

**To Pay or Not to Pay:
Managerial Decision Making and
Wage Withholding in Russia**

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Abstract

In this paper we investigate the decisions of Russian managers in distributing wage nonpayment in Russia during the 1994-96 period. Using a longitudinal survey of households, we identify a pattern of wage arrears across regions and industries which suggests that managers allocated nonpayment among workers so as to minimize the real wage declines experienced by higher productivity workers. This finding suggests that post-Soviet managers were responding more strongly to market incentives than to equity considerations in their wage withholding allocation decisions.

I. Introduction

The failure of Russian institutions to fully pay their employees had become a crisis by 1996 creating serious difficulties for the continuing prospects of Russia's market economy reforms. According to official estimates, outstanding wage arrears increased substantially throughout 1996, rising from 22,114 billion rubles at the end of the first quarter (constituting 71 percent of the monthly wage bill) to 38,712 billion rubles at the end of the fourth quarter (at 114 percent of the monthly wage bill).¹ Averaged over employees who were actually owed wages, the stock of outstanding unpaid wages amounted to approximately 275 percent of monthly wages (*Russian Economic Trends*, 1997.1).

Despite mounting wage arrears and the widely recognized and publicly articulated concern over the issue,² there has been little discussion of managerial objectives in allocating arrears among workers.³ In this paper, we employ longitudinal data on the Russian population to analyze this question. We argue that rather than removing surplus workers from the payroll, managers effectively instituted wage cuts by resorting to partial wage nonpayment. A higher occurrence of wage withholding from relatively low wage workers in poorer regions (and industries) than in the wealthier regions (and industries) suggests that the pattern of wage nonpayment in Russia was influenced more by market incentives in managerial decision making than by traditional (paternalistic), pre-transition concerns over equity. Managerial behavior consistent with a response to market pressures for retaining more productive workers is also

¹These figures are based on eight sectors (namely, industry, agriculture, construction, transportation, education, culture, health care, and science) for which Goskomstat reported wage arrears beginning in 1996, and which constitute approximately 78 percent of total official employment in 1995. They do not cover the large military sector in which wage arrears were quite substantial.

²Contrary to the impression given in much of the popular press, the government's failure to fully pay its employees is only a fraction of the wage nonpayments problem. In June 1997, wage arrears in the eight sectors of the economy noted in fn.1 amounted to 53.9 trillion rubles of which 11 trillion rubles (20.4 percent of the total) were due to nonpayment from local and federal budgets. Wage arrears to the military were estimated separately at 5.4 trillion rubles.

³See Desai and Idson (1998) for an analysis of the impact of the arrears crisis on the welfare of Russian workers and the survival strategies adopted by individuals and families. For additional analyses of wage arrears in Russia, see Layard and Richter (1995), Alfandari and Schaffer (1996), Standing (1996), Lehmann, et al. (1997), and Earle and Sabirianova (1998).

reflected in an allocation of wage arrears disproportionately towards groups with the weakest market prospects.

II. Why Wage Arrears?

Workers were denied wages, and increasingly so beginning in 1994, primarily due to mounting cash flow problems faced by the government and enterprises⁴, and weak incentives for enterprise restructuring. The soft budget constraints of the Soviet period and the periodic unanticipated surges in output targets encouraged enterprises to hoard labor. Weak enforcement of bankruptcy laws during the subsequent transition to markets provided few incentives to managers for releasing workers from the payroll. They instead delayed wage payments and put workers on forced administrative leaves without pay rather than render them jobless.

At the same time, managers had economic incentives to retain rather than layoff redundant workers (see Aukutsionek and Kapeliushnikov, 1997). For example, Russian enterprises were required to pay three months' severance pay to workers who lost their jobs due to workforce reduction. Faced with the severance pay requirement, managers found it less costly to retain workers at the enterprises with effectively reduced wages rather than fire them. Again, if aggregate demand eventually recovered and growth accelerated, the retained workers could provide a pool of trained labor allowing the enterprise to readily expand production.

Workers also faced substantial incentives to retain their jobs in the face of pay delays. They were accustomed to receiving an array of benefits, including school, hospital, and day-care services as well as low-cost housing, all attached to the large enterprises. Most workers, therefore, could be expected to settle for receiving these entitlements with reduced pay in preference to losing their jobs and the associated benefits.⁵

⁴Fundamental problems associated with the system of taxation (see Hendley, et al., 1997) have led to widespread tax delinquency by enterprise managers (see Johnson, Kaufman, and Shleifer, 1997; Hendley, Ickes, and Ryterman, 1998), thereby weakening the federal treasury's ability to collect taxes. As a result, the government has been unable to pay its workers and its suppliers of energy and military items, which in turn has caused enterprises to withhold wages from their employees.

⁵Although benefits tied workers to the firm, wage withholding nevertheless exposed employers to the risk of losing their most productive employees who could be expected to have the most marketable skills and the best alternative employment prospects.

Managers and workers thus opted for informal arrangements involving implicit payoffs for both sides rather than explicit contract renegotiations. The high economic (and political) costs of layoffs, combined with workers' readiness to accept temporary wage loss in return for the entitlements resulting from being officially on the payroll and the hesitation by regional and federal governments to rigorously implement bankruptcy laws, resulted in managerial reliance on downward wage adjustments accomplished through the partial withholding of wages and forced administrative leaves without pay.

The problem facing Russian employers can then be described as follows. Actual wage payments w per worker are specified as a fraction β of contracted wages w^c :

$$w = \beta w^c \quad (1)$$

where β , the pay compliance rate, lies in the 0-1 range: $\beta=0$ if wages are fully withheld, and $\beta=1$ if wages are fully paid. Enterprise profits (Π) are given by:

$$\Pi = \alpha L - \beta w^c L - q(\beta w^c - w^m) \lambda L \quad (2)$$

where, for simplicity, we assume a constant marginal productivity of labor α^6 . The number of workers is denoted by L ; output price is normalized to 1; w^m is the expected wage opportunity outside the firm if the worker quits; and the quit rate $q = q(w - w^m)$, $q' < 0$, $q'' > 0$, is assumed to be a decreasing function of the wage differential (see Calvo, 1979; and Salop, 1979). Worker separations impose costs on the firm, λ , arising from loss of training investments by the firm, hiring costs that are incurred when the worker is replaced, and other costs to the firm such as mandated severance payments. The first-order condition for profit maximization⁷ w.r.t. β is:

⁶Allowing wage noncompliance to negatively affect labor productivity by creating effort disincentives does not qualitatively change the results that follow (see footnote 9).

⁷Given the tax implications associated with cash profits, Russian managers may not choose to maximize profits, but may instead seek to maximize the rents that accrue to them. If we alternatively interpret (2) as a function describing managerial rents rather than enterprise profits, the comparative static result in (5) is unchanged. That is, rent-seeking managers will still respond to the market options of their

$$-q'(\beta w^c - w^m)\lambda = 1 \quad (3)$$

which defines the enterprise's equilibrium position with respect to actual wage payments made, on average, to workers, and includes two endogenous variables (β and w^c) and one exogenous variable (w^m). The total differential of (3) gives:

$$-q''[\beta dw^c + w^c d\beta - dw^m]\lambda = 0 \quad (4)$$

Assuming that contracted wages are inflexible⁸ due, say, to prohibitive recontracting costs (so that $dw^c = 0$), equation (4) yields the result:

$$d\beta/dw^m = 1/w^c > 0 \quad (5)$$

which states that when a worker faces better expected offers outside the enterprise, the wage payments compliance rate is higher, i.e. wage withholding will be higher among workers with weaker alternative job prospects.

State sector decision makers and enterprise managers were therefore likely to devise strategies of wage nonpayment that best helped them lower wage outlays without losing their best workers. If managers were to withhold the wages of the better paid, more productive workers, they ran the risk of affecting their productivity through the nonpayment effort disincentive⁹, or their loss to another enterprise. Given the high labor turnover in Russian factories, employees with marketable skills and opportunities could be expected to move to a

more productive workers by paying them a higher percentage of the wages owed to them in order to discourage costly (rent reducing) turnover.

⁸This is a reasonable assumption: if wages were fully downwardly flexible, firms would not need to withhold wage payments, but instead simply lower wage rates in the face of surplus labor.

⁹ If we allow labor productivity α to be a concave function of the compliance rate β , i.e. $\alpha = \alpha(\beta)$, $\alpha' > 0$, $\alpha'' < 0$, then it follows that $d\beta/dw^m = q''/[q'' \cdot (w^c)^2 - \alpha''] > 0$. Alternatively, if we specify labor productivity to be a concave function of actual wage payments relative to market alternatives, i.e. if $\alpha = \alpha(\beta w^c - w^m)$, then we get an identical result as in (5).

better job in another enterprise.¹⁰ Market incentives, therefore, dictated a pattern of wage withholding skewed in the direction of the less productive workers who faced weaker employment options.

III. Markets, Equity, and Wage Arrears

Our empirical analysis is based on the Russian Longitudinal Monitoring Survey (RLMS), a nationally representative longitudinal survey¹¹ of Russian households. The survey project has currently gone through two phases, each phase consisting of a different sample of households for which interviews were conducted with every member of the household. Phase I is composed of four rounds of interviews conducted during 1992 and 1993; Phase II has to date undergone three rounds of interviews, Rounds V-VII, each fielded in the Fall of 1994, 1995 and 1996 respectively. The survey contains detailed information on demographic and employment characteristics by occupation and job location which help us analyze the labor market experiences of Russian households as the transition to a market economy has proceeded. Although the RLMS began in 1992, our analysis is restricted to the 1994-96 period because data on unpaid wages only became available in Phase II of the survey in which respondents were asked a series of questions concerning nonpayment of wages.

Table 1, panel (A) gives details of the survey questions on wage nonpayment which form the basis of our investigation. These questions were asked of all respondents who indicated that they were either at work or on unpaid or paid leave. Our analysis focuses on arrears of the subset of people aged 17-64 who were receiving positive wages from their primary jobs at the time of the interviews.¹² Panel (B) provides information on the levels and trends in the incidence and

¹⁰For a discussion of job turnover in Russian enterprises, see Gimpelson (1996).

¹¹The RLMS sample is based on dwelling units and does not attempt to follow individuals who have moved away. Attempts to estimate the possible attrition bias in the RLMS indicate relatively little attrition, most likely a result of the relative lack of population mobility across regions and housing units; as expected, the greatest attrition occurs in the Moscow and St. Petersburg regions. See Heeringa (1997) for an analysis of sample design considerations and sample attrition in the RLMS.

¹²The restriction to ages 17-64 reduces the sample of respondents with positive wages by 70 (1.9 percent), 72 (2.2 percent) and 48 (1.8 percent) people in 1994, 1995 and 1996 respectively. 67.34 percent,

magnitude of wage arrears between workers and firms. Rounding out the percentages, we see that 26 percent of working people were owed wages (*Pjowed*) by their primary employers in 1994 and 1995, the fraction rising to 40 percent of the sample in 1996. The average value of outstanding debt (*Amtowed*) to workers became more widespread and increased between 1994 and 1996 by 40 percent.¹³ Finally, we see that among workers experiencing arrears, wages tended to be withheld approximately two and one-half months, with no discernable increase in the average duration of outstanding arrears (*Nopaym*) over the period.

The pre-transition tradition of firms acting as production units and providers of social services tended to uneasily coexist as growing market pressures and hardening budget constraints required managers to use wage policies less as mechanisms for fulfilling equity goals than for bottom line profit calculations. Did managers exhibit behavior consistent with an attempt to distribute arrears equitably among workers, i.e. were workers who had their wages withheld in one year less likely to have some of their wages withheld in subsequent years? Was the implied “withholding tax” on wages progressive in the sense that a higher percentage of a worker’s contracted wage was withheld from higher wage workers? We investigate these questions in Tables 2 and 3 below.

In panel (A) of Table 2, we utilize the longitudinal structure of the RLMS data for estimating the effect of workers having a portion of their wages withheld in 1994 and/or 1995 on the likelihood that they will also suffer wage arrears in 1996. In both the simple and multivariate specifications, the positive estimated effects of *Pjowed*₁₉₉₄ and *Pjowed*₁₉₉₅ on the dependent variable *Pjowed*₁₉₉₆ indicate that workers who had their wages withheld one year were more likely to have their wages withheld in subsequent years than workers who were not experiencing wage withholding¹⁴. We therefore conclude that the pattern of managerial withholding of wages

67.0 percent and 65.58 percent of the respondents between the ages of 16 and 64 reported that they were either at work or on unpaid or paid leave in 1994, 1995 and 1996 respectively. 75.2 percent, 70.9 percent and 61.5 percent of these groups reported receiving wages in the three years.

¹³Throughout the paper, all monetary figures have been converted to December 1995 values using the Goskomstat national price index.

¹⁴The smaller coefficient of *Pjowed* in 1995, relative to that for 1994, most likely reflects the influence of the 1995 presidential elections, i.e. politicians provided funds to temporarily reduce wage

is inconsistent with a policy of “equitable” distribution, or sharing, of arrears during the 1994-96 period.

In panel (B) we evaluate the progressivity of the implicit withholding tax associated with wage arrears, and the effect of the wage level of the worker on the duration of withholding. The estimated coefficient of the monthly wage variable¹⁵ in regression (1) indicates that a 10 percent increase in monthly real wages was associated, on average, with a 7.7 percent increase in accumulated outstanding debt. When we control for a number of additional factors that may influence wage arrears¹⁶ in equation (2), this effect is largely unchanged dropping to 6.5 percent. The implied taxation of wages, with a positive estimated intercept, was therefore regressive: a higher percentage of the monthly wage of lower wage workers was retained by employers as a forced, interest-free loan. In regressions (3) and (4) we see that higher wage workers tended to suffer a shorter withholding period: a 10 percent increase in monthly wages was associated, on average, with a 1.7 to 2.3 percent decline in the period over which wages were withheld, further evidence that generally more productive workers suffered a lesser burden from wage arrears practices.¹⁷

withholding in an attempt to placate voters. In support of this contention, research by Daniel Treisman (1999) documents that the level of regional wage arrears was one of the most important factor in predicting support for pro-government blocs and for Yeltsin. The 1995 elections may also account for the decline in 1995 of all three measures of wage withholding shown in Panel (B) of Table 1.

¹⁵The wage variable used in Table 2 and the subsequent tables is an estimate of contracted wages which are actual wages paid plus an estimate of the monthly outstanding wage obligations by the employers, the latter calculated as the cumulated nonpayments divided by the number of months for which these wages have been owed. (Note that this procedure will be subject to measurement error because we do not know the debt which was incurred in the past 30 days.) Monthly wages are taken from the questionnaire item, “how much money in the last 30 days did you receive from your primary workplace after taxes? If you received all or part of the money in foreign currency, please convert all into rubles, and name the total sum.” We deleted the responses when the individual reported either zero monthly wage or monthly wage in excess of 5,000,000 real rubles.

¹⁶Because specification (2) additionally includes productivity proxies such as education and employment tenure, the estimated wage variable effect reflects the productivity of unobserved labor quality, rents accruing to workers, and measurement error in the included proxies.

¹⁷An alternative explanation for these relationships might be that the more productive workers, having sorted into more profitable firms, were less affected by wage arrears. Data limitations unfortunately prevent us from testing this hypothesis.

While market pressures influenced managerial behavior, Soviet traditions suggest that managers may also be motivated by welfare considerations with regard to wages actually paid out to their workers. To the extent that managers attempted to allocate arrears in a fashion that protected the welfare of employees most in need, we might expect that in situations where workers were relatively poor, say in relatively low real wage regions, managers would have a stronger (weaker) tendency to withhold wages from higher (lower) wage workers, i.e. the effect of an individual's wage on the likelihood of wage withholding would be stronger in relatively poorer, lower wage regions. We investigate managerial behavior from this perspective in Table 4: How does the impact of an individual's wage on the likelihood of his/her being subjected to wage withholding vary with respect to the level of (real) wages in the region in which the person lives, and alternatively in the industry in which the person works?¹⁸

To this end, we calculate the median monthly wage in each region¹⁹ and industry²⁰ and evaluate (i) the impact on the likelihood of wage withholding of an individual's wage relative to the regional or industry median wage (ii) and the variation in this impact with respect to the median wage in the region or industry. As noted above, the redistributive welfare concerns of the traditional, pre-transition managerial behavior predicts that an individual's relative wage should have a stronger (weaker) impact on the likelihood of wage withholding in relatively lower (higher) paying regions and industries. We would then expect to find a negative coefficient on an interaction term of the individual's wage (relative to median wage in the region or industry) and the median wage in the region or industry, i.e. in lower paid sectors, the incidence of arrears would rise more strongly with individual wages than in richer sectors.

¹⁸Our ideal unit of analysis for this purpose should be the enterprise with data on the allocation of arrears to the individual employed by the enterprise; unfortunately, this information is not available to us.

¹⁹Although the publicly disseminated RLMS data aggregates interview sites into eight broad regions, researchers at the RLMS project released disaggregated information to us for the purpose of this study. We were thus able to combine the 160 interview sites into 38 rather than eight regional groupings.

²⁰Although the RLMS fielded questions on industry of employment, these responses were not translated from Russian and were therefore not distributed to the public for analysis. After discussions with RLMS project directors, we were able to obtain and translate the original industry responses (with the diligent assistance of Anna Demidova) and group them into 21 broad industry groups which correspond broadly to the categories used by Goskomstat in its reporting of industry level statistics.

The results of this analysis, reported in Table 3, do not support the hypothesis of progressive wage withholding practices by managers. The effect of an individual's relative wage (*ir_wage*) on the likelihood of withholding (*Pjowed*) was negative (row 1), which indicates that the incidence of wage withholding was higher for workers in the bottom half of the wage distributions in the region in which they lived and the industry in which they were employed. This result is consistent with a managerial tendency to allocate wage arrears to the lower paid, less skilled employees, those likely to have fewer alternative job prospects and thus more likely to continue working at substantially lower, actual wages. The negative estimates (row 2) of the effect of the median wage in the respondent's industry and region of residence (*m_wage*) on wage withholding suggest that workers in higher paying regions and industries were less likely to face wage withholding, as might be expected in sectors that were faring better during the transition and which tended to use more skilled labor with stronger market alternatives. Most germane to our analysis here are the significantly positive signs of the interaction terms (*ir_wage x m_wage*) in row 3, indicating that lower paid workers in poorer sectors were more likely (relative to workers further up in the regional or industrial salary scale) to have their wages withheld. The pronounced managerial tendency in the poorer regions and industries to insulate the more productive workers from wage withholding is consistent with a fear on the part of the managers that these workers will quit and search for jobs in higher paid sectors. These results lead us to conclude that managerial practices with regard to the distribution of wage withholding reflected bottom line considerations of employee retention and minimization of the wage bill rather than attempts to help the workers most in need: managers withheld wages from workers who were most likely to accept the implied wage cuts and continue working at the enterprise.

We further assess the influence of labor market pressures on managerial decision making with respect to the allocation of wage arrears by relating alternative measures of the labor market options of workers to the likelihood of nonpayment (*Pjowed*), the amount withheld (*Amtowed*), and the duration of outstanding enterprise debt to the worker (*Nopaym*). Two subjective assessments of labor market power are used for the purpose: (i) the variable "*findjb*" gives the worker's assessment of the ease with which he/she would find comparable work if he/she were to be laid off; (ii) the variable "*chanj*" indicates the worker's concern about being laid off. We

also use an objective measure, the variable “*comply*” which indicates if the worker has ever been forced to go on unpaid leave. Parameter estimates for the regressors of interest are reported in Table 4, i.e. each cell is from a separate regression of the explanatory variable on *Pjowed* in column 2, or $\ln(\text{Amtowed})$ in column 3, or $\ln(\text{Nopaym})$ in column 4, and a full vector of additional control variables. The results indicate that workers who exhibited good market prospects were less likely to be owed wages,²¹ the amount owed to them tended to be less, and the length of time that their wages were withheld was shorter.²²

Wage Arrears and Change of Employer

We have argued that managers allocate wage arrears with an eye to economizing on costly labor turnover. Is there evidence that workers who face wage withholding are, in fact, more likely to change employers in subsequent years? Do workers who move to other employers tend to experience a lower likelihood of wage withholding on their new job? Finally, conditional on being subject to wage withholding on the new job, does the amount withheld tend to be lower than on the previous job? These questions are addressed empirically in Table 5, beginning with the first question in regressions (1) and (2), the second in regression (3), and the third in regression (4).

The RLMS unfortunately does not explicitly ask questions in Phase II concerning job separations, or distinguish between voluntary and involuntary turnover, or include employer IDs that would allow us to track employer changes. Given these data limitations, we instead use the longitudinal structure of the survey to create an employer change dummy, $Chjob_{t,t-1}$ (where t ranges from 1994 to 1996), which is set equal to 1 if tenure in year t was less than tenure in year

²¹The variables *findjb* and *chanj* are coded to increase with lack of perceived market power so that positive coefficients indicate that when perceived market power was lower, the worker was more likely to incur nonpayment of wages. Similarly, *comply*=1 also indicates lack of market power, because *comply*=1 if the worker was forced on unpaid leave, so that we would expect to find a positive parameter estimate, i.e. managers will be less hesitant to withhold wages and risk losing employees with weaker market options.

²²The regressions in columns 3 and 4 are for people who are owed wages, i.e. for people with *Pjowed*=1, so that the results are not simply picking up the pattern of occurrence of arrears found in the second column.

t-1 and if the industry of employment in period t is different from that in period t-1. We use the joint criteria of tenure decline and industry change as an indicator of employer change so as to be reasonably confident that we are not interpreting job change within the enterprise as turnover to a different employer.

We see from the first two regressions that workers who had some portion of their wages withheld in year t-1 were more likely to have changed employer by year t than was the case for workers who did not have a portion of their wages withheld in year t-1. The positive coefficient 0.290 of $Pjowed_{t-1}$ in regression (1) shows that the occurrence of wage arrears in 1994 increased the likelihood of worker turnover between 1994 and 1995, and that the occurrence of wage arrears in 1995 increased the likelihood of turnover between 1995 and 1996. In the second regression, which focuses on the subset of people who experienced wage withholding in year t-1 (i.e., $Pjowed_{t-1}=1$), the positive coefficient 0.214 of $\ln(Amtowed_{t-1})$ indicates that the likelihood of turnover between years t and t-1 was higher, the larger the value of outstanding arrears in year t-1.²³ Therefore, the occurrence of wage withholding per se, and the value of outstanding arrears conditional on their occurrence, tended to increase the likelihood of subsequent labor turnover. As already noted, we cannot empirically assess whether these changes occurred because workers quit their jobs in search of alternative employment, or because workers facing wage arrears were more likely to be fired, although, given managerial reluctance to fire workers, we suspect that much of this turnover was worker initiated.

In the last two regressions, we address the question of the effects of turnover on the subsequent wage arrears experience of workers. The estimated negative coefficient -0.258 of $Chjob_{t,t-1}$ in regression (3) indicates that workers who changed employers were less likely to face wage withholding in their new place of employment. In regression (4), the negative coefficient -1.157 of $Chjob_{t,t-1}$ indicates that, among workers who continued to experience wage arrears (i.e., $Pjowed_t=1$), arrears on the new job tended to be lower than the outstanding arrears for workers who did not change employers.²⁴ (This result, though, may reflect the relatively short time on the

²³The explanatory variables in both regressions are year t-1 values.

²⁴The explanatory variables in both regressions are year t values.

new job.) We conclude that job turnover was associated, on average, with a general reduction in the occurrence of wage withholding and perhaps in the amounts withheld, results consistent with our conjecture that much of this turnover was worker initiated.

IV. Conclusions

In this paper, we argue that the wage nonpayment decisions by Russian managers reflected managerial strategies aimed at lowering wage outlays while at the same time containing costly labor turnover. Our empirical analysis supports four main conclusions. First, the incidence of wage withholding was greater, its duration was longer, and its cumulative amount was proportionately higher among relatively low paid workers, suggesting that the implicit wage arrears tax was regressive. Second, the incidence of wage nonpayment was higher among lower wage workers in lower wage regions and industries, reflecting the influence of market pressures in managerial strategies in distributing wage arrears. Third, workers with weaker labor market prospects were more likely to experience wage withholding, in greater amounts, and for a longer period. Finally, we show that managerial concerns about the impact of wage withholding on worker-initiated turnover were well founded: Workers subjected to wage nonpayment tended to move to jobs with other enterprises and, in so doing, reduced the likelihood that they would face continued wage nonpayment.

Table 1. Variable Definitions and Descriptive Statistics

(A) Variable Definitions

<u>Variable Names</u>	<u>Variable Construction</u>
<i>Pjowed</i>	“At the present time, does your place of work owe you any money, which for various reasons was not paid on time?” The response is coded as 1 if the respondent said “yes” and as 0 if the respondent said “no”.
<i>Amtowed</i>	“How much money in all have they not paid you?” Respondents skipped this question if they answered that their employer did not owe them wages. (The amounts are deflated to December 1995 rubles.)
<i>Nopaym</i>	“For how many months has your enterprise not paid this money to you?”

(B) Wage Arrears Patterns

	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Pjowed</i> : Percentage of people who are owed wages	26.08 (43.19)	25.52 (43.61)	40.42 ^{b,c} (49.08)
<i>Amtowed</i> : Average wages owed	770,066 (810,467)	689,082 ^a (776,556)	1,081,584 ^{b,c} (975,809)
<i>Nopaym</i> : Average number of months for which wages have been in arrears	2.46 (2.35)	2.11 (1.95)	2.73 (2.84)

Notes: Annual averages are reported with standard deviations in parentheses. Superscripts a, b and c denote significant differences (at 10 percent or better) between 1994 and 1995, 1995 and 1996, and 1994 and 1996 respectively. All values are in terms of December 1995 rubles.

Table 2. Wage Arrears: Persistence, Magnitude and Duration

(A) Persistence in the Incidence of Arrears				
	<i>Pjowed</i> ₁₉₉₆			
	(1)		(2)	
<i>Pjowed</i> ₁₉₉₄	1.087 (0.110)		1.003 (0.162)	
<i>Pjowed</i> ₁₉₉₅	0.434 (0.111)		0.498 (0.160)	
(B) "Progressivity" in the Allocation of Arrears?				
	<u>ln(<i>Amtowed</i>)</u>		<u>ln(<i>Nopaym</i>)</u>	
	(1)	(2)	(3)	(4)
<i>dum1995</i>	-0.152 (0.051)	-0.118 (0.053)	-0.120 (0.031)	-0.077 (0.033)
<i>dum1996</i>	0.329 (0.036)	0.433 (0.041)	0.136 (0.031)	0.195 (0.034)
ln(<i>rmwage</i>)*	0.772 (0.030)	0.649 (0.050)	-0.170 (0.017)	-0.231 (0.023)

Notes: The dependent variable in panel (A) is the value of *Pjowed* in 1996; maximum likelihood probit estimates are reported with standard errors in parentheses. The lagged values of *Pjowed* are all significant at the 1 percent level. Specification (2) additionally includes variables for age, gender, job tenure, education, monthly wage level, region of residence, occupation and industry of employment. These control variables refer to the year 1996 (the full results are available on request).

In panel (B), the dependent variable in regressions (1) and (2) is ln(*Amtowed*), and is ln(*Nopaym*) in regressions (3) and (4). All regressions are estimated by ordinary least squares and are restricted to people who reported wage nonpayment (i.e., *Pjowed*=1). Coefficient estimates are reported with robust standard errors in parentheses. (All estimates are significant at the 5 percent level or better.) Regressions (2) and (4) additionally include a constant and the same control variables noted above (the full results are available on request). The variables *dum1995* and *dum1996* are year dummies (the reference point is 1994).

* See footnote 15.

*Table 3. Within-Industry and Within-Region
Regressivity in the Incidence of Wage Arrears*

	<u>Industry Patterns</u>		<u>Regional Patterns</u>	
	(1)	(2)	(1)	(2)
<i>ir_wage</i>	-1.939 ^a (0.715)	-2.135 ^a (0.640)	-1.362 ^d (0.925)	-1.258 ^d (0.883)
<i>m_wage</i>	-	-0.218 ^a (0.088)	-	-0.198 ^b (0.100)
<i>ir_wage</i> x <i>m_wage</i>	0.165 ^a (0.055)	0.179 ^a (0.049)	0.122 ^c (0.070)	0.114 ^c (0.067)

Explanatory variables definitions:

1. Industry regressions:

ir_wage = the ratio of the respondent's wage to the median wage in the respondent's industry
m_wage = the logarithm of the median wage in the respondent's industry

2. Regional regressions:

ir_wage = the ratio of the respondent's wage to the median wage in the region where the respondent lives
m_wage = the logarithm of the median wage in the region in which the respondent lives

Notes: The dependent variable in all four regressions is *Pjowed*. All regressions are estimated by maximum likelihood probit; parameter estimates are reported with robust standard errors in parentheses. Superscripts a, b, c, and d denote significance at the 1 percent, 5 percent, 10 percent and 15 percent respectively.

The regressions additionally include a constant, year dummies and control variables for age, gender, job tenure, education and occupation. Both specifications for the industry regressions also include 37 regional dummies; specification (1) additionally includes a vector of 20 industry dummies. Both specifications for the regional regressions also include 20 industry dummies; specification (1) additionally includes a vector of 37 regional dummies.

Table 4. The Effects of Labor Market Prospects on Wage Arrears

	<i>Pjowed</i>	<i>ln(Amtowed)</i>	<i>ln(Nopaym)</i>
<i>findjb</i>	0.0692 ^a (0.0125)	0.0435 ^a (0.0141)	0.0254 ^b (0.0108)
<i>chanj</i>	0.0386 ^b (0.0160)	0.0400 ^b (0.0190)	0.0276 ^b (0.0133)
<i>comply</i>	0.6791 ^a (0.0605)	0.0953 ^c (0.0564)	0.0631 ^d (0.0430)

Explanatory variable definitions:

findjb: "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 position?" The variable is coded with 1 for the response "quite confident" to 5 for the response "not at all confident".

chanj: "How concerned are you that you might lose your job?" The variable is coded with 1 for the response "not at all concerned" to 4 for the response "very concerned".

comply: "Has the administration at any time sent you on compulsory unpaid leave?" The variable is coded as 1 for "yes" and 0 for "no".

Notes: Column headings list the dependent variable associated with the column estimates. Cells contain parameter estimates resulting from nine separate regressions of the three dependent variables (in the column headings) on the indicated row variable. Each regression additionally contains the control variables listed in the notes to Table 2 (the full results are available on request). The first regression is estimated by maximum likelihood probit, the second and third regressions are estimated by OLS. Parameter estimates are reported with robust standard errors in parentheses. Superscripts a, b, c and d denote significance at the 1 percent, 5 percent, 10 percent and 15 percent respectively.

Table 5. Wage Arrears and Employer Change

	Effect of Wage Arrears on Employer Change		Effect of Employer Change on Wage Arrears	
	$Chjob_{t,t-1}$		$Pjowed_t$	$\ln(Amtowed_t)$
	(1)	(2)	(3)	(4)
$Pjowed_{t-1}$	0.290 ^a (0.093)	-	1.011 ^a (0.067)	-
$\ln(Amtowed_{t-1})$	-	0.214 ^a (0.097)	-	0.385 ^a (0.024)
$Chjob_{t,t-1}$	-	-	-0.258 ^b (0.126)	-1.157 ^a (0.455)

Variable Definition: $Chjob_{t,t-1} = 1$ if tenure in year t was less than tenure in year t-1 and industry of employment in period t is different from industry of employment in period t-1.

Notes: The first three regressions are estimated by maximum likelihood probit, the last by ordinary least squares. Coefficient estimates are reported with robust standard errors in parentheses. Significance at the 1 percent and 5 percent levels are denoted by superscripts a and b respectively. Each regression additionally contains a constant, the logarithm of the individual's monthly wage and the vector of control variables listed in the notes to Table 2 (the full results are available on request). In regressions (1) and (2), the control variables take the values of period t-1; in regressions (3) and (4), they take the values of period t.

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