in 1994 to nearly 70% in the aftermath of Russia's financial crisis in 1998, but even as late as 2004, when macroeconomic conditions had substantially improved, at least 20% of the civilian workforce reported being owed back wages (RLMS 2005).² What factors influence managers' allocation of wage arrears among their employees? Does management's perception of a worker's 'marketability' – a worker's ability to find satisfactory alternative employment – influence their behavior with regard to the allocation of wage arrears?

Russian workers have responded to wage arrears by changing their saving and expenditure behavior (Gregory *et al* 1999, Guariglia and Kim 2003, Skoufias 2003), as well as by changing their employment conditions: moving to a new workplace (another firm or self-employment), and/or taking a second job either in the official or informal economy (Earle and Sakova 1999, Foley 1997, Guariglia and Kim 2004 2006). Is worker response to wage arrears influenced by perceptions of their 'marketability'?

We investigate the link between perceptions and behavior using the wage arrears phenomenon in Russia as our case study. To measure perception, we utilize assessments of 'marketability' – what we will call *perceived demand*. For behavior, we first consider the behavior of managers in the allocation of wages arrears, and, second, the response by workers to wage arrears. In economies undergoing the transition from central planning to market-oriented allocation, considering individuals' perceptions of their potential or alternative employment opportunities is particularly relevant. Individual initiative in seeking out and/or training for new

¹ Clarke (2003) dates the origin of the "wage arrears" crisis to the second half of 1991, when Yeltsin's government decided to reward the powerful miners' union for their political support with a large pay increase. Unfortunately for the miners, there was no money in the state budget to cover this expenditure, so wage payments were delayed. Earle and Sabirianova (2000) also identify the state as the leader in this practice, setting the path-dependent development of wage arrears in motion.

² A LexisNexis search of "wage arrears in Russia" generated 125 articles in 2005 documenting the magnitude of and monthly changes in wage arrears, as well as workers' hunger strikes in response to wage arrears. See, for example, Russian News Agency ITAR-TASS, 11 January 2005, BBC Worldwide Monitoring, 10 March 2005 (from Russian radio) and 19 April (from NTV Mir).

jobs, as well as one's ability to adjust to new economic conditions, play a major role in determining one's success in transitional labor markets. Perceived demand can serve as a measure of initiative or adjustment – so-called 'soft skills' not captured by standard measures of human capital – and therefore more accurately explain observed labor market outcomes. Additionally, in Russia, where local labor markets often are monopsonistic, perceived demand may indicate worker bargaining power in negotiating the terms of employment and working conditions.

We use Russian Longitudinal Monitoring Survey (RLMS) data³ collected between 1994 and 2004 to test two basic hypotheses about the relationship between perceptions and behavior:

H₁: Managers refrain from allocating wage arrears to workers with high perceived demand (high marketability).

H₂: Workers with high perceived demand (high marketability) are more likely to change jobs in an attempt to avoid wage arrears.

Why does it matter if perceived demand influences the behavior of Russian managers and workers? Generally, despite the voluminous literature analyzing the link between the two, the knowledge gap associated with actually measuring the influence of perceptions on behavior remains rather large. In part, this stems from the multiplicity of perceptions and behaviors under investigation (see, for example, Ettner and Grzywacz 2001, Goehring and Stager 1991, Jaskyte 2003, Lanour and Bowler 1998, Whaley 2003), and, in part, from the paucity of appropriate data. Our study adds to the empirical analyses of perceptions and behavior, and is the first to utilize survey data collected from a representative sample of the Russian population.

More specifically, there are at least three reasons why understanding the link between perceptions and behavior among managers and workers in Russia who confront wage arrears is helpful. First, accurately identifying characteristics of workers prone to wage arrears facilitates better design of policies to avoid or offset the wage arrears trap, and, consequently, improves welfare. By wage arrears trap, we mean the observed outcome that individuals who experience wage arrears in one period are more likely to experience wage arrears in subsequent periods. Second, understanding the link between perceptions and behavior enables managers in Russia, in both domestic and foreign-owned firms, to more effectively motivate and/or retain workers, thereby improving productivity and profitability. Third, understanding the link between

³ See Swafford *et al* (1997) for complete description of RLMS sample selection methodology and sample characteristics.

perceptions and behavior in Russia's wage arrears situation gives researchers an opportunity to assess the extent to which general findings regarding the link between the two apply to this rather unique phenomenon.

Our paper is divided into seven parts. Part I briefly summarizes the wage arrears phenomenon in Russia during its transformation from a planned economy to a market-oriented economy. Part II describes the survey data and sample of respondents used in our analysis. We explain how we construct our wage arrears measures in Part III and provide a descriptive analysis of the wage arrears phenomenon using these RLMS data. Part IV develops our measures of perceived demand and motivates the hypotheses to be tested in this analysis. Part V provides the model that depicts managerial strategies in allocating wage arrears among workers. Controlling for regional macroeconomic conditions, firm characteristics, and worker characteristics, we use probit and Poisson regressions to estimate the influence of perceived demand on manager's allocation of wage non-payment and wage debt. Our results suggest that managers attempt to avoid allocating wage arrears to workers with high perceived demand. Indeed, perceived demand plays a greater role in the arrears allocation process than the individual's educational attainment. This result is particularly strong when wage debt is used as our measure of wage arrears. In Part VI we consider the influence of perceived demand on worker response to wage arrears through job change, using probit regressions, and controlling for the same macroeconomic conditions, firm characteristics, and worker characteristics. We find that job change is significantly higher among workers with high perceived demand. Concluding remarks are offered in Part VII.

I. Wage Arrears in Russia's Transition Economy

Following Russia's price liberalization in January 1992, pressure on wages throughout the economy dramatically increased. Moreover, policies adopted (and not adopted) during Russia's transition process, and the under-developed nature of requisite legal and financial institutions for the successful introduction of a market economy, combined to put Russian firms in a situation where they faced chronic cash shortages (Braguinsky and Yavlinsky 2000, Cohen *et al* 1995, Ickes and Ryterman 1992 1993, Krueger 2004). Not surprisingly, the number of unprofitable enterprises (both state-owned and privately-owned) grew steadily, accounting for 27 percent of total enterprises in 1995, 43 percent in 1996, 47 percent in 1997, and 56 percent in 1998 (FIPC 1997, IEWS 1998). Throughout this period, inter-enterprise debt in the form of overdue payables hovered in the range of 50% of GDP (Commander and Mumssen 1998). By 1998, one-third of all

Russian enterprises were technically insolvent – that is, their total assets were less than twice the value of their liabilities (World Bank 1998).

The collapse of product markets in the (near) hyper-inflationary environment during the early stages of Russia’s transition process pushed privatized firms to cut costs wherever they could. Despite the Soviet legacy of overfull employment (Granick 1987, Clarke 1999), mass reduction in workforce size to bring employment in line with production requirements was not really an option for privatized firms. By law, workers were entitled to severance pay equal to three months earnings (Clarke 2000a 2000b, Roxenborough and Shapiro 1996, Rymkevitch 2003), and the majority of privatized firms simply could not afford these payments.

Following the state’s lead, firms engaged in the practice of wage non-payment, despite new laws that prioritized the payment of tax and wage debts over all others. Privatized firms, especially large industrial enterprises operating in monopsonistic labor markets, were “exempted” from these laws by local governments trying to shield workers by offering lucrative tax breaks and “recovery” grants to firms that promised to keep employees on the books (Alfandari and Schaffer 1996, Broadman and Recantini 2001, Commander and Tolstopiatenko 2001, Grogan 1999, Nesporova 1999). Officially, unemployment remained low, but hidden forms of unemployment, including compulsory unpaid leave and non-payment of wages, became commonplace (Bragin and Osakovsky 2005, Commander and Yemtsov 1999, Standing 1996).

II. Data description and sample characteristics

Research on wage arrears in Russia was initiated by the World Bank as part of a general study of the transition process, and, more particularly, of the causes and consequences of inter-enterprise arrears.⁴ To supplement Goskomstat data, the Russian Longitudinal Monitoring Survey (RLMS), initially funded by the World Bank, first included questions to address the wage arrears phenomenon in 1994, and has since become, by far, the most commonly used source in analyses that directly or indirectly focus on wage arrears in Russia. The survey has important advantages over other existing sources of Russian data, as it is both nationally representative and contains

⁴ The seminal product of this research was a paper by Alfandari and Schaffer (1996), which utilized data drawn from official Goskomstat reports published between October 1993 and January 1995 and a survey of large-scale and medium-scale industrial enterprises to evaluate the relationships between (1) overdue commercial payables to suppliers and receivables from customers, (2) overdue bank liabilities, (3) overdue tax and social security payables to the government, and (4) overdue wages to employees. Each of these variables was measured in terms of the aggregate debt across firms. Goskomstat was the most comprehensive source of information available on wage arrears at the time. But Goskomstat data ultimately proved to be inadequate for measuring this phenomenon in five important respects. For complete discussion see Petrin and Linz (2005).

individual-level information.

Data for our analysis of the relationship between perceptions and behavior were obtained from all rounds of the RLMS Phase II (rounds V-XIII), which correspond to years 1994, 1995, 1996, 1998, 2000, 2001, 2002, 2003, and 2004. To identify the group of respondents suitable for the analysis, we required that respondents demonstrate strong attachment to the civilian labor force.⁵ Strong attachment to the civilian labor force was demonstrated if respondents satisfied two criteria:⁶ (1) in response to the question about their “main occupation,” they selected “employed,” “on official childcare or maternity leave,” or “unemployed, actively looking for work;”⁷ and (2) they reported holding a primary job coded according to the four-digit International Standard Classification of Occupations (ISCO) that is consistent with an employee working in a civilian (non-farm) enterprise.⁸ The size of the resulting sample is 40,794 observations, although we are obliged in some instances to use smaller, sub-samples, given the (lack of) available data for some years. We provide summary statistics in the Appendix to clarify which sub-samples are used in particular regression analyses.

Wage Arrears Measures

The RLMS data set contains four variables that address wage arrears, each providing a somewhat different way of measuring the phenomenon: *amtow*, *owed*, *nopaym*, and *notpaid*.⁹

Amtow reflects answers to the question: “How much money in all have they [your place of work] not paid you?” and is given in ruble-denominated values. *Amtow* is not usually used in empirical analyses of wage arrears because it only specifies the nominal value of total wage debt,

⁵ Given mobility and other constraints not typical of the rest of the working population, individuals who reported themselves as working for the military in any capacity were excluded. Moreover, while other researchers have elected to drop individuals in the RLMS who are not officially “working age” (18-60 years old for men and 18-55 years old for women), we have elected to keep younger workers who meet the employment criteria, and have only dropped those older workers who are over age 65 years.

⁶ Ambiguity regarding labor force participation emerges from the fact that respondents give different responses to similar questions, making no one question a sure-fire signal of employment status.

⁷ Excluded are the categories of students, housewives, and retired (and no longer working).

⁸ Excluded are individual farmers, senior government officials, artists and entertainers, fashion models, religious leaders, and so on, who have rather atypical performance criteria to meet in highly specialized labor markets.

⁹ All except *notpaid* are the original RLMS variable names, minus the survey-round prefix. *Notpaid* is derived from the inverse of the RLMS variable *jobpay*.

not when the wage debt was incurred (Desai and Idson 2000). Analysis of nominal debt is not meaningful in periods of high inflation, which Russia experienced for much of the transition. Moreover, without specific information about the actual timing of past wage arrears, it is impossible to calculate the real value of wage debt from *amtow*.

Owed is a binary variable specifying a yes-no answer to the question, “At the present time, does your place of work owe you any money, which for various reasons was not paid on time?” Table 1 reports the percentage of the civilian workforce who responded affirmatively to this question.

Nopaym reflects answers to the question: “For how many months has the enterprise not paid this money to you?” *Nopaym* is reported as an ordinal measure of quantity, which has been interpreted as signifying the number of monthly “paychecks” owed (Earle and Sabirnova 1999). Table 1 reports the mean value for *nopaym* (months owed) for all RLMS survey rounds between 1994 and 2004. Typically, analyses of wage arrears have either used *owed* to define instances, or “incidents,” in which a wage debt is accrued (see, for example, Desai and Idson 2000, Earle and Sabirianova 2000 2002, Earle *et al* 2003; Gerry *et al* 2004; Lehmann *et al* 1999), or *nopaym* – to capture the relative or absolute level wage debt accumulated by individuals at a given point in time (Earle *et al* 2004, Earle and Sabirianova Peter 2004).

The fourth RLMS wage arrears variable is *notpaid*. *Notpaid* is a binary indicator variable based on answers to the question: “At your primary job in the last 30 days, did you receive some amount of money in the form of wages, bonuses, grants, benefits, revenues, or profits?” *Notpaid* directly addresses the occurrence of wage non-payment.¹⁰ Since wage non-payment is the direct causal link to wage debt, it is curious that no study to date has utilized this variable. Certainly, *notpaid* is not a perfect measure of current non-payment because it does not distinguish between partial and full wage payments. However, it does identify the cases where current arrears are most prominent and where they are likely to matter most. For example, it is reasonable to expect that worker response to current non-payment will be stronger if wages are not paid at all, while partial wage payment may signal an employer’s willingness and ability to resolve financial difficulties and, hence, may have little effect on worker behavior. Therefore, in our analysis, we use *owed* and *nopaym* as measures of wage debt, and *notpaid* as a measure of current non-payment.

¹⁰ *Notpaid* equals 1 when respondents answer negatively. We note that even a positive response to the question could be associated with partial payment, and thus does not cleanly capture the wage arrears phenomenon.

Workers have to experience wage non-payment in order to report wage debt, but it is not the case that *owed* and *notpaid* are identical or inter-changeable. We hypothesize that managers and workers will behave differently when faced with these two different conditions. We speculate, for example, that managers may be rather liberal in allocating wage non-payment (*notpaid*), perhaps believing that for morale purposes it is best to refrain from paying all workers in a given month. We further speculate that managers may prioritize workers in the reduction of wage debt (*owed, nopaym*) in order to ensure that those most valuable to the company are retained. Moreover, we consider the possibility that workers view wage non-payment and wage debt differently, and, consequently, respond differently to the two conditions. We also consider the possibility that workers respond differently depending on the magnitude of the wage debt (*nopaym*): the greater the magnitude of wage debt, the less likely are workers to change workplaces because, in effect, they lose claim to back pay. To test these hypotheses, we conduct our analysis for each of the wage arrears measures: *notpaid*, *owed*, and *nopaym*.

III. Variation in Wage Arrears

By 1994, when the RLMS first began surveying Russian workers to determine the scope of wage arrears, nearly one-quarter reported not receiving full wage payment in the previous pay period (*notpaid*) and more than 40% of the respondents were already reporting that they were owed money (*owed*) by their employer (see Table 1). Reporting of wage arrears peaked between 1996 and 1998 (no RLMS conducted in 1997), and then declined markedly. Considering the fact that the magnitude of wage arrears was halved at the end of 2004 – from 24 billion rubles on 1 January 2004 to 12 billion rubles (\$432 million) on 1 January 2005 (RIA Novosti, 29 March 2005), with much of the reduction coming in November and December 2004 – it appears that even government officials have recognized that Russian workers’ tolerance for wage arrears is diminishing. However, the fact that wage arrears rose by nearly 20%, to 14.3 billion rubles by 1 February 2005, affecting as many as 2.4 million employees (Prime-Tass, 22 February 2005), suggests that a permanent fix for the wage arrears situation is not on the immediate horizon. Petrin *et al* (2006) offers a detailed explanation for why wage arrears rose dramatically in Russia during deteriorating macroeconomic conditions and continue to persist despite improving macroeconomic conditions.

According to RLMS data, despite the general pattern of increasing wage arrears through 1998, and then declining wage arrears after the financial crisis, the incidence of wage arrears varied substantially by location and sector between 1994 and 2004. As seen in Table 2, the percentage of

workers living in Moscow and St. Petersburg who report being owed wages is substantially below the country average; regions far-removed from the “center” exhibit a significantly higher incidence of wage arrears (Siberia, North Caucasus, for example). Desai and Idson (2000) find an inverse relationship across regions between the level of economic development and the incidence of wage arrears. Workers in economically depressed regions – measured in terms of per capita GDP, unemployment rate, median wage, and other indicators – have been hardest hit by (have the highest incidence of) non-payment of wages and the subsequent persistence of wage debt. Moreover, in comparison to individuals living in urban settlements, the percentage of workers owed wages is much higher in rural settlements: 61% reported being owed back wages in 1994, 76% in 1998, 41% in 2002, and just under 30% in 2004 (see Table 2). That is, between 1994 and 2004, on average, nearly 50% of the civilian workforce living in rural settlements reported wage arrears, compared to 30% of the workforce living in urban settlements.

While detailed firm-level data are not provided in the RLMS, differences in the incidence of wage arrears between 1994 and 2004 appear to be linked to firm characteristics. Workers employed by privately-owned firms, whether foreign or domestic, are significantly less likely to report wage arrears (Table 2), as are workers employed by small firms (firms which employ 100 or fewer workers), although this advantage seems to diminish over time. Workers in firms with bad financial conditions¹¹ are consistently more likely to report wage arrears.

We measure wage debt, in part, using the number of monthly paychecks owed (*nopaym*). Between 1994 and 2004, the number of monthly paychecks owed averaged 3.5 (RLMS 2005). Workers in Western Siberia were owed an average of 5.2 paychecks during this period (Table 2, paychecks), while those in the Urals, Central and Central Black Earth regions, as well as those in Moscow and St. Petersburg averaged less than three. Once again, rural-urban differences are pronounced: workers in rural settlements report an average of about 5 months’ earnings owed, workers in urban settlements average about 3 months earnings owed.

The incidence of wage arrears between 1994 and 2004 appears to vary by worker characteristics (see Table 3), but not dramatically. Younger workers (15-24 years old), workers with some university education, and workers who recently hired in to the company (job tenure is less than 1 year) tend to be somewhat less likely to report wage arrears. These characteristics may

¹¹ Bad financial conditions are defined as firms which utilize unpaid leaves and payment in-kind to manage cash-flow problems.

be capturing a “mobility effect,” however, especially if contrasted against workers with more than 10 years at the company and workers with less than 9 years of schooling. The incidence of wage arrears tends to be lower among workers in occupations closest to cash transactions (“clerical, sales, services”) and among workers in occupations where wages are above the national average (“managers and professionals,” and “skilled technical and administrative”).

RLMS data indicate the persistence of wage arrears despite improving macroeconomic conditions, although wage arrears do tend to vary by region, industry, firm and worker in ways consistent with firm survival strategies adopted in an environment of financial turmoil and liquidity constraints. Despite the overall reduction in wage arrears associated with improved macroeconomic conditions, our current understanding of the wage arrears phenomenon in Russia is insufficient to rule out the possibility of a return to widespread wage arrears if macroeconomic conditions worsen. Furthermore, our current understanding of Russia’s wage arrears phenomenon fails to adequately account for how managers allocate wage arrears. Earle and Sabirianova (2000 2004) use RLMS data to show that once a worker experiences wage arrears, that worker faces a higher likelihood of remaining in the wage arrears trap (will continue to experience wage arrears). Moreover, their analysis indicates that, despite local labor market conditions, wage arrears can be avoided by some workers – between 40% and 70% of the RLMS respondents surveyed between 1994 and 2000 reported no paychecks owed (Earle and Sabirianova 2004, Table 1). We hypothesize that managers avoid allocating wage arrears to workers with high perceived demand. Why? We hypothesize that managers recognize that Russian workers with high perceived demand are more likely to leave the workplace/change jobs to avoid wage arrears.

IV. Perceived Demand and Wage Arrears

Why should perceived demand matter in the allocation of and response to wage arrears? We define perceived demand as a worker’s assessment of his/her ‘marketability’ – that is, one’s perception of one’s ability to find comparable alternative employment. We assume this assessment is shared by both workers and their managers. We argue that there are two possible reasons why perceived demand should matter in the wage arrears phenomenon. The first reason relates to managers’ decisions to reward good workers by minimizing their wage arrears. Since ‘marketability’ is positively related to productivity, a worker’s perceived demand should reflect the value of this worker to the firm. In this case, managers might choose to discriminate between different types of workers, not only to reward good workers, but also to retain the most valuable

ones.

The second reason relates to workers' response to wage arrears. Earle and Sabirianova (2000) develop model of managerial choice in the allocation of wage arrears which compares the benefits to the firm from arrears to the costs imposed on the firm by worker and government response to the practice. In their model, worker quits, among other factors, impose additional costs on employers, and since workers are more likely to remain at their workplace if wages are paid in full and on time, employers' optimal strategy may be to reduce arrears in order to prevent quit behavior and thus cut these costs.

We are interested in the factors that influence the behavior of managers and workers. Based on results reported in numerous studies, we expect to find that arrears are associated with a higher probability of job change by workers. Furthermore, we hypothesize that, regardless of local labor market conditions, worker response to wage arrears, and thus the allocation of wage arrears by managers, will be influenced by perceived demand. We hypothesize that workers with higher perceived demand are likely to change jobs more often, and therefore, managers may choose to avoid allocating wage arrears to such workers in order to avoid the costs associated with losing valuable employees.

While there are no existing theoretical or empirical studies that identify factors which contribute to perceived demand, we hypothesize that perceived demand is inversely related to job insecurity (fear of job loss) and positively related to skills (perceived, actual). Consequently, we utilize two different measures of perceived demand when we examine the influence of perceived demand on the allocation of wage arrears by managers and the response to wage arrears by workers. Using multiple measures allows us to test the robustness of our results.

Measuring Perceived Demand

We first consider the proposition that perceptions of 'marketability' may be discerned from one's sense job security and the ability to provide for one's basic needs (Elman and O'Rand 2002). That is, we view perceived demand as inversely related to job insecurity and/or the inability to provide basic necessities: the greater the fear of job loss and the higher the concern about one's inability to provide for one's basic needs, the lower one's perceived demand. Three RLMS questions included in each round of the survey address these issues. Respondents were asked:

Imagine this not very pleasant scene: the enterprise or organization where you work, for some reason will close tomorrow, and all workers will be laid off. How certain are you that you will be able to find work, no worse than your present job? (FINDJB)

How concerned are you that you might lose your job? (CHANJL)

How concerned are you about the possibility that you might not be able to provide yourself with the bare essentials in the next 12 months? (AGETNE)

In each case, respondents are given a 5-point Likert scale, where 1 reflects a negative assessment (fear) and 5 reflects a positive assessment (confidence).¹² Because the reliability coefficient (Cronbach alpha) equals 0.61, we construct a composite measure of perceived demand, PCVDMD1, using these three questions. PCVDMD1 has a minimum value of 3 and maximum value of 15. We arbitrarily categorize scores of 6 and lower as “low” perceived demand and scores of 12 and higher as “high” perceived demand.

We also consider the proposition that perceptions of ‘marketability’ may be discerned from assessments of one’s skills (Handel 2003, Hargittai and Shafer 2006, Jenkins 2001, Pallier 2003). That is, we view perceived demand as positively related to perceived (and actual) skills. Our second measure of perceived demand, PCVDMD2, is based on the following question, which was asked only beginning in 1996:

Consider this statement – is it like you or not: “It seems to me that I have few of those qualities that are valued in the economic situation of today” ...? (VALUED)

Respondents were given a scale from 1 to 4, where 1 reflects few valued skills and 4 reflects many valued skills.¹³ “Low” perceived demand is defined as a score equal to 1; “high” perceived demand is defined as a score equal to 4. This variable is not available prior to 1996, nor is it available in 2001, so our analysis using PCVDMD2 is necessarily performed on a smaller sub-sample of the data.

Do workers with high perceived demand differ from those with low perceived demand? Table 4 provides summary statistics for both perceived demand measures by select worker characteristics and wage arrears status. That is, Table 4a reports the percentage of respondents categorized as having “low” and “high” perceived demand using the composite measure (PCVDMD1), as well as the mean response by select worker characteristics and wage arrears status. Table 4b reports similar results for the skills measure (PCVDMD2). Several patterns are evident. First, regardless of measure, the percentage of workers in the “low” perceived demand

¹² To maintain consistency in the three variables, we reversed the coding of the responses for FINDJB so that 1 = absolutely uncertain and 5 = absolutely certain.

¹³ We note that in the original wording, the options given are: 1= that is exactly like you ... 4 =it is not at all like you.

category rises each year prior to Russia's financial crisis in August 1998. This reflects not only growing perceptions of job insecurity but also concerns about having sufficient skills. Given the magnitude of the structural economic transformation taking place, this result is hardly surprising. Second, in comparison to men, a greater percentage of women consistently fall into the "low" perceived demand category. The gender difference in response patterns is substantial and statistically significant – not only are women more concerned than men that they might lose their job and not be able to find anything comparable, women also consistently report that their skills are not as valued in the current economic situation. Third, generational differences in response patterns also are significant: older workers (over age 40 at the time the survey was conducted) emerge more frequently in the "low" perceived demand category and less frequently in the "high" perceived demand category. For younger workers (less than age 25 at time of survey), the opposite holds true: more frequently in the "high" perceived demand category and less frequently in the "low" perceived demand category. Fourth, a greater percentage of individuals with at least some university education tend to emerge in the "high" perceived demand category, but this result diminishes over time.

Perceived demand also varies by job tenure: individuals employed at the same workplace for over 10 years consistently account for the greatest proportion of workers with "low" perceived demand. For occupation, the pattern is not so clear. These data suggest that, over time, employment conditions possibly improved for "skilled manual" and "clerical, sales, service" workers, as the percentage of these workers in the "high" perceived demand category appears to increase, albeit not uniformly. While "managers and professionals" routinely are found among those reporting "high" perceived demand, no other systematic difference emerges by occupation. In contrast, there is a clear relationship between wage arrears and perceived demand: individuals who report wage arrears fall into the "low" perceived demand category more often than those for whom wages are paid in a timely manner. The difference is substantial and statistically significant.

Table 5 reports the "low" and "high" perceived demand categories by region and firm characteristics: Table 5a focuses on the composite measure associated with fear of job loss (PCVDMD1); Table 5b focuses on the valued skills measure (PCVDMD2). The "best" perceived demand outcomes are associated with individuals who live in Moscow/St Petersburg and/or work in foreign-owned firms. Living in urban settlements is better than rural settlements, as is working in a non-state-owned firm. The firm's financial health has little discernable influence on perceived

demand response patterns, and it is only after the financial crisis in 1998 that local unemployment conditions have an important influence on perceived demand – individuals living in locales where unemployment is relatively low exhibit higher perceived demand.

Perhaps most strikingly evident in Table 4 and Table 5 is the impact of Russia's financial crisis in August 1998 on perceived demand; mean scores are significantly lower in 1998 in comparison to 1996.¹⁴ The impact of the financial crisis on perceived demand was substantial, albeit not uniform – the impact varies by worker characteristics, as well as by region and by firm characteristics. Similarly, the recovery of perceived demand after the crisis occurs at a much different pace, depending upon worker characteristics, and regional and firm conditions. A detailed analysis of factors influencing perceived demand among the respondents participating in RLMS between 1994 and 2004 is provided in Linz *et al* (2006).

Perceived Demand and the Allocation of Wage Arrears by Managers

We consider two hypotheses regarding the way in which perceived demand may influence the allocation of wage arrears by managers.

H₁: *Managers do not consider perceived demand in the allocation of wage-nonpayment (notpaid).*

H₂: *Managers do consider perceived demand in the allocation of wage debt (owed, nopaym), and will refrain from allocating wage debt to workers with high perceived demand (high marketability).*

Our first hypothesis reflects the premise that a firm's financial conditions drive wage arrears. Bad financial conditions (lack of funds) oblige managers in loss-making firms to delay wage payments. We posit that managers are likely to delay wage payments for all workers to minimize the adverse effect on morale associated with differential treatment. Anecdotal evidence suggests, for example, that while Russian managers may prefer to be selective in deciding who to pay, giving preference to more highly-valued workers, this might not be practical or efficient from the standpoint of maintaining worker morale. Few practices can be more destructive of workplace

¹⁴ The surveys typically are conducted in October/November. Consequently, in 1998, workers had experienced the adverse consequences of the crash for at least three months before they participated in the survey. For a detailed discussion of causes and consequences of financial crisis, see Kharas *et al* (2001).

morale than the imposition of selective cuts in wages and benefits.¹⁵

Wage non-payment might also occur in profit-making firms if alternative financial opportunities are present and the cost to the firm of delaying wage payment is small. Attractive financial opportunities were present in Russia beginning in 1995 when short-term state bonds, GKO's, were issued (Kharas *et al* 2001, Millar 2003). Capital flight estimates rising from 3% of GDP in 1995 to over 18% of GDP in 2000 (Abalkin and Whalley 1999, Grigoryev and Kosarev 2000, Lougani and Mauro 2000, Tikhomirov 1997) suggest that firms also were able to take advantage of attractive financial opportunities outside of Russia. Earle and Sabirianova (2004) consider the costs imposed on the firm by wage non-payment: reduced work effort and thus lower productivity/profitability, labor turnover and thus higher training costs and/or lower productivity/profitability, and penalties imposed by government authorities for violating labor codes. They conclude that the latter cost, penalties imposed by government authorities, is rarely enforced, and that the former cost, lower productivity, is attenuated by locale labor market conditions that reduce employee options to respond to wage arrears. Consequently, we do not rule out the possibility of wage non-payment in firms in good financial condition. We simply suggest that if managers decide to pursue a wage non-payment strategy in a particular month, the wage non-payment is likely assigned to all workers.

Our second hypothesis is based on the premise that managers' wage debt strategies ultimately are governed by firm-performance objectives, and not defined exclusively by current financial conditions. We follow our first hypothesis that managers adopt an across-the-board wage non-payment strategy with the proposition that managers rotate the repayment of wage debt on a priority basis, where priority is defined by a worker's contribution to the firm and/or the likelihood of losing a valued worker. This two-part strategy targets firm performance to the extent that managers may conclude that they can reduce antagonisms in the workplace in the short term and thus maintain or improve worker performance in the longer term. We predict that wage debt will be higher among workers who have fewer alternative employment options. Our objective is to explicitly test the hypothesis that both the incidence (*owed*) and magnitude (*nopaym*) of wage debt will be higher among workers with low perceived demand.

¹⁵ An extensive management and psychology literature suggests that the most cost-effective way for managers to handle cash-flow problems, whether real or contrived, is to undertake a practice of uniform treatment – in this case, distribute wage arrears across-the-board, to all workers. For a review of the literatures, see Linz *et al* (2006), Tekleab *et al* (2005).

Perceived Demand and the Response by Workers to Wage Arrears

We focus our analysis of worker response to wage arrears on the decision to change workplaces. The RLMS included a job change question for the first time in 1996, but the wording of the question made it impossible to determine whether the respondent changed jobs within a workplace or changed workplaces.¹⁶ In subsequent surveys, the response options became more specific in order to capture this difference. Our focus is on whether an individual changed employers, so we re-code and construct *newjob* to reflect this behavior.

We consider two hypotheses regarding the way in which perceived demand may influence worker response to wage arrears:

H₁: *Workers with high perceived demand will be more likely to change jobs (workplaces).*

H₂: *Other things equal, workers who experience wage arrears will be more likely to change workplaces, but the probability of job change declines as the size of the wage debt grows.*

We posit that if job change occurs among workers with high perceived demand and if wage arrears are positively correlated with job change, this can be viewed as a signal of job change being a worker's attempt to improve his/her employment conditions in response to wage arrears.

V. Allocation of Wage Arrears

To better understand the wage arrears phenomenon, we utilize three measures in our analysis of managers' allocation of wage arrears: *notpaid*, *owed*, and *nopaym*. In this way we hope to be able to assess whether Russian managers differentiate their behavior in terms of generating new wage debts and managing old ones, and how this is affected by perceived demand.

To assess the likelihood that a worker will be allocated wage arrears by his/her manager, we use the following probit model:

$$P(\text{wage arrears}|\text{economy}, \text{firm}, \text{individual}) = \Phi(z)$$

where $z = \beta_0 + \beta_1 \text{economy} + \beta_2 \text{firm} + \beta_3 \text{individual} + \varepsilon$

with *notpaid* and *owed* as our two measures of the incidence of wage arrears. Φ is the standard normal cumulative density function.

¹⁶ One difficulty associated with conducting our analysis using RLMS data is the fact that if workers change locations they are dropped from the survey (for further discussion, see Andrienko and Guriev, 2004). Workers may not be able to improve their wage arrears situation by changing employers in the local labor market because of adverse economic conditions. If workers move to jobs in new locations, where economic conditions are better, they are no longer included in the survey. Consequently, we are not able to directly test the hypothesis that job change influences wage arrears.

To assess the intensity, or duration, of wage arrears, we use a Poisson model with:

$$E(nopaym|economy, firm, individual) = \exp(\beta_0 + \beta_1 economy + \beta_2 firm + \beta_3 individual)$$

In all three specifications, our objective is to assess the relative impact of perceived demand on the allocation of wage arrears. We control for the observed attributes of firms, individuals, and macroeconomic conditions. Summary statistics for the variables used in our regression analysis are provided in the Appendix. Here we briefly describe the *economy*, *firm* and *individual* variables. To capture macroeconomic conditions, *economy*, we use region dummies, oblast-level unemployment rates (calculated by IMF and matched with RLMS sampling units), a dummy variable for settlement type (rural versus urban) and finally, we include time dummies. In this way, we are able to identify, at least in part, the effect of changes over time in the structure and macroeconomic conditions on the wage arrears phenomenon in Russia.

We include two *firm-level* variables that are likely to have an important effect on wage arrears: ownership and financial health. We construct dummy variables to identify three ownership categories: foreign-owned (including joint ventures with state), state-owned, and Russian private-owned enterprises.¹⁷ Private (*de novo*) firms, and foreign-owned firms, appear to be more inclined to voluntarily adhere to legally prescribed fair labor practices, perhaps because they have better opportunities than privatized and state-owned firms to adjust costs. Privatized firms, although shaped by the Soviet legacy, are seen to be more responsive to restructuring needs than state-owned firms. Consequently, we expect wage arrears to be highest among state-owned firms and lowest among private (*de novo*, privatized or foreign-owned) firms.

Clarke (2000) has shown, however, that assumptions regarding the expected differences in performance between private, privatized, and state-owned firms can be misleading. If the firm's financial health is in jeopardy, ownership structure might not matter at all. Thus, we follow Clarke (2000) in positing that the relative financial health of the firm is an independent variable in its own right. To identify "financial health" of the firm, we construct two dichotomous indicator variables: firms in bad financial health are (1) more apt to pay workers in-kind (goods) rather than in cash, and (2) more likely to enforce compulsory leaves of absence as a way to formally retain the

¹⁷ The RLMS data records ownership variables in non-exclusive categories that can be confusing. We re-code these variables as follows: a state-owned firm is one that is *exclusively* state-owned; a Russian-owned or foreign-owned firm is one that is either wholly owned by private interests or is constituted as a joint venture with the state. There is not overlap in the sample between Russian and foreign ownership understood in this way. Russian private-owned includes both privatized and newly-created private (*de novo*) firms.

services of their employees while simultaneously adjusting their wage bills. We hypothesize that wage arrears will be more likely among individuals who work for firms in bad financial health, regardless of the firm's ownership structure.

The advantage of using RLMS data to evaluate wage arrears outcomes is that it enables us to control for the attributes and attitudes that workers bring to the decision-making process in a more systematic way. We include the following *individual* characteristics: age, gender, marital status (dummy variable equals one if married), education (secondary or less, vocational-level training, university-level training),¹⁸ job tenure (years at current workplace), and occupation.

RLMS data enable us to assess whether occupations are neutral with regard to wage arrears, as previous studies have suggested. We start from the occupational classification provided in RLMS (400 job codes are included in the sample), and then, rather than collapse the four-digit codes into two-digit or one-digit codes (which typically yield discrete categories that make no sense),¹⁹ we construct a classification that focuses on sorting jobs by those characteristics that we believe are most relevant to the study of wage arrears: management and non-management positions, manual and non-manual positions, and skilled and unskilled positions. Dummy variables were constructed to represent each of the seven resulting categories: managers and professionals; skilled technical and administrative personnel; clerical, sales and service personnel; teachers, nurses, and social workers; skilled manual workers; semi-skilled manual workers; and

¹⁸ The RLMS variable for "maximum grade completed" is misleading. While 50 percent of all respondents in the RLMS sample report that they have completed no more than the compulsory ninth-grade education, two-thirds of these have gone on at some point in their lives to acquire advanced training at the secondary school, community college, or university level. Altogether, nearly 90 percent of the RLMS sample reports some level of advanced training, either vocational or academic/professional, degree or non-degree. Confusion can arise from the use of the remaining indicator variables that the RLMS uses for the various formal levels of secondary and post-secondary education. Because these variables are non-exclusive, respondents may be doubly or triply counted in any study that does not carefully discriminate. Consequently, the method we have chosen here to classify education is as follows: (1) respondents are divided into two groups based on whether or not they indicate that they have received any education beyond the secondary school level. Those who answer "no" are classified as "secondary education or less." (2) The remainder are classified as either "some post-secondary education" or "university level graduate" depending on the highest level of achievement reported. While this method sacrifices some detail, it has the advantage of providing us with three meaningful categories of education that should enable us to measure their relative effects on wage arrears outcomes.

¹⁹ RLMS researchers at the University of North Carolina caution against mechanically collapsing the occupation coding scheme: "This does not, in our estimation, constitute a valid ordinal scale. For example, many professionals also perform secondary managerial functions and may have more authority over other employees than some people who are classified as managers. Crafts workers may well be more skilled, educated, and highly paid than some clerks." [<http://www.cpc.unc.edu/projects/rlms/data/occupationalcoding.html>].

unskilled manual workers.

Additionally, we include a lagged dependent variable (the value of the dependent variable in the previous survey round), which measures the persistence of wage arrears over time and helps to capture the effect of the unobserved individual and firm-specific characteristics. Because we are using lags, we lose the first period (1994), and we have to limit the sample to the respondents who appear in at least two consecutive rounds of the survey.

We estimate the model for each of the three wage arrears measures, using both perceived demand measures. In our regression analysis, the perceived demand measures are the initial continuous variables that were standardized to have zero sample mean and unit variance. We allowed the perceived demand effects to vary in time by interacting the perceived demand measures with time dummies. When tests suggested that there was no significant variation over time, we imposed coefficients equality. The effects of all other factors were assumed to be time-constant.

Wage Arrears Regression Results

The estimated partial effects of the economy, firm, and individual characteristics on wage arrears are reported in Table 6. The main patterns resemble those revealed by the descriptive statistics presented in Tables 2 and 3. As seen in Table 6, wage arrears were most severe in 1996-1998, and declined steadily in the subsequent years, as macroeconomic conditions improved. Regional differences are substantial, with the worst situation observed in the remote Siberian regions. Arrears are less of a problem in urban settlements, generally, and in the metropolitan areas of Moscow and St. Petersburg, particularly, because employment opportunities are more plentiful, especially in comparison to rural areas.

Occupations suffering least from arrears are the relatively mobile clerical/sales/service occupations, which also have an advantage of being close to cash transactions.²⁰ Our estimates show that skilled workers tend to fare relatively well in comparison to their unskilled counterparts. The only exception is teachers/nurses/social workers, who are typically employed by state-owned organizations, and who exhibit the highest number of paychecks owed.

In general, wage arrears are rather common among respondents working at state-owned enterprises and enterprises in bad financial health. The probability of wage non-payment and wage

²⁰ Studies show that firms close to cash transactions tend to be financially better off and tend to rely less on barter transactions to conduct their business operations (Krueger 2004, Krueger and Linz 2002).

debt tend to be greater in locales where unemployment rates are high, a result likely due to adverse economic conditions in the region combined with a greater willingness by workers to tolerate wage arrears because of limited local employment alternatives.

Many worker characteristics, such as age, marital status, and education, seem not to matter in the allocation of wage debt, once we control for other factors. Gender is important, however. Both the probability of being owed wages and the size of the wage debt tend to be smaller among women. Not surprisingly, wage debt accumulation is greater among respondents who have worked at the same workplace for many years. This result is consistent with a strong positive relationship between current non-payment and the arrears situation in the previous period. Specifically, other things being equal, if a worker is owed wages in the previous period, then the probability that this worker will be owed wages in the current period is higher by about 0.33. Moreover, there is evidence suggesting that wage debt is expected to grow larger if the size of the debt is already big. In this sense, workers fall into a wage arrears trap, from which it is difficult to escape.

One primary objective is to evaluate the influence of perceived demand on managers' allocation of wage arrears. Estimates of the partial effects of our perceived demand measures on wage arrears are reported in Table 7. We hypothesized that managers would not consider perceived demand in their allocation of current wage non-payment (*notpaid*). We find, however, that perceived demand, as measured by job insecurity fears, has a small but significant effect on managerial behavior. As expected, perceived demand is more important in the allocation of wage debt than in the allocation of current non-payment. The estimated partial effects are small, but statistically significant, suggesting that the probability of being owed wages and the size of the wage debt tend to be smaller among workers with higher perceived demand.

We note that in all specifications the effect of job insecurity (PCVDMD1) is greater than the effect of having valuable skills (PCVDMD2). Our estimates show that the probability of being owed wages is by 0.014 smaller if a worker's PCVDMD2 is one standard deviation greater than the sample average. The effect of PCVDMD1 is twice as big in 1995-2001, but becomes small and insignificant in 2002-2004. Similarly, the expected number of monthly paychecks owed is reduced by about 0.05 if PCVDMD1 exceeds the sample mean by one standard deviation. The effect of the PCVDMD2 measure is about 40% less. Our results support the general finding in psychology that avoiding negative consequences appears to have a bigger influence on behavior than considering positive consequences – consider the reaction to having one's consumption reduced by half as a

result of (a) saving, or (b) theft.

We interpret the negative relationship between perceived demand and wage arrears as likely reflecting that workers with high perceived demand are more productive and managers choose to reward these workers by refraining from allocating wage non-payment, or, if that fails, placing high priority on reducing their wage debt. Another possible explanation relates to job change decisions by workers, which we analyze next.

VI. Perceived Demand and Worker Response to Wage Arrears

Do Russian workers use job change as a coping strategy for avoiding wage arrears? To study this issue we estimate the job change equation using probit regression:

$$P(\text{jobchange}|\text{economy}, \text{firm}, \text{individual}) = \Phi(z)$$

where $z = \beta_0 + \beta_1 \text{economy} + \beta_2 \text{firm} + \beta_3 \text{individual} + \varepsilon$

Newjob is a binary variable equal to one if the worker changed employers between the current period and the next period this worker was observed, while the explanatory variables are from the current period. We utilize the same *economy* variables from the wage arrears equation: region, unemployment rate, settlement type, and year, as well as the same *firm* variables: financial condition, ownership. In addition to the *individual* variables used in the wage arrears equation: age, gender, marital status, education, job tenure, occupation, and wage arrears experience, we include a measure of wages, *payt*. Variable *payt* is the “contractual wage” described by Earle and Sabirianova (2002); *payt* is used in place of the actual wage to avoid problems associated with zero or partially reported wages when wages are not paid on time.²¹ Because the contractual wage is not available in RLMS before 1998 and we need to observe all explanatory variables prior to job change, we estimate the equations using 2000-2004 job change data. Similarly to the arrears regressions, we allow the perceived demand effects to vary over time, but impose time-invariant restrictions on the other coefficients. We estimate the model using both perceived demand measures. Summary statistics of the variables used in these regressions are provided in Appendix.

Job Change Regression Results

Our estimates are reported in Table 8. As seen in Table 8, the highest probability of job

²¹ *Payt* was obtained from responses to the following question: *Tell me, please, in the last 12 months how much was your average monthly wage after taxes from this organization – regardless of whether it was paid to you on time or not? If you have worked there for less than 12 months, what has been your average monthly wage for the time you have worked there? If you receive all or part of your wage in foreign currency, please convert that to rubles and report the total amount paid.*

change is observed in 2000 (shortly after the financial crisis), and it stabilizes in subsequent years. Respondents residing in urban areas and in the Central region tend to change jobs less often, and worker turnover is greater in occupations closest to cash transactions (clerical/sales/services) and manual occupations. Employees working in state-owned enterprises tend to be more attached to their jobs, as do older workers, workers with longer previous job tenure, and women. As expected, local unemployment rate is negatively related to the probability of job change – the higher the local unemployment rate, the fewer the alternative job opportunities for any given worker, and the more likely that workers will remain attached to their existing job/workplace.

Both current non-payment and the presence of wage debt increase the probability of job change in the subsequent period. The effect is from 0.02 to 0.05, depending upon the specification. In contrast, workers are more reluctant to quit their job if their wage debt is large, since in this case the wage loss due to moving to another workplace is also large (workers forfeit the entirety of the wage debt). Similarly, job change becomes less likely as the contractual wage rises. Overall, these findings provide evidence in support of our hypothesis that workers use job change as a means to escape from the wage arrears trap. The incidence of wage non-payment creates additional motivation to look for a better job.

Table 9 displays estimated partial effects of our perceived demand measures on the probability of job change. Both measures tend to have significant positive effects, implying that higher perceived demand is associated with a higher probability of job change. We note that the negative measure of perceived demand (job insecurity) has a somewhat larger influence than the positive measure (many valued skills). That is, the probability of job change is 0.015 higher if PCVDMD2 is one standard deviation greater than the sample average. The relationship is stable over the 2000-2003 period, although it becomes insignificant (and negative) in 2004. The corresponding effect of PCVDMD1 ranges from 0.01 to 0.025, depending on specification and year. Generally, perceived demand has a bigger influence on worker behavior than the worker's educational attainment or local labor market conditions (as measured by the unemployment rate).

We conclude that (1) the incidence of wage arrears is associated with a higher probability of job change, and (2) workers with high perceived demand are more likely to change jobs. Thus, workers who believe that they have valuable skills demanded in the market (that is, workers who are expected to be of greater value to their employers) have more incentive to leave, and one way to keep these workers is to pay them their wages on time and/or reduce their wage debt. This is

consistent with our finding that arrears tend to be lower among workers with high perceived demand.

VII. Summary and Conclusions

Using the most recent RLMS data, we analyze the wage arrears phenomenon in Russia. Like studies based on data collected before 2002, we find that arrears are more common among workers employed by firms in bad financial condition, and in locales where unemployment rates are high. Indeed, regional differences are pronounced. The probability of experiencing wage arrears is greater among workers employed in state-owned organizations, and among those living in rural, as opposed to urban, settlements. Worker characteristics tend not to explain the incidence or duration of wage arrears; gender is only exception. Job tenure has a small positive effect and certain occupations exhibit lower arrears (managers/professionals, skilled technical/administrative, and clerical/sales/service). In short, updating wage arrears analyses using more recent data does little more than confirm results generated in previous studies. Much about the wage arrears phenomenon remains to be explained.

Our primary contribution is to investigate the link between perceptions and behavior using the wage arrears phenomenon in Russia as our case study. We develop two measures of perceived demand – a worker’s perception of his/her ‘marketability’ – and evaluate the influence of perceived demand on the behavior of managers and workers. In particular, we ask whether managers behave differently with regard to the allocation of current wage non-payment and wage debt, and whether or not perceived demand influences the allocation behavior. We find that arrears tend to be lower among workers with high perceived demand, and this effect is particularly large in the case of wage debt. We explain this finding by managers’ and workers’ optimizing behavior. Specifically, we argue that workers with high perceived demand are more likely to quit their jobs to avoid arrears, so the optimal strategy for managers is to avoid allocating or reduce wage arrears to such workers, and, in effect, lessen the cost associated with losing valuable employees.

We test our hypothesis by analyzing the determinants of job change. We ask whether workers behave differently in response to wage non-payment and wage debt, and estimate the influence of perceived demand on their behavior. We find that workers with high perceived demand change jobs more often. Additionally, both current non-payment and wage debt are associated with a higher probability of job change, although this probability declines as the size of the wage debt increases. Thus, by reducing wage arrears to workers with high perceived demand,

managers can make current employment more attractive to these workers and motivate them to stay on their jobs. This finding supports our hypothesis about the optimizing behavior of both managers and workers.

Our analysis suggests that the probability of falling into the wage arrears trap is lower for workers with high perceived demand. Our findings show that neither education nor job tenure help to reduce or avoid wage debt. Rather, 'marketability' matters.

We expected to find that managers allocate current wage non-payment across workers independently from considerations of 'marketability,' and then follow up with a wage debt reduction strategy that targets most valuable workers. That is, we hypothesized that perceived demand would not influence current non-payment, but would influence wage debt reduction. We also hypothesized that our two measures of perceived demand would perform equally well. We found that our job insecurity measure (PCVDMD1) routinely had a greater influence than our many valued skills measure (PCVDMD2), and that managers considered perceived demand in all instances of wage arrears allocation. Perhaps Russian managers know that research conducted in developed market economies suggests that most workers feel they are compensated unfairly, regardless of managerial efforts to satisfy distributive justice criteria in pay allocations (Heneman and Judge 2000), so they simply avoid this strategy and allocate wages and wages arrears in a way that focuses on retaining their good ('marketable') workers.

Establishing a link between perceptions and behavior is not new. Developing a more detailed explanation of the wage arrears phenomenon is new: (1) we consider alternative wage arrears measures, and allow workers and managers to behave differently with regard to these measures, and (2) we proposed a specific measure of 'marketability' and evaluate its influence. Given the growing literature in behavioral economics, perhaps more detailed surveys of worker attitudes and personality traits will be conducted in both developed market economies and transition economies so that our understanding of the ways in which perceptions and 'soft skills' affect labor market outcomes is further enhanced. We view this analysis as one step in the thousand mile journey.

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Table 1: Wage Arrears, by round (1994-2004)

		1994	1995	1996	1998	2000	2001	2002	2003	2004
Wage Arrears										
not paid	Pct	23.5	27.6	37.1	31.8	19.4	16.2	15.3	13.0	10.0
owed	Pct	46.5	49.0	65.4	69.0	37.0	31.5	29.0	25.6	20.2
paychecks	Mean	2.74	2.93	3.46	4.91	4.27	2.84	2.82	20.93	2.46
RLMS obs	N	4528	4202	4050	3941	4155	4733	4952	5076	5157

Table 2: Arrears by region, firm characteristics, 1994-2004

	not paid		1994 owed		paychecks		not paid		1995 owed		paychecks		not paid		1996 owed		paychecks		
	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	
<i>Region</i>																			
Northern and north western	27.6	337	53.4	335	3.03	314	27.3	333	57.1	331	2.22	304	35.4	305	73.4	304	3.48	280	
North Caucasian	29.3	529	47.7	518	2.69	484	33.7	496	52.0	492	2.99	445	50.5	487	73.3	479	3.48	438	
Ural	19.3	678	46.4	670	2.45	626	21.1	639	45.8	625	2.06	586	31.4	624	67.6	605	2.85	562	
Central and central black-earth	22.2	839	42.8	830	2.80	777	21.2	753	39.6	739	2.61	697	28.1	743	54.6	724	3.06	679	
Volga-Vaytski and Volga basin	24.9	776	48.0	752	2.65	701	33.4	721	57.1	708	2.94	659	45.2	697	71.7	685	3.78	634	
Western Siberian	28.7	432	49.8	428	3.38	395	40.1	411	58.3	408	4.76	356	43.3	404	72.4	398	4.28	357	
Eastern Siberian and far eastern	29.5	454	60.6	442	2.58	407	35.9	434	59.3	420	3.33	380	49.2	413	76.0	408	3.83	369	
Metropolitan: Moscow/St. Petersburg	10.2	479	28.8	467	2.48	443	10.5	410	26.9	405	2.50	376	12.9	365	34.5	354	2.73	342	
<i>Settlement type</i>																			
Urban	20.0	680	41.6	1382	2.46	486	23.3	713	44.0	1322	2.30	483	31.1	913	61.6	1763	3.04	455	
Rural	34.1	385	61.3	685	3.29	171	39.1	445	62.5	702	4.09	157	52.9	586	75.4	826	4.41	116	
<i>Local unemployment rate</i>																			
<6%	21.2	99	39.2	177	2.21	60							35.9	69	79.6	144	3.09	37	
6-10%	22.4	844	46.2	1703	2.78	549	22.6	560	42.7	1040	2.42	367	28.6	563	56.3	1085	3.02	276	
>10%	39.9	122	61.7	187	2.88	48	35.9	562	60.4	930	3.50	258	47.4	829	76.4	1305	3.93	235	
<i>Ownership</i>																			
State	24.2	671	48.3	1331	2.65	438	27.1	642	49.4	1169	2.84	397	39.1	866	67.7	1496	3.21	351	
Russian	19.1	132	38.6	266	2.80	88	25.5	237	44.1	409	2.69	128	32.3	313	60.3	584	3.77	127	
Foreign	17.4	25	38.0	54	3.51	12	22.9	35	40.5	62	3.08	26	25.9	36	55.0	77	2.74	26	
<i>Enterprise size</i>																			
1-30 employees	24.4	449	45.9	839	2.88	250	26.6	408	46.4	708	2.96	228	36.5	557	61.8	940	3.39	213	
31-200 employees	22.4	204	45.5	413	2.79	134	28.5	198	53.8	373	3.33	114	37.5	250	73.2	485	3.90	112	
201-1000 employees	17.8	138	47.6	366	2.74	121	25.4	150	50.9	301	2.55	107	31.1	155	66.9	335	3.58	65	
<i>Financial health</i>																			
Ok	17.0	490	37.1	1043	2.49	406	21.6	597	42.7	1179	2.64	454	30.0	749	57.8	1441	3.00	403	
Bad	30.7	376	62.7	763	3.05	199	39.0	338	63.2	541	3.66	129	51.6	494	82.6	786	4.43	109	
<i>TOTAL</i>																			

Table 2: Arrears by region, firm characteristics, 1994-2004

	not paid		2002 owed		paychecks		not paid		2003 owed		paychecks		not paid		2004 owed		paychecks	
	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N
	<i>Region</i>																	
Northern and north western	19.0	366	40.7	354	1.75	305	17.2	360	34.7	349	1.88	305	11.0	356	22.3	336	1.72	311
North Caucasian	17.8	483	30.0	447	2.65	398	17.8	501	27.7	465	3.10	413	11.8	525	20.4	485	2.80	447
Ural	10.7	717	19.8	676	2.39	626	9.9	784	19.6	723	2.14	664	8.6	802	15.9	741	2.24	686
Central and central black-earth	11.6	686	25.0	837	2.01	783	10.0	901	22.1	842	2.29	486	6.8	883	16.8	832	2.08	799
Volga-Vaytski and Volga basin	17.9	875	34.3	846	3.33	779	13.3	860	27.6	812	3.56	749	11.5	851	22.0	803	2.85	735
Western Siberian	28.1	413	47.4	392	5.42	335	22.0	432	44.3	400	5.15	363	15.3	444	38.4	409	3.26	368
Eastern Siberian and far eastern	20.9	460	40.4	436	1.71	386	18.7	497	34.2	468	1.61	423	13.4	522	27.1	487	1.72	445
Metropolitan: Moscow/St. Petersburg	6.8	768	12.9	737	2.38	705	5.6	738	11.8	710	2.02	678	6.5	769	10.9	750	2.44	709
<i>Settlement type</i>																		
Urban	11.7	430	24.7	865	2.00	385	10.1	380	21.6	766	2.06	323	7.8	301	17.2	627	2.21	225
Rural	25.7	328	41.4	503	4.23	138	21.6	282	37.6	457	4.38	110	16.9	215	29.7	353	2.88	109
<i>Local unemployment rate</i>																		
<6%	8.4	116	16.5	219	2.27	95	7.5	113	15.8	228	1.92	89	7.8	129	14.0	224	2.10	75
6-10%	18.7	492	34.4	860	3.23	307	12.3	160	22.8	277	2.50	83	10.5	266	22.5	527	2.73	170
>10%	15.9	150	32.3	289	2.04	121	17.3	374	33.9	388	3.41	250	13.1	111	25.8	207	2.21	77
<i>Ownership</i>																		
State	17.3	408	32.4	762	2.63	305	13.8	310	27.5	616	2.87	235	10.6	225	21.7	460	2.40	172
Russian	12.7	222	24.1	420	2.95	171	11.6	214	22.8	421	3.13	157	8.1	164	16.6	336	2.50	124
Foreign	7.0	16	14.1	33	1.22	15	8.2	15	13.1	24	2.25	9	7.3	13	10.1	18	1.29	5
<i>Enterprise size</i>																		
1-30 employees	15.6	314	28.1	565	2.83	221	11.6	236	23.7	483	2.97	183	9.0	182	18.2	369	2.35	135
31-200 employees	16.1	140	32.1	297	3.58	108	13.8	111	27.6	222	3.55	87	10.0	84	24.2	203	2.46	84
201-1000 employees	11.0	84	25.7	197	1.99	87	9.2	61	23.1	153	2.24	67	6.7	46	16.8	116	2.37	46
<i>Financial health</i>																		
Ok	10.6	374	22.9	808	2.49	385	8.1	288	18.9	670	2.60	320	5.5	208	14.5	545	2.07	224
Bad	29.1	208	46.4	324	4.15	85	25.1	157	43.6	267	4.27	59	20.4	119	37.7	212	3.31	58
<i>TOTAL</i>																		

Table 3: Arrears by Worker Characteristics, 1994-2004

	not paid		1994 owed		paychecks		not paid		1995 owed		paychecks		not paid		1996 owed		paychecks		
	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	
<i>Gender</i>																			
Male	27.1	595	51.0	1095	2.82	936	31.1	632	52.6	1049	3.15	892	40.2	778	68.1	1288	3.86	1136	
Female	20.2	470	42.4	972	2.65	836	24.3	526	45.7	975	2.68	807	34.3	721	63.0	1301	3.08	1155	
<i>Age</i>																			
15-24	29.2	157	46.0	241	2.70	174	31.2	163	45.9	235	2.30	157	39.9	196	61.3	287	2.95	235	
25-39	22.8	440	48.3	915	2.78	784	27.0	463	50.1	841	3.01	699	36.1	590	66.6	1067	3.50	941	
40-54	22.7	355	46.7	716	2.71	645	27.0	400	50.3	737	2.90	663	36.9	530	65.2	920	3.38	827	
over 54	22.6	113	39.6	195	2.70	169	27.5	132	44.8	211	3.24	180	38.2	183	66.3	315	4.02	288	
<i>Education</i>																			
Secondary degree or less	27.5	198	49.1	345	2.74	286	30.4	260	49.7	415	3.67	331	41.1	323	67.4	515	3.54	457	
Vocational degree	28.0	487	51.4	879	2.84	742	32.4	489	53.2	789	2.97	665	42.6	617	69.3	987	3.80	856	
University degree	18.4	380	41.5	843	2.64	744	22.3	408	45.3	819	2.53	702	30.9	557	61.4	1085	3.13	976	
<i>Occupation</i>																			
Managers & professionals	15.4	103	39.3	258	2.73	240	19.5	116	39.6	233	3.01	203	29.1	150	60.1	309	3.28	278	
Skilled technical &	18.5	108	39.8	229	2.53	196	18.5	102	39.9	217	2.58	182	30.1	165	60.4	323	2.87	281	
Clerical, sales, service	17.7	94	35.6	181	2.54	143	20.7	115	36.1	193	3.07	138	24.3	129	48.7	242	3.04	213	
Teachers, nurses, social	18.4	74	42.3	169	2.16	143	27.8	100	52.5	187	2.02	160	41.1	158	73.8	282	2.58	257	
Skilled manual	27.2	246	50.7	450	2.39	376	31.0	233	53.4	395	2.55	339	40.9	290	71.1	495	3.68	446	
Semi-skilled manual	27.7	241	55.2	473	3.23	421	36.4	302	60.0	490	3.30	415	44.2	350	72.1	561	4.11	493	
Unskilled manual	35.3	199	55.0	307	3.05	250	34.2	190	56.5	309	3.47	262	45.9	257	67.9	377	3.85	323	
<i>Job Tenure</i>																			
Less than 1 year tenure	27.8	207	42.4	309	2.21	222	30.9	227	45.7	326	2.19	221	36.3	248	59.5	385	2.64	301	
1 to 3 years tenure	20.1	170	42.3	349	2.76	297	24.6	206	45.0	369	2.74	311	32.3	263	59.7	475	3.20	426	
3 to 10 years tenure	23.8	294	47.8	580	2.80	512	28.5	289	52.6	527	2.92	442	39.4	398	68.3	682	3.63	609	
More than 10 years tenure	22.0	332	48.7	728	2.87	674	26.3	315	51.8	615	3.22	567	36.4	389	71.3	760	3.70	708	

Table 3: Arrears by Worker Characteristics, 1994-2004

	not paid		1998 owed		paychecks		not paid		2000 owed		paychecks		not paid		2001 owed		paychecks	
	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N
	<i>Gender</i>																	
Male	33.6	621	70.0	1244	5.42	1076	20.8	402	39.9	729	4.71	5.36	16.8	372	33.0	699	3.11	474
Female	30.2	630	68.1	1369	4.45	1203	18.1	402	34.5	731	3.80	500	15.7	396	30.1	719	2.57	481
<i>Age</i>																		
15-24	32.1	161	67.5	310	4.04	240	24.4	138	39.4	207	2.43	110	20.7	136	33.7	204	2.17	117
25-39	31.9	488	69.6	1026	5.02	897	20.1	323	38.3	578	4.59	393	16.4	302	31.6	553	2.57	353
40-54	31.3	468	68.6	1007	4.87	895	18.0	297	36.6	583	4.42	466	15.6	290	32.3	580	3.32	429
over 54	33.8	134	70.3	270	5.48	247	14.1	46	28.7	92	4.45	67	10.9	40	22.7	81	2.23	56
<i>Education</i>																		
Secondary degree or less	38.4	244	75.1	456	5.15	389	23.5	160	39.0	253	4.61	167	19.8	157	35.7	272	2.51	175
Vocational degree	35.1	512	70.4	987	5.19	847	22.7	351	41.8	607	4.48	428	19.7	338	37.0	589	3.11	388
University degree	27.0	493	65.8	1163	4.58	1038	15.3	293	32.5	600	3.94	441	12.2	270	25.9	553	2.72	391
<i>Occupation</i>																		
Managers & professionals	23.6	127	60.5	319	5.03	290	15.4	95	30.1	180	3.83	133	10.2	81	24.1	187	2.63	142
Skilled technical & Clerical, sales, service	26.0	148	68.5	383	4.03	346	14.6	80	28.9	155	3.56	116	13.4	85	27.0	169	2.75	108
Teachers, nurses, social	26.3	137	54.0	251	4.66	202	17.2	109	30.9	170	3.60	100	13.3	92	23.2	139	2.67	88
Skilled manual	33.4	142	79.0	331	4.14	302	16.8	67	38.3	152	5.42	113	15.1	65	33.2	142	3.43	102
Semi-skilled manual	35.7	220	72.3	425	4.80	368	18.1	115	38.7	232	4.49	169	18.3	125	34.1	221	2.15	147
Unskilled manual	36.4	275	74.1	547	5.73	465	23.7	191	42.9	332	4.31	252	19.0	167	37.8	319	2.74	211
Job Tenure																		
Less than 1 year tenure	39.8	202	72.9	357	5.58	306	28.5	147	48.6	239	4.49	153	24.9	153	41.3	241	3.56	157
1 to 3 years tenure	35.9	233	65.5	389	3.21	316	25.8	214	41.0	306	2.72	170	22.1	213	36.4	319	2.10	171
3 to 10 years tenure	26.7	231	63.3	519	4.57	461	17.6	155	35.6	287	3.63	204	14.9	148	28.9	268	2.71	191
More than 10 years tenure	28.9	319	68.5	737	5.02	645	17.2	210	34.4	409	4.57	305	13.5	175	28.1	351	2.79	248
	31.6	315	73.4	723	5.50	652	17.3	137	38.0	365	5.23	300	14.3	167	32.8	382	3.29	299

Table 3: Arrears by Worker Characteristics, 1994-2004

	not paid		2002 owed		paychecks		not paid		2003 owed		paychecks		not paid		2004 owed		paychecks	
	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N	Pct	N	Pct	N	Mean	N
	<i>Gender</i>																	
Male	14.8	337	30.1	650	3.09	485	13.1	305	27.3	594	3.16	431	10.3	246	22.4	499	2.69	338
Female	15.7	421	28.0	718	2.55	475	13.0	357	24.3	629	2.68	404	9.8	270	18.4	481	2.19	299
<i>Age</i>																		
15-24	23.0	161	33.9	223	2.09	123	19.1	132	30.1	193	2.17	106	16.3	112	25.8	163	1.72	76
25-39	14.3	273	29.0	522	2.50	360	12.7	253	25.9	476	2.73	306	9.3	196	20.0	389	2.15	237
40-54	14.5	280	28.2	527	3.38	399	12.2	240	24.9	468	3.28	358	8.6	164	19.4	354	2.94	268
over 54	10.8	44	24.4	96	2.65	78	8.8	37	21.1	86	3.14	65	9.8	44	16.9	74	2.46	56
<i>Education</i>																		
Secondary degree or less	19.0	152	31.5	237	3.09	157	16.4	134	28.8	217	3.73	139	13.7	111	24.9	186	2.59	112
Vocational degree	18.1	321	32.9	552	2.91	376	15.0	279	30.3	518	2.83	364	11.4	213	22.9	397	2.74	259
University degree	12.1	285	25.3	579	2.65	427	10.4	248	21.2	487	2.69	332	7.8	192	16.8	397	2.13	266
<i>Occupation</i>																		
Managers & professionals	10.8	83	24.9	188	3.73	142	10.5	76	20.9	150	2.75	106	6.5	48	15.1	108	2.32	85
Skilled technical & Clerical, sales, service	11.5	85	23.4	169	2.49	125	12.0	85	23.0	158	2.33	111	7.7	58	18.7	137	2.48	91
Teachers, nurses, social	13.3	100	22.1	147	2.26	80	12.9	110	21.8	158	2.50	82	8.4	68	15.3	106	1.88	52
Skilled manual	17.5	77	32.1	140	1.99	95	9.5	45	24.9	118	3.08	85	9.0	43	17.5	83	1.81	53
Semi-skilled manual	14.5	102	30.6	202	2.32	153	13.1	93	27.2	180	2.52	124	8.5	64	19.3	134	2.12	86
Unskilled manual	17.5	158	33.9	295	2.90	210	14.5	131	29.9	253	3.24	189	12.9	125	26.8	244	3.13	163
	23.8	153	37.0	227	3.46	155	17.5	122	31.3	206	3.64	138	16.8	110	27.1	168	2.38	107
<i>Job Tenure</i>																		
Less than 1 year tenure	22.5	229	35.9	337	1.82	206	19.5	209	31.4	297	2.05	171	15.4	163	26.1	249	1.46	135
1 to 3 years tenure	13.4	148	25.7	269	2.27	176	11.3	126	24.4	251	2.36	182	7.6	83	17.2	174	2.48	117
3 to 10 years tenure	11.5	158	25.6	337	2.34	256	9.5	133	21.8	293	2.74	204	8.7	136	17.1	250	2.42	150
More than 10 years tenure	14.2	161	29.8	336	4.30	269	11.4	129	26.1	292	3.96	235	8.8	109	21.0	256	3.01	204

Table 4a: Perceived demand composite measure, by round, by worker characteristics

	1994				1995				1996				1998			
	Perceived demand				Perceived demand				Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Gender</i>																
Male	42.8	11.9	7.39	2108	46.1	10.4	7.16	1950	49.1	9.3	6.92	1819	57.8	5.6	6.28	1714
Female	59.2	4.8	6.16	2257	59.0	5.6	6.19	2084	61.6	4.9	6.03	1995	70.5	3.0	5.43	1953
<i>Age</i>																
15-24	38.9	12.1	7.65	514	40.2	10.3	7.41	497	42.5	8.0	7.22	449	51.8	7.9	6.83	440
25-39	51.7	7.5	6.73	1872	53.4	7.3	6.65	1645	54.2	6.8	6.56	1547	61.7	4.1	5.95	1427
40-54	55.2	7.9	6.46	1504	55.4	7.8	6.50	1443	60.2	7.0	6.17	1370	71.5	2.9	5.40	1431
over 54	50.7	8.0	6.78	475	56.1	8.0	6.41	449	60.3	6.2	6.17	448	63.7	4.9	5.80	369
<i>Education</i>																
Secondary degree or less	56.4	6.9	6.43	684	57.0	6.1	6.28	819	59.8	4.2	6.14	732	66.9	3.6	5.62	587
Vocational degree	53.5	6.8	6.55	1678	55.0	6.1	6.47	1451	58.4	6.4	6.20	1367	68.3	3.6	5.62	1347
University degree	47.7	9.9	7.03	2003	49.0	10.2	6.99	1760	51.7	8.6	6.79	1713	60.8	4.9	6.05	1723
<i>Occupation</i>																
Managers & professionals	44.7	11.9	7.23	646	47.6	12.2	7.20	574	46.3	9.7	7.17	497	53.7	7.2	5.45	512
Skilled technical & Clerical, sales, service	50.0	9.6	6.90	570	48.6	8.5	6.87	527	56.2	7.0	6.48	516	66.8	3.8	5.69	548
Teachers, nurses, social	60.4	4.9	6.04	505	58.2	5.2	6.16	519	62.0	3.8	5.91	474	68.4	3.3	5.56	450
Skilled manual	45.2	6.8	7.12	394	50.1	9.6	6.99	353	53.8	9.3	6.72	364	61.5	4.2	6.00	400
Semi-skilled manual	48.0	9.6	7.00	586	50.3	9.4	6.91	730	52.9	7.2	6.55	667	61.8	5.3	6.07	568
Unskilled manual	52.7	7.3	6.66	847	55.1	6.4	6.42	800	57.4	6.7	6.31	758	69.7	2.0	5.05	712
	59.5	5.5	6.15	541	59.1	4.3	6.17	531	60.6	5.8	6.12	538	67.9	4.2	5.59	477
<i>Job Tenure</i>																
Less than 1 year tenure	48.1	10.9	7.11	717	48.9	10.1	7.90	693	46.3	10.3	7.06	622	56.0	6.3	6.39	575
1 to 3 years tenure	42.6	11.9	7.35	808	45.0	9.5	7.15	802	50.4	7.4	6.73	768	59.4	5.5	6.16	799
3 to 10 years tenure	51.9	6.9	6.64	1198	53.5	7.9	6.66	978	55.2	7.5	6.54	977	66.2	3.8	5.72	1041
More than 10 years tenure	56.4	6.0	6.38	1465	57.2	7.3	10.33	1166	62.3	5.4	6.01	1033	70.5	2.9	5.39	948
<i>Arrears Status</i>																
Received wage payment	59.6	9.1	6.91	3333	50.3	8.8	6.85	2915	51.6	8.3	6.73	2390	62.9	4.8	5.95	2488
Wage non payment	56.7	5.2	6.23	1029	59.5	5.4	6.18	1115	62.5	4.8	5.99	1417	68.0	3.0	5.55	1175
No wage debt	46.3	9.9	7.11	2330	49.0	9.6	6.96	2063	47.3	9.3	7.03	1320	60.1	5.3	6.16	1154
Wage debt	57.1	6.4	6.33	2013	56.8	6.1	6.35	1961	60.1	5.8	6.15	2478	66.5	3.7	5.67	2511
<i>Total</i>	51.3	8.2	6.75	4365	52.8	7.9	6.66	4034								

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 4a: Perceived demand composite measure, by round, by worker characteristics

	2000				2001				2002				2003			
	Perceived demand				Perceived demand				Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Gender</i>																
Male	41.0	10.6	7.42	1753	31.8	15.4	8.20	2041	33.9	15.0	8.04	2117	33.6	14.2	8.05	2093
Female	52.3	6.7	6.64	2043	44.1	10.5	7.29	2325	43.3	11.4	7.36	2503	43.3	10.3	7.36	2515
<i>Age</i>																
15-24	35.3	13.9	7.88	496	27.8	17.8	8.43	580	25.0	19.1	8.60	628	25.1	16.7	8.60	606
25-39	42.8	10.4	7.30	1449	34.9	14.8	7.97	1694	35.5	13.8	7.89	1770	33.8	13.9	8.02	1780
40-54	54.9	5.6	6.46	1534	45.5	9.8	7.24	1747	45.9	10.9	7.25	1840	47.6	9.2	7.11	1831
over 54	47.6	5.0	6.91	317	36.5	10.4	7.69	345	44.2	9.9	7.18	382	42.5	10.5	7.32	391
<i>Education</i>																
Secondary degree or less	48.7	5.8	6.77	620	44.2	9.8	7.28	735	42.1	12.8	7.49	729	40.9	11.1	7.50	721
Vocational degree	47.8	6.9	6.88	1378	37.7	11.9	7.73	1531	38.6	13.1	7.67	1642	38.7	11.2	7.64	1647
University degree	46.0	10.6	7.18	1798	36.7	14.6	7.86	2086	38.2	13.2	7.73	2242	38.4	13.1	7.76	2239
<i>Occupation</i>																
Managers & professionals	43.3	12.6	7.41	587	32.8	15.1	8.12	754	32.2	15.1	8.03	746	35.4	15.6	8.09	692
Skilled technical &	46.6	11.1	7.17	521	38.3	15.1	7.81	614	38.8	12.4	7.70	704	39.4	13.4	7.72	673
Clerical, sales, service	50.0	7.3	6.77	522	41.4	9.3	7.43	579	36.0	14.9	7.82	642	40.4	10.7	7.48	693
Teachers, nurses, social	47.4	7.9	6.98	390	40.3	15.3	7.70	419	41.3	13.0	7.52	424	40.8	12.7	7.72	466
Skilled manual	43.1	9.7	7.28	564	32.6	14.9	8.15	631	39.7	14.7	7.80	648	32.7	13.4	8.00	633
Semi-skilled manual	51.1	6.1	6.66	742	42.3	10.0	7.32	816	44.9	9.9	7.17	851	42.8	8.1	7.24	823
Unskilled manual	47.4	4.5	6.78	470	41.9	10.7	7.44	553	36.2	12.1	7.72	605	40.3	11.9	7.61	628
<i>Job Tenure</i>																
Less than 1 year tenure	41.1	12.7	7.54	706	29.8	16.5	8.31	835	31.8	15.8	7.17	909	31.2	14.0	8.18	900
1 to 3 years tenure	43.4	9.7	7.32	784	33.7	16.1	8.14	905	34.1	15.2	8.07	1021	32.6	14.0	8.08	989
3 to 10 years tenure	47.1	7.8	6.96	1148	39.5	12.9	7.68	1213	38.2	14.2	7.74	1297	36.5	13.3	7.84	1322
More than 10 years tenure	52.5	5.7	6.54	930	45.3	8.9	7.14	1140	48.4	8.8	6.97	1114	51.8	8.1	6.81	1101
<i>Arrears Status</i>																
Received wage payment	46.3	9.0	7.07	3067	37.5	13.3	7.79	3658	38.3	13.6	7.72	3912	37.8	12.6	7.74	4023
Wage non payment	50.5	6.4	6.71	729	42.8	10.6	7.34	706	42.6	10.1	7.38	706	46.2	8.9	7.21	584
No wage debt	45.8	9.4	7.11	2421	36.0	13.6	7.88	3019	37.3	13.7	7.77	3305	37.6	13.0	7.78	3471
Wage debt	49.4	6.8	6.81	1372	43.5	11.0	7.34	1343	43.1	11.4	7.42	1312	43.1	9.4	7.36	1132
<i>Total</i>																

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 4a: Perceived demand composite measure, by round, by worker characteristics

	2004			
	Perceived demand		Mean	N
	low	high		
	PCT	PCT		
<i>Gender</i>				
Male	33.6	13.0	8.03	2166
Female	42.4	10.2	7.39	2548
<i>Age</i>				
15-24	26.0	16.9	8.70	597
25-39	33.9	13.8	8.03	1900
40-54	46.5	8.2	7.07	1787
over 54	41.4	7.2	7.09	430
<i>Education</i>				
Secondary degree or less	38.6	11.2	7.73	713
Vocational degree	39.5	10.2	7.54	1689
University degree	37.4	12.5	7.29	2311
<i>Occupation</i>				
Managers & professionals	33.5	14.7	8.02	701
Skilled technical &	37.1	12.4	7.76	715
Clerical, sales, service	39.6	9.6	7.53	664
Teachers, nurses, social	41.4	12.8	7.58	468
Skilled manual	32.4	13.1	8.06	679
Semi-skilled manual	42.9	7.8	7.29	884
Unskilled manual	41.8	11.1	7.58	603
<i>Job Tenure</i>				
Less than 1 year tenure	32.0	15.1	8.24	925
1 to 3 years tenure	23.3	13.8	8.13	979
3 to 10 years tenure	38.6	12.0	7.71	1430
More than 10 years tenure	45.7	7.2	6.99	1195
<i>Arrears Status</i>				
Received wage payment	38.1	11.5	7.71	4250
Wage non payment	41.2	11.1	7.48	459
No wage debt	37.8	11.4	7.73	3793
Wage debt	40.8	11.9	7.50	912
<i>Total</i>				

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 4b: Perceived Demand (Valued Skills), by worker characteristics, by round

	1996				1998				2000				2002			
	Perceived demand				Perceived demand				Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Gender</i>																
Male	13.1	14.0	2.53	1680	24.4	12.9	2.31	1633	21.0	12.0	2.38	1705	16.3	16.3	2.52	208
Female	20.8	12.0	2.33	1864	30.2	8.0	2.11	1856	27.6	9.4	2.20	1987	21.3	21.3	2.35	2441
<i>Age</i>																
15-24	12.9	10.3	2.46	419	20.0	11.6	2.36	440	19.2	13.6	2.47	479	10.3	10.3	2.70	632
25-39	14.9	12.4	2.45	1446	23.5	11.1	2.28	1363	18.7	11.6	2.40	1435	15.1	15.1	2.51	1740
40-54	19.0	14.1	2.41	1270	32.7	8.7	2.10	1336	30.8	9.9	2.16	1478	24.5	11.9	2.28	1760
over 54	23.7	13.9	2.33	409	32.0	12.0	2.14	350	29.7	4.3	2.06	300	26.4	11.2	2.26	367
<i>Education</i>																
Secondary degree or less	20.0	14.1	2.38	689	34.5	9.7	2.09	565	27.3	11.4	2.23	597	22.4	12.1	2.36	718
Vocational degree	16.1	12.6	2.42	1213	28.3	11.4	2.20	1253	26.8	10.8	2.25	1336	20.7	14.2	2.38	1568
University degree	16.8	12.7	2.44	1640	24.2	9.8	2.25	1660	21.9	10.2	2.33	1759	16.6	14.8	2.48	2206
<i>Occupation</i>																
Managers & professionals	14.9	12.6	2.48	483	21.9	9.9	2.32	503	19.1	12.9	2.45	572	14.6	18.6	2.59	732
Skilled technical & Clerical, sales, service	15.1	12.2	2.49	483	21.2	12.6	2.34	515	20.5	12.2	2.41	493	14.8	16.2	2.55	683
Teachers, nurses, social	19.0	10.6	2.37	463	25.7	8.3	2.19	470	23.5	8.8	2.29	565	16.9	12.7	2.45	670
Skilled manual	21.8	10.1	2.28	348	32.1	8.2	2.07	380	26.4	9.3	2.19	364	19.8	11.5	2.35	408
Semi-skilled manual	14.9	12.8	2.46	611	25.3	12.3	2.27	534	25.6	11.0	2.27	547	20.2	14.9	2.41	624
Unskilled manual	16.1	14.9	2.47	678	30.9	10.5	2.16	648	25.1	11.5	2.28	704	20.1	13.2	2.39	809
	20.7	15.7	2.34	478	36.7	9.3	2.04	439	33.6	7.4	2.05	447	28.6	9.9	2.18	573
<i>Job Tenure</i>																
Less than 1 year tenure	19.0	12.7	2.41	600	22.5	11.0	2.30	582	24.2	11.5	2.33	730	15.8	16.0	2.53	920
1 to 3 years tenure	14.4	13.5	2.49	724	23.9	12.0	2.32	767	19.6	13.3	2.45	789	17.3	14.9	2.47	1006
3 to 10 years tenure	16.8	12.1	2.40	906	28.5	10.6	2.18	997	25.8	9.5	2.23	1106	18.2	13.4	2.42	1259
More than 10 years tenure	20.1	13.5	2.39	950	29.7	8.6	2.14	870	28.5	9.1	2.17	856	24.0	12.7	2.29	1043
<i>Arrears Status</i>																
Received wage payment	16.4	14.0	2.46	2242	27.1	10.5	2.22	2397	24.2	10.0	2.29	2997	18.6	14.0	2.44	3838
Wage non payment	18.6	11.1	2.36	1292	28.2	9.9	2.17	1087	26.3	13.3	2.28	692	21.4	14.7	2.36	660
No wage debt	13.9	14.8	2.52	1198	24.8	11.8	2.30	1066	23.3	10.2	2.30	2218	18.6	14.0	2.44	3065
Wage debt	18.9	11.9	2.37	2263	29.4	9.4	2.14	2292	27.8	11.2	2.24	1281	20.1	14.1	2.37	1229
<i>Total</i>																

low = score of 1 (of 4)

high = score of 4 (of 4)

Table 4b: Perceived Demand (Valued Skills), by worker characteristics, by round

	2003				2004			
	Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Gender</i>								
Male	16.2	14.0	2.51	2070	13.9	17.3	2.61	2179
Female	22.3	10.9	2.34	2443	19.4	10.8	2.37	2545
<i>Age</i>								
15-24	12.2	11.9	2.61	596	9.8	16.5	2.69	611
25-39	15.2	14.2	2.53	1793	13.7	16.6	2.60	1929
40-54	23.7	11.1	2.30	1753	21.0	10.7	2.33	1756
over 54	31.8	10.0	2.14	371	24.3	9.8	2.28	428
<i>Education</i>								
Secondary degree or less	25.7	11.1	2.29	703	18.4	11.9	2.41	732
Vocational degree	20.9	10.8	2.36	1613	18.7	12.8	2.42	1689
University degree	16.4	13.8	2.50	2194	15.0	15.2	2.55	2302
<i>Occupation</i>								
Managers & professionals	13.0	16.2	2.62	685	11.2	19.1	2.71	703
Skilled technical & Clerical, sales, service	16.2	15.0	2.54	648	13.1	18.8	2.65	692
Teachers, nurses, social	18.1	11.3	2.42	750	15.3	13.2	2.48	733
Skilled manual	22.9	11.5	2.31	433	19.5	7.1	2.32	452
Semi-skilled manual	18.3	10.2	2.40	627	16.7	11.7	2.44	675
Unskilled manual	21.1	13.2	2.41	778	18.6	13.4	2.43	878
Unskilled manual	29.0	7.8	2.16	592	25.5	10.5	2.25	591
<i>Job Tenure</i>								
Less than 1 year tenure	17.8	12.4	2.45	944	16.0	15.6	2.50	956
1 to 3 years tenure	17.2	13.2	2.50	989	14.5	15.5	2.56	999
3 to 10 years tenure	19.1	11.7	2.43	1266	16.8	14.4	2.50	1453
More than 10 years tenure	25.0	11.1	2.28	1011	20.2	9.7	2.35	1174
<i>Arrears Status</i>								
Received wage payment	19.2	12.0	2.42	3948	16.3	14.1	2.50	4257
Wage non payment	21.6	14.1	2.39	568	22.0	11.2	2.31	463
No wage debt	18.3	12.3	2.45	3165	15.8	14.6	2.51	3545
Wage debt	23.6	12.0	2.31	1075	21.8	11.4	2.34	893
<i>Total</i>								

low = score of 1 (of 4)

high = score of 4 (of 4)

Table 5a: Perceived demand composite measure, by round, by region

	1994				1995				1996				1998			
	Perceived demand				Perceived demand				Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Region</i>																
Northern and north western	51.2	7.6	6.69	328	50.1	10.5	6.85	325	52.4	8.5	6.67	294	66.1	3.1	5.83	292
North Caucasian	53.0	6.6	6.69	511	52.0	5.0	6.55	479	55.2	7.2	6.49	460	61.5	4.7	6.06	400
Ural	52.4	8.0	6.70	653	56.8	7.7	6.49	607	61.4	5.0	6.11	575	64.4	3.3	5.73	581
Central and central black-earth	51.0	9.1	6.75	812	52.0	6.6	6.68	725	53.0	5.8	6.49	711	64.3	3.2	5.71	709
Volga-Vaytski and Volga basin	56.7	7.4	6.39	744	60.7	52.0	6.05	694	60.9	5.0	6.06	663	66.7	4.2	5.71	682
Western Siberian	52.7	5.2	6.53	423	49.7	7.3	6.73	396	56.4	5.1	6.33	390	65.3	3.9	5.84	360
Eastern Siberian and far eastern	55.7	5.2	6.35	440	58.7	5.8	6.33	412	61.3	7.2	6.18	377	69.2	3.6	5.54	364
Metropolitan: Moscow/St. Petersburg	33.9	16.3	8.12	454	34.3	19.4	8.21	396	38.1	16.9	7.90	344	55.6	10.0	6.58	279
<i>Settlement type</i>																
Urban	49.4	9.1	6.91	3272	51.2	8.9	6.79	2947	54.5	7.8	6.57	2757	64.7	4.5	5.84	2677
Rural	57.1	5.6	6.28	1093	57.2	5.1	6.31	1087	58.8	4.7	6.13	1057	64.0	3.3	5.78	990
<i>Local unemployment rate</i>																
<6%	51.6	5.2	6.57	438					77.1	1.7	5.32	179	53.3	12.1	6.86	182
6-10%	51.5	8.8	6.76	3627	50.6	8.6	6.84	2383	50.3	8.3	6.79	1856	45.8	8.4	7.02	321
>10%	48.7	6.0	6.89	300	57.9	6.4	6.28	1506	60.6	6.0	6.13	1657	67.1	3.3	5.64	3164
<i>Ownership</i>																
State	53.0	7.2	6.63	2725	53.6	8.5	6.55	2315	57.5	5.8	6.35	2148	64.8	3.8	5.76	2008
Russian	43.4	13.6	7.49	682	47.0	8.7	7.12	916	50.3	9.8	6.83	949	62.9	6.0	6.05	973
Foreign	44.2	11.6	7.43	138	40.1	14.5	7.57	152	44.4	14.8	7.30	135	57.8	4.8	6.35	147
<i>Enterprise size</i>																
1-30 employees	50.2	8.0	6.77	1807	52.7	8.5	6.71	1507	55.8	7.7	6.45	1487	63.8	4.6	5.90	1447
31-200 employees	52.7	8.5	6.75	896	51.5	8.7	6.75	678	54.7	5.8	6.45	654	68.4	2.1	5.51	677
201-1000 employees	51.3	8.7	6.77	758	48.3	9.5	7.00	580	52.1	8.3	6.72	491	62.8	5.2	5.94	538
<i>Financial health</i>																
Ok	48.3	9.1	6.97	2770	51.1	9.0	6.79	2721	54.0	6.9	6.55	2433	62.9	4.3	5.92	2237
Bad	58.3	5.8	6.22	1202	58.7	74.7	6.22	836	62.7	6.3	6.03	923	69.6	3.9	5.50	1037

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 5a: Perceived demand composite measure, by round, by region

	2000				2001				2002				2003			
	Perceived demand				Perceived demand				Perceived demand				Perceived demand			
	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N	low PCT	high PCT	Mean	N
<i>Region</i>																
Northern and north western	39.4	10.8	7.58	297	31.8	17.0	8.30	324	31.4	19.0	8.32	347	32.4	18.1	8.34	336
North Caucasian	46.1	7.4	7.05	403	47.5	8.9	7.10	425	41.4	9.8	7.35	437	42.9	8.8	7.31	445
Ural	44.3	8.3	7.14	623	38.7	11.8	7.65	646	41.4	11.1	7.43	660	40.7	9.8	7.45	683
Central and central black-earth	45.2	8.5	7.14	755	36.7	14.5	7.85	791	40.0	11.2	7.50	820	38.7	9.7	7.51	813
Volga-Vaytski and Volga basin	55.4	6.0	6.39	700	44.0	10.0	7.26	741	41.5	10.1	7.38	831	41.9	9.4	7.40	795
Western Siberian	49.4	10.4	6.99	403	46.5	6.8	7.08	368	46.0	10.2	7.19	374	44.0	10.1	7.36	386
Eastern Siberian and far eastern	51.1	6.2	6.65	403	39.3	11.1	7.52	432	45.1	10.8	7.26	426	48.2	8.4	6.97	450
Metropolitan: Moscow/St. Petersburg	35.4	16.5	7.97	212	25.3	20.2	8.75	639	27.6	22.2	8.79	725	25.6	22.9	8.94	700
<i>Settlement type</i>																
Urban	45.2	9.9	7.18	2695	34.7	14.4	7.97	3211	36.8	15.0	7.88	3437	36.1	14.1	7.93	3449
Rural	51.9	5.0	6.57	1101	48.5	8.6	6.99	1155	45.2	7.4	7.06	1183	47.1	6.3	6.93	1159
<i>Local unemployment rate</i>																
<6%	36.4	14.4	7.72	132	30.2	18.1	8.40	1049	30.7	17.3	8.29	1298	30.2	16.8	8.33	1411
6-10%	48.3	7.9	6.92	1797	40.6	11.0	7.50	2322	41.5	11.4	7.47	2443	38.4	9.7	7.58	1176
>10%	46.7	8.6	7.03	1867	41.6	11.5	7.50	995	44.1	11.5	7.32	879	46.0	10.2	7.23	1941
<i>Ownership</i>																
State	47.7	7.1	6.89	2023	40.7	11.9	7.52	2207	39.7	12.9	7.60	2312	42.4	11.8	7.50	2186
Russian	44.5	11.0	7.32	1104	34.1	14.8	8.07	1470	37.2	13.9	7.84	1718	33.6	13.3	7.97	1809
Foreign	45.7	11.4	7.09	175	34.2	13.7	7.92	190	33.9	16.7	7.97	227	37.0	16.0	7.91	181
<i>Enterprise size</i>																
1-30 employees	45.0	8.5	7.11	1532	37.1	13.2	7.80	1786	38.9	12.8	7.66	1987	37.8	12.7	7.78	2003
31-200 employees	48.7	9.0	6.90	723	40.2	13.2	7.60	836	39.5	10.9	7.53	852	40.2	12.1	7.64	786
201-1000 employees	48.5	9.4	7.02	618	40.6	13.8	7.65	732	40.9	14.1	7.65	756	38.4	12.1	7.59	651
<i>Financial health</i>																
Ok	45.9	8.2	7.07	2624	38.1	13.1	7.24	3165	38.3	13.4	7.72	3481	38.0	12.9	7.76	3482
Bad	52.7	6.7	6.60	696	41.3	11.3	7.46	683	42.0	12.0	7.47	690	42.1	10.3	7.33	599

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 5a: Perceived demand composite measure, by round, by region

	2004			
	Perceived demand		Mean	N
	low PCT	high PCT		
<i>Region</i>				
Northern and north western	38.0	16.0	8.02	324
North Caucasian	44.8	8.6	7.28	466
Ural	41.2	9.9	7.51	724
Central and central black-earth	36.2	8.6	7.53	813
Volga-Vaytski and Volga basin	42.2	10.6	7.37	784
Western Siberian	38.9	10.6	7.53	404
Eastern Siberian and far eastern	43.3	10.6	7.38	483
Metropolitan: Moscow/St. Petersburg	26.1	18.2	8.77	716
<i>Settlement type</i>				
Urban	35.1	13.5	7.95	3573
Rural	48.6	5.2	6.83	1141
<i>Local unemployment rate</i>				
<6%	30.2	13.5	8.20	1547
6-10%	42.8	10.2	7.37	2291
>10%	43.2	10.4	7.46	775
<i>Ownership</i>				
State	42.5	10.5	7.43	2074
Russian	33.0	12.9	7.99	1992
Foreign	34.5	15.2	8.18	177
<i>Enterprise size</i>				
1-30 employees	37.3	12.1	7.75	1997
31-200 employees	39.5	12.0	7.66	825
201-1000 employees	36.7	11.5	7.69	679
<i>Financial health</i>				
Ok	37.7	11.4	7.70	3706
Bad	41.4	13.4	7.63	550

low = score of 6 or less (of 15)

high = score of 12 or more (of 15)

Table 6. Estimated Partial Effects for Arrears Equations, 1995-2004

	NOTPAID		OWED		NOPAYM	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Year dummies</i>						
1995	0.043*** (0.013)	-	-0.076*** (0.016)	-	-0.235*** (0.036)	-
1996	0.117*** (0.016)	0.096*** (0.015)	0.111*** (0.020)	0.085*** (0.021)	-0.007 (0.043)	-0.082** (0.036)
2000	-0.051*** (0.009)	-0.052*** (0.008)	-0.263*** (0.011)	-0.267*** (0.011)	-0.433*** (0.031)	-0.449*** (0.031)
2001	-0.031*** (0.010)	-	-0.199*** (0.013)	-	-0.516*** (0.033)	-
2002	-0.029** (0.011)	-0.040*** (0.010)	-0.208*** (0.014)	-0.224*** (0.015)	-0.543*** (0.033)	-0.609*** (0.034)
2003	-0.062*** (0.009)	-0.066*** (0.009)	-0.240*** (0.013)	-0.250*** (0.014)	-0.568*** (0.033)	-0.625*** (0.037)
2004	-0.084*** (0.008)	-0.087*** (0.008)	-0.276*** (0.012)	-0.285*** (0.013)	-0.683*** (0.033)	-0.735*** (0.038)
<i>Region dummies</i>						
Northern and North Western	-0.040*** (0.008)	-0.030*** (0.010)	0.006 (0.017)	0.025 (0.021)	-0.033 (0.046)	0.012 (0.057)
North Caucasian	-0.038*** (0.008)	-0.031*** (0.010)	-0.084*** (0.016)	-0.064*** (0.018)	-0.186*** (0.040)	-0.128*** (0.049)
Ural	-0.044*** (0.007)	-0.044*** (0.008)	-0.075*** (0.013)	-0.071*** (0.015)	-0.195*** (0.035)	-0.166*** (0.040)
Central and Central Black-Earth	-0.052*** (0.007)	-0.043*** (0.008)	-0.056*** (0.014)	-0.042** (0.016)	-0.222*** (0.037)	-0.204*** (0.040)
Western Siberian	0.011 (0.012)	0.0005 (0.012)	0.084*** (0.019)	0.097*** (0.023)	0.117** (0.055)	0.118* (0.064)
Eastern Siberian and Far Eastern	-0.003 (0.010)	0.005 (0.011)	-0.005 (0.016)	0.019 (0.019)	-0.011 (0.044)	0.014 (0.051)
Moscow / St. Petersburg	-0.069*** (0.009)	-0.062*** (0.010)	-0.125*** (0.017)	-0.136*** (0.019)	-0.322*** (0.051)	-0.393*** (0.050)
<i>Occupation dummies</i>						
Managers & professionals	-0.042*** (0.009)	-0.032*** (0.011)	-0.068*** (0.018)	-0.051** (0.021)	-0.073 (0.046)	-0.039 (0.053)
Skilled technical & administrative	-0.051*** (0.009)	-0.042*** (0.010)	-0.069*** (0.017)	-0.056*** (0.019)	-0.116*** (0.042)	-0.068 (0.050)
Clerical, sales, service	-0.047*** (0.009)	-0.045*** (0.010)	-0.114*** (0.016)	-0.119*** (0.018)	-0.240*** (0.042)	-0.240*** (0.042)
Teachers, nurses, social workers	-0.030*** (0.010)	-0.024* (0.012)	-0.025 (0.019)	-0.032 (0.021)	0.016 (0.057)	0.034 (0.061)
Skilled manual	-0.017* (0.009)	-0.024** (0.010)	-0.012 (0.017)	-0.020 (0.020)	-0.098** (0.044)	-0.098** (0.049)
Semi-skilled manual	-0.022** (0.009)	-0.020* (0.010)	-0.018 (0.016)	-0.017 (0.019)	-0.056 (0.038)	-0.045 (0.046)
Rural settlement	0.078*** (0.007)	0.083*** (0.009)	0.088*** (0.011)	0.090*** (0.013)	0.283*** (0.037)	0.248*** (0.043)
Local unemployment rate	0.006*** (0.001)	0.004*** (0.001)	0.010*** (0.002)	0.006*** (0.002)	0.029*** (0.006)	0.013** (0.006)

<i>Ownership type</i>						
Foreign enterprise	-0.047*** (0.011)	-0.056*** (0.011)	-0.105*** (0.019)	-0.121*** (0.021)	-0.135** (0.068)	-0.242*** (0.059)
Russian enterprise	-0.018*** (0.006)	-0.018*** (0.006)	-0.041*** (0.009)	-0.046*** (0.011)	0.050* (0.029)	0.079** (0.033)
Bad financial health	0.114*** (0.008)	0.113*** (0.009)	0.180*** (0.011)	0.196*** (0.014)	0.353*** (0.037)	0.356*** (0.042)
Age	0.0004 (0.0003)	0.0004 (0.0003)	-0.001 (0.000)	-0.001** (0.001)	-0.0004 (0.001)	-0.001 (0.002)
Female	-0.017** (0.007)	-0.010 (0.007)	-0.029*** (0.011)	-0.023* (0.012)	-0.094*** (0.032)	-0.077** (0.034)
Married	-0.001 (0.007)	0.008 (0.007)	0.001 (0.011)	0.004 (0.012)	0.017 (0.035)	0.019 (0.036)
<i>Education</i>						
Vocation-level training	0.002 (0.008)	-0.007 (0.009)	0.0001 (0.013)	-0.017 (0.015)	0.027 (0.036)	-0.001 (0.040)
University-level training	-0.016* (0.009)	-0.024** (0.010)	-0.001 (0.014)	-0.021 (0.016)	0.020 (0.037)	-0.007 (0.041)
Tenure	-0.0005 (0.0003)	-0.0003 (0.0004)	0.002*** (0.001)	0.003*** (0.001)	0.009*** (0.001)	0.010*** (0.002)
Lag of NOTPAID	0.147*** (0.009)	0.136*** (0.010)	-	-	-	-
Lag of OWED	-	-	0.330*** (0.009)	0.325*** (0.011)	-	-
Lag of NOPAYM	-	-	-	-	0.071*** (0.003)	0.066*** (0.004)
PCVDMD1	X	-	X	-	X	-
PCVDMD2	-	X	-	X	-	X
Number of observations	17957	12767	17628	12534	15835	11315
Percent correctly predicted	85.1	86.0	76.9	78.2	-	-
Pseudo R-squared	0.1842	0.1928	0.2584	0.2794	0.3280	0.3494

Since PCVDMD2 is not available in 1995 and 2001, these years were excluded from the corresponding regressions (columns 2, 4, and 6).

The estimates for NOTPAID and OWED are obtained from probit regressions. The estimates for NOPAYM are obtained from Poisson regressions.

Estimated partial effects of PCVDMD1 and PCVDMD2 are reported in Table 7

Reference categories: 1998 year, Volga-Vyatski and Volga Basin region, unskilled manual workers, state-owned enterprises, and workers with some postsecondary education.

Standard errors robust to heteroskedasticity and serial correlation are in parentheses under partial effect estimates.

*** = significant at 1%, ** = significant at 5%, * = significant at 10%.

Table 7. Estimated Partial Effects of Perceived Demand on Arrears, 1995-2004

Dependent variable	Independent variables	1995	1996	1998	2000	2001	2002	2003	2004
NOTPAID	PCVDMD1	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)
	PCVDMD2	-	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)
OWED	PCVDMD1	-0.028*** (0.006)	-0.028*** (0.006)	-0.028*** (0.006)	-0.028*** (0.006)	-0.028*** (0.006)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)
	PCVDMD2	-	-0.014*** (0.005)	-0.014*** (0.005)	-0.014*** (0.005)	-	-0.014*** (0.005)	-0.014*** (0.005)	-0.014*** (0.005)
NOPAYM	PCVDMD1	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)	-0.045*** (0.015)
	PCVDMD2	-	-0.028** (0.014)	-0.028** (0.014)	-0.028** (0.014)	-	-0.028** (0.014)	-0.167*** (0.042)	-0.028** (0.014)

Since PCVDMD2 is not available in 1995 and 2001, the corresponding estimates are missing.

The estimates for NOTPAID and OWED are obtained from probit regressions.
The estimates for NOPAYM are obtained from Poisson regressions.

Estimated partial effects of the other variables included in the regressions are reported in Table 6.

Standard errors robust to heteroskedasticity and serial correlation are in parentheses under the partial effect estimates.
* = significant at the 10% level; ** = significant at the 5% level; *** = significant at the 1% level

Table 8. Estimated Partial Effects for Job Change Equations, 2000-2004

	NEWJOB					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Year dummies</i>						
2001	-0.056*** (0.008)	-0.057*** (0.009)	-0.053*** (0.009)	-0.052*** (0.010)	-0.049*** (0.009)	-0.052*** (0.010)
2002	-0.063*** (0.009)	-	-0.060*** (0.009)	-	-0.050*** (0.010)	-
2003	-0.069*** (0.010)	-0.072*** (0.012)	-0.066*** (0.010)	-0.068*** (0.012)	-0.060*** (0.011)	-0.064*** (0.013)
2004	-0.067*** (0.010)	-0.066*** (0.011)	-0.063*** (0.010)	-0.062*** (0.012)	-0.053*** (0.011)	-0.056*** (0.012)
<i>Region dummies</i>						
Northern and North Western	0.013 (0.014)	0.010 (0.016)	0.008 (0.014)	0.006 (0.016)	0.002 (0.014)	-0.003 (0.016)
North Caucasian	0.006 (0.014)	0.004 (0.015)	0.008 (0.014)	0.006 (0.015)	0.007 (0.014)	0.006 (0.015)
Ural	-0.011 (0.010)	-0.010 (0.011)	-0.011 (0.010)	-0.010 (0.011)	-0.011 (0.011)	-0.009 (0.012)
Central and Central Black-Earth	-0.018* (0.009)	-0.027** (0.010)	-0.019* (0.009)	-0.027** (0.010)	-0.020** (0.010)	-0.027** (0.010)
Western Siberian	-0.017 (0.013)	-0.020 (0.015)	-0.018 (0.013)	-0.021 (0.015)	-0.016 (0.013)	-0.014 (0.015)
Eastern Siberian and Far Eastern	0.002 (0.013)	-0.003 (0.014)	0.001 (0.013)	-0.003 (0.014)	-0.001 (0.013)	-0.006 (0.014)
Moscow / St. Petersburg	-0.037*** (0.012)	-0.038** (0.014)	-0.037*** (0.012)	-0.038** (0.014)	-0.032** (0.013)	-0.034** (0.014)
<i>Occupation dummies</i>						
Managers & professionals	-0.027** (0.011)	-0.024* (0.013)	-0.027** (0.011)	-0.024* (0.013)	-0.026** (0.011)	-0.023 (0.013)
Skilled technical & administrative	-0.025** (0.011)	-0.027** (0.013)	-0.026** (0.011)	-0.028** (0.012)	-0.026** (0.011)	-0.027** (0.013)
Clerical, sales, service	-0.003 (0.012)	-0.004 (0.014)	-0.002 (0.012)	-0.002 (0.014)	0.0004 (0.012)	0.001 (0.014)
Teachers, nurses, social workers	-0.060*** (0.010)	-0.057*** (0.012)	-0.061*** (0.010)	-0.058*** (0.012)	-0.058*** (0.011)	-0.055*** (0.012)
Skilled manual	-0.006 (0.012)	-0.012 (0.013)	-0.006 (0.012)	-0.012 (0.013)	-0.003 (0.012)	-0.009 (0.013)
Semi-skilled manual	-0.018 (0.011)	-0.018 (0.012)	-0.018* (0.011)	-0.018 (0.012)	-0.017 (0.011)	-0.018 (0.012)
Rural settlement	-0.014* (0.008)	-0.017* (0.009)	-0.012 (0.008)	-0.017* (0.009)	-0.007 (0.008)	-0.010 (0.009)
Local unemployment rate	-0.006*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)	-0.006*** (0.002)
<i>Ownership type</i>						
Foreign enterprise	0.001 (0.015)	0.019 (0.019)	0.003 (0.015)	0.021 (0.019)	0.007 (0.015)	0.027 (0.020)
Russian enterprise	0.055*** (0.007)	0.051*** (0.008)	0.055*** (0.007)	0.053*** (0.008)	0.056*** (0.007)	0.054*** (0.008)
Bad financial health	0.024*** (0.008)	0.028*** (0.010)	0.024*** (0.008)	0.026*** (0.010)	0.022*** (0.009)	0.025*** (0.010)

Age	-0.002*** (0.0003)	-0.002*** (0.0004)	-0.002*** (0.0003)	-0.002*** (0.0004)	-0.002*** (0.0003)	-0.002*** (0.0004)
Female	-0.039*** (0.008)	-0.050*** (0.009)	-0.038*** (0.008)	-0.049*** (0.009)	-0.038*** (0.008)	-0.050*** (0.009)
Married	-0.001 (0.007)	-0.006 (0.009)	-0.002 (0.007)	-0.006 (0.009)	0.002 (0.007)	-0.004 (0.009)
<i>Education</i>						
Vocation-level training	-0.002 (0.009)	-0.005 (0.010)	-0.002 (0.009)	-0.005 (0.010)	-0.002 (0.009)	-0.004 (0.011)
University-level training	-0.002 (0.010)	-0.004 (0.011)	-0.002 (0.010)	-0.004 (0.011)	0.001 (0.010)	0.001 (0.011)
Tenure	-0.006*** (0.001)	-0.007*** (0.001)	-0.006*** (0.001)	-0.007*** (0.001)	-0.006*** (0.001)	-0.007*** (0.001)
Monthly wage/1000	-0.003** (0.001)	-0.003* (0.001)	-0.003** (0.001)	-0.003* (0.001)	-0.003** (0.001)	-0.002* (0.001)
NOTPAID	0.048*** (0.010)	0.041*** (0.011)	-	-	-	-
OWED	-	-	0.033*** (0.008)	0.034*** (0.009)	0.036*** (0.009)	0.044*** (0.011)
NOPAYM	-	-	-	-	-0.001 (0.001)	-0.003** (0.002)
PCVDMD1	X	-	X	-	X	-
PCVDMD2	-	X	-	X	-	X
Number of observations	11534	8503	11532	8502	11027	8139
Percent correctly predicted	86.3	86.1	86.2	86.1	86.5	86.4
Pseudo R2	0.0989	0.1030	0.0982	0.1034	0.0942	0.099

Since PCVDMD2 is not available in 2001 (job change data from 2002), this year was excluded from the corresponding regressions (columns 2, 4, and 6).

The estimates are obtained from probit regressions.

All independent variables are measured in the period preceding the period of the job change.

Estimated partial effects of PCVDMD1 and PCVDMD2 are reported in Table 9.

Reference categories: 2000 year, Volga-Vyatski and Volga Basin region, unskilled manual workers, state-owned enterprises, and workers with some postsecondary education.

Standard errors robust to heteroskedasticity and serial correlation are in parentheses under partial effect estimates.

*** = significant at 1%, ** = significant at 5%, * = significant at 10%.

Table 9. Estimated Partial Effects of Perceived Demand on the Job Change, 2000-2004

Perceived demand measure	Arrears measure included	2000	2001	2002	2003	2004
PCVDMD1	NOTPAID	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)
	OWED	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)	0.017*** (0.003)
	OWED and NOPAYM	0.010** (0.004)	0.025*** (0.005)	0.010** (0.004)	0.025*** (0.005)	0.010** (0.004)
PCVDMD2	NOTPAID	0.015*** (0.004)	0.015*** (0.004)	-	0.015*** (0.004)	-0.008 (0.007)
	OWED	0.015*** (0.004)	0.015*** (0.004)	-	0.015*** (0.004)	-0.008 (0.007)
	OWED and NOPAYM	0.015*** (0.004)	0.015*** (0.004)	-	0.015*** (0.004)	-0.006 (0.007)

Since PCVDMD2 is not available in 2001 (job change data from 2002), the corresponding estimates are missing.

The estimates are obtained from probit regressions.

Perceived demand is measured in the period preceding the period of the job change.

Estimated coefficients of the other variables included in the regressions are reported in Table 8.

Standard errors robust to heteroskedasticity and serial correlation are in parentheses under partial effect estimates.

* = significant at the 10% level; ** = significant at the 5% level; *** = significant at the 1% level

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