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**Community Norms and Organizational Practices:  
The Legitimization of Wage Arrears in Russia, 1992-1999**

Upjohn Institute Staff Working Paper 03-97

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**Abstract**

What role do community norms play in the diffusion and persistence of new organizational practices? We explore this question through an examination of the widespread practice of wage arrears, the late and non-payment of wages, in Russia during the 1990s. Existing research on wage arrears most often examines this practice as a means of flexible wage adjustment under difficult economic conditions. We develop an alternative theory that explains wage arrears through their acceptance as a legitimate form of organizational behavior within local communities. Our empirical analysis finds some support for the neoclassical position that wage arrears reflect adjustment to negative shocks, but this perspective fails to account for a number of important facts, including a high level of arrears among apparently successful firms. In contrast, our results find strong support for the institutional perspective. The statistical analysis demonstrates powerful and robust community effects both in firm adoption of this practice, controlling for firm performance, liquidity, and fixed firm effects, and in workers' reaction to arrears, through their quit (exit) and strike (voice) behavior.

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A core insight of institutional theories across multiple disciplines is that social and economic outcomes are not produced solely by the aggregation of individual behavior but also by the collective rules, norms, and beliefs that structure action (Clemens and Cook, 1999). Institutional research into the role of legitimization processes in the diffusion and persistence of new organizational practices similarly builds on a community-level approach to understanding organizational behavior. New practices arise and diffuse not only due to technical or efficiency considerations but also through the development of community-wide regulatory rules, normative standards, and cognitive beliefs (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Scott, 1995).

Despite a growing amount of research into the role of institutional processes in the spread of new organizational practices (Burns and Wholey, 1993; Davis, 1991; Fligstein, 1985; Guler, Guillen, and Macpherson, 2002; Palmer, Jennings, and Zhou, 1993; Palmer et al., 1987; Tolbert and Zucker, 1983; Westphal, Gulati, and Shortell, 1997), some critics argue that empirical research remains unduly focused on managerial cognition as a means of explaining the impact of community norms on organizational outcomes (Mizruchi and Fein, 1998; Tolbert and Zucker, 1996). Existing empirical research emphasizes the role of “mimetic isomorphism” in explaining the interaction between organizational behavior and social context. When an activity becomes familiar and routine with continued use, then managers are more likely to mimic it rather than experiment with new practices (Aldrich, 1999; DiMaggio and Powell, 1983). Community-wide processes influence the diffusion of organizational practices because managers observe and respond to one another as they face everyday strategic issues.

However, others argue that a focus on managerial cognition and consensus underemphasizes the way in which coercion and conflict shape social norms (Hirsch and Lounsbury, 1997; Mizruchi and Fein, 1998). What is legitimate for managers may not be legitimate for other social actors (Perrow, 1986). Therefore, an examination of the role of managers in constructing their own definitions of legitimate behavior requires the question: legitimate for whom? These authors argue that audiences

and interests beyond those of managers need to be analyzed to understand the way that communities construct and confer legitimacy in organizational systems (see also Clemens and Cook, 1999; Tolbert and Zucker, 1996; Fligstein, 1990; Stryker, 2000).

We contribute to a broadening of the scope of institutional analysis by developing and testing a measure of legitimacy rarely explored in the empirical literature: the degree of opposition to an organizational practice. Building on existing research, we first examine the presence and impact of legitimacy from the viewpoint of managers. We theorize that the greater the prevalence of an organizational practice within a community, the more likely that managers will choose to use this practice even if there is no strong economic rationale to support this action (Fligstein, 1985; Tolbert and Zucker, 1983). However, we also examine the question of legitimacy from the perspective of workers. We theorize that the prevalence of an organizational practice within a community influences not only the decision of managers to adopt it, but also the decision of workers to accept or oppose it.

The case we examine is the spread of wage arrears in Russia during the 1990s. Wage arrears, the late and non-payment of contractual wages to employees, first became substantial in 1993, and the aggregate stock of overdue wages grew to a total of 50 trillion rubles (around 8 billion dollars U.S.) by the beginning of 1998 (Goskomstat, 1998). Nearly two-thirds of Russian employees reported they were owed overdue wages by the end of that year, with an average debt of 4.8 monthly wages per affected worker (Earle and Sabirianova, 2000). The use of wage arrears in Russia moved beyond an exceptional practice in times of crisis to represent a routine organizational practice practiced by a large number of organizations across multiple industries and sectors.

Taking their starting point in the neoclassical economic model of wage adjustment, most prior studies of the Russian labor market have treated wage arrears as a flexible way for firms to reduce labor costs (Alfandari and Schaffer, 1996; Desai and Idson, 2000; Gimpelson, 1998; Layard and Richter, 1994; Lehmann, Wadsworth, and Acquisti, 1999; a critique of this approach can be found in Earle and Sabirianova, 2000 and 2002). The pressure to cut labor costs in Russia has been heavy due

to the inherited situation of overstaffing, particularly in industrial enterprises, which, emerging from the constraints and supports of administrative planning, have experienced tremendous shocks to their product and factor markets. GDP has fallen by about 40 percent, and industrial production has been cut by over half in the early and mid-1990s (Goskomstat, 1998). Faced with this crisis, firms have responded by reducing employment, hours of work, real wage rates, and employee benefits as well as delaying wages. A firm-level consequence of wage arrears – the ability to adjust wages flexibly under conditions of high uncertainty and difficult economic conditions – is portrayed as the primary causal explanation of why this practice has diffused so widely in post-communist Russia.

In contrast to the neoclassical perspective that views wage arrears as a flexible contracting mechanism, we propose and test a theory that examines this practice as a legitimate form of organizational behavior. The neoclassical perspective starts with the implicit assumption that wage arrears are legitimate and theorizes about the conditions under which firms will find this strategy most beneficial. An institutional perspective raises the question of whether, and under what conditions, wage arrears may become considered as a legitimate organizational practice at all. To examine the extent to which wage arrears are legitimized in Russia, we move above the level of the firm to look at characteristics of communities. We theorize that the more that wage arrears are perceived as a legitimate form of organizational behavior within a community, the more likely it is that firms will use this practice and the less likely that workers will oppose it.

In the first section of the paper, we review the institutional literature on the relationship between community norms and the legitimization of new organizational practices. We then develop hypotheses from both a neoclassical and institutional perspective to explain the use of wage arrears by firms and the reactions to wage arrears by workers. We test these hypotheses on a dataset developed through a large survey of Russian agricultural and industrial firms, containing annual information from 1991 to 1999.

Our results provide partial support for a neoclassical perspective on the spread of this practice. We find that better performing firms are less likely to adopt wage arrears than poorly performing firms and that firms with more liquid resources make less use of the practice than their less liquid counterparts. The neoclassical perspective, however, is insufficient to explain a number of important facts about arrears including the existence of substantial numbers of firms that have significant levels of arrears yet nevertheless display strong growth and excellent liquidity characteristics. According to the neoclassical model, firm characteristics such as growth in sales and output, rapid hiring, increasing employment and wages, positive cash flow, and an absence of liquidity difficulties should not be found in firms with wage arrears, but we find that many such firms do in fact exist. The data also show many cases of declining firms that have zero arrears, implying that the neoclassical explanation of wage arrears as solely a mechanism of wage adjustment is insufficient to account for the phenomenon.

Investigating this puzzle from the standpoint of institutional theory, we find powerful community effects in the diffusion of wage arrears. First, focusing on the set of firms whose behavior directly contradicts the neoclassical story - those displaying both large arrears and rising employment and wages - we show that such firms are disproportionately located in localities with high average levels of arrears. Declining firms are also more likely to have arrears in such areas than they are in low-arrears localities. This suggests that the choice of arrears is not a function solely of firm-specific conditions of growth and liquidity, but that the prevalence of arrears in local communities also influences an individual firm's choices.

Second, defining the relevant organizational field as the local community in a multivariate analysis, we find that the lagged level of local arrears is a strong predictor of firm-level arrears. The effect of lagged local arrears is large and robust even when controlling for a host of firm characteristics, including alternative measures of growth, performance, liquidity, and other relevant covariates. The analysis also includes firm fixed effects to control for any unobserved propensity for firms to use arrears that may be correlated with lagged local arrears.

Third, we investigate worker responses to arrears and find that the propensity of workers to quit the firm and engage in strikes in response to arrears in their firm is a decreasing function of the level of local arrears. In communities with low arrears, a firm's quit rate and strike probability both tend to increase in the level of their arrears. In areas with high arrears, however, these responses are strongly attenuated, suggesting that workers are less likely to oppose wage arrears in localities in which the practice is more widely diffused. The results provide strong evidence that wage arrears have become institutionalized as a legitimate organizational practice within these communities.

### **COMMUNITY NORMS AND ORGANIZATIONAL PRACTICES: ARE WAGE ARREARS LEGITIMATE?**

A common finding in organizational research is that the structure of communities influences the diffusion and persistence of new organizational practices. Organizational researchers have shown that organizational practices diffuse quickly within industries once a large number of firms adopt the practice (Davis, 1991; Fligstein, 1985; Palmer, Jennings, and Zhou, 1993). Parallel findings have demonstrated that organizational practices spread across industries and regions even if underlying technical challenges of the industries or regions differ greatly (Burns and Wholey, 1993; Fligstein, 1990; Tolbert and Zucker, 1983). Moreover, institutional theories have been used to explain long-lasting differences in organizational practices across national boundaries (Gooderharn, Nordhaug, and Ringda, 1999; Biggart and Guillen, 1999; Guillen, 1994). Firms within countries are shown to demonstrate similar patterns of organizational behavior because of their embeddedness in a common institutional environment (Dore, 1973; Orru, Biggart, and Hamilton, 1991; Hamilton and Biggart, 1988).

Differences in social norms of legitimate behavior are an important explanation of the variation of organizational practice across communities. Biggart and Guillen (1999) remark that "in some settings it is 'normal' to raise business capital through family ties; in others, this is an 'inappropriate'

imposition and fostering ties to banks or to foreign investors might be a more successful or legitimate fund-raising strategy. ... Cultural and social organization provide not only ideas and values, but also strategies of action.” From this perspective, organizational practices are viewed as socially legitimized forms of organizational activity as much as they are technical solutions to economic tasks. Legitimate organizational practices are “strategies of action” that actors within a social context consider “normal” and “appropriate” (Aldrich and Fiol, 1994; Scott 1995; Suchman, 1995). Firms cannot simply pursue profit-maximizing goals by any available means; instead, they are constrained by social understandings of what is acceptable behavior.

Some researchers examine the distinction between organizational ends and means by distinguishing between “symbolic” and “substantive” activity. Firms often adopt socially endorsed means of activity to mimic or impress other powerful actors within a community but decouple this ceremonial activity from the substantive task of achieving organizational goals (Westphal, Gulati and Shortell, 1997; Westphal and Zajac, 1994). However, a number of researchers stress that the impact of institutional norms should not be seen as contradictory to theories of technical rationality (Dobbin and Dowd, 1997; Fligstein, 1996). Communities do not dictate the decisions that organizations must take, but they frame the menu of legitimate “strategies of action” from which organizations are allowed to choose in pursuing technical goals.<sup>1</sup>

A comparison of the practice of wage arrears in Russia to norms of on-time payment in other countries demonstrates the importance of community norms of legitimate behavior in shaping organizational behavior. Wage arrears are not only much rarer in most economies (including most post-socialist countries), but also when they do appear, the circumstances tend to be quite special: small start-up companies facing severe liquidity constraints, bankrupt firms about to be shut down, or

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<sup>1</sup> Biggart and Hamilton (1992) build upon this argument to argue that neoclassical economic models should not be applied universally across countries. While these models may correctly describe organizational behavior in western, developed countries, differences in local norms of legitimate behavior lead organizations in non-western contexts to behave in ways that often deviate from the predictions of western theory (see also Hamilton and Biggart, 1988).



occasional situations of fraud. For most firms under most circumstances, the choice of delaying wage payments is simply not on the table. In the rare cases when arrears do occur, most communities react to this form of behavior as an abdication of contractual obligations instead of accepting it as a legitimate firm strategy to facilitate wage adjustment. Social understandings, not economic ones, provide the boundaries of what is considered to be legitimate behavior.

These boundaries are given not only, or even primarily, by formal laws and regulations. Indeed, while the legal systems of most other countries provide no special provisions for wage arrears, treating them merely as a particular case of contract violations, the Russian Labor Code explicitly outlaws them. Firms' use of the practice may be challenged either in the civil courts (when workers file a lawsuit) or by the Ministry of Labor's Inspection Service, in the latter case sometimes leading to criminal court procedures. The consistent use of wage arrears, despite their illegality, raises the important distinction between formal law and social meaning in the study of legitimacy: law has meaning only if it enters into the actions of individuals. The importance of norms of legitimate behavior in explaining on-time payment in western countries is not simply that late payment is illegal, but that, in most situations, on-time payment is taken for granted. Western managers do not explicitly strategize about the costs and benefits of avoiding wage obligations, as if this practice represented a legitimate option among a menu of strategic choices. Instead, practices are routinely chosen – or ignored – based on taken-for-granted norms of behavior (March and Olsen, 1989).

The tight alignment between regulatory, normative, and cognitive sources of support for community norms in western contexts often makes it difficult to untangle the various processes by which organizational practices become legitimized. Much of recent U.S. research into diffusion processes examines organizational practices that eventually became viewed as normative best practice among professionals, professional organizations, or the state: for example, civil bureaucracy (Tolbert and Zucker, 1983), the multi-divisional form (Fligstein, 1985; Palmer, et al., 1987; Palmer, Jennings, and Zhou, 1993), total quality management (Westphal, Gulati, and Shortell, 1997), the matrix

organization (Burns and Wholey, 1993) and ISO 9000 quality standards (Guler, Guillen, and Macpherson, 2002). The eventual normative endorsement of these practices makes it difficult to distinguish between alternative institutional explanations of why legitimacy influences the spread of an organizational practice: because a powerful actor such as the state has imposed the practice upon other organizations; because it has become normatively accepted as best-practice among a group of professionals; or because managers have simply adopted typified models of organizational behavior under conditions of uncertainty.

The case of Russian wage arrears offers an extraordinary setting for examining the construction and maintenance of community norms of legitimate behavior because, in contrast to the examples in the existing literature, regulatory, normative, and cognitive legitimization mechanisms operate at cross-purposes. Not only are wage arrears illegal in Russia, but they are also frequently normatively condemned. Public opinion data research has demonstrated that Russian workers consistently place the problem of wage arrears as one of the fundamental problems facing the country (Javeline, 2003). Russian politicians similarly rail against the practice. President Yeltsin, for example, cited the continuation of wage arrears as justification for firing multiple government officials in 1996 (McFaul, 2001). The wage arrears case thus presents an important theoretical question for institutional research: can an activity that is frequently used, but illegal and normatively condemned, still be considered a “legitimate” organizational practice?

An answer to this question depends, first of all, on how legitimacy is defined. By regulatory or normative criteria, wage arrears can easily be identified as “illegitimate.” However, organizational theorists emphasize that a cognitive definition of legitimacy refers to the extent to which a practice is considered “appropriate” or “normal” by the actors within a broader community (Suchman, 1995). The construction of legitimacy, in this case, has little to do with formal prescriptions of expressed norms of good conduct within a community, such as that found in legal or professional standards. Instead, legitimacy reflects informal understandings of what are perceived as accepted ways of

conducting business within a community. By these criteria, the argument that wage arrears are legitimate in Russia remains a plausible hypothesis. Although wage arrears may be illegal, they are nevertheless used frequently in everyday business activity.

Institutional theory in organizational research provides an important theoretical perspective to understand the way in which the legitimization of an organizational practice may take place outside the scope of the law. Organizational researchers theorize that the legitimization of an organizational practice takes place, at a minimum, in a two-stage process (Tolbert and Zucker; 1983; Fligstein, 1985). In the first stage, organizations, often for transactional or efficiency reasons, adopt a new organizational practice. However, as more firms within a community adopt an activity, it becomes increasingly legitimized as an accepted form of organizational behavior within a community. Once legitimized, the social forces supporting an organizational activity as a collective norm of behavior help to explain the continued persistence of the practice, even if original economic functions dissipate.

From this perspective, legitimate norms of behavior are not simply imposed on managers by more powerful organizations such as the state or professional organizations. Instead, managers themselves are participants in the construction of the commonly accepted standards of behavior under which they operate. A firm's adoption of a new activity has consequences not only for the firm itself, but also for the community as a whole.

The existing empirical literature emphasizes the role of managerial cognition in explaining the connection between firm strategy and collective outcomes. The underlying argument is that the decisions of managers are not made independently of the actions of other organizations. Instead, managers observe and respond to other managers when facing difficult and uncertain decisions. Therefore, an important consequence of the increasing adoption of a new practice by a large number of organizations is that it increases the availability and appropriateness of that activity in the minds of managers. Organizational theorists have built upon this insight to demonstrate that managers are more

likely to adopt a practice or strategy if they have had contact with other managers who have adopted a similar activity (Haunschild, 1993; Haverman, 1993; Palmer, Jennings, and Zhou, 1993).

Critics of this approach, however, argue that the role of managerial action in the construction of new social norms involves conflict as well as cognition. Stryker (2000) argues that institutional politics between multiple stakeholders explains the way in which communities construct and maintain collective norms of legitimate behavior. Fligstein (1990: 6) makes a similar argument about the role of power and politics in the construction of collective norms and beliefs. He posits that actors within a common field of activity “share a similar conception of legitimate action.” However, he suggests that organizational fields “are set up to benefit their most powerful actors.” From this perspective, an analysis of only managerial beliefs and actions is insufficient to understand the causes and consequences of legitimacy. Instead, multiple audiences and interests need to be examined in order to understand the processes by which communities construct and confer legitimacy in organizational systems (see also Hirsch and Lounsbury, 1997; Mizruchi and Fein, 1998; Perrow, 1986; Tolbert and Zucker, 1996).

The call to include multiple audiences and competing interests in the construction of legitimacy is particularly important in the case of wage arrears in Russia. Despite their negative consequences for at least one set of community stakeholders in Russia, wage arrears nevertheless spread widely in Russia during the 1990s. The role of workers in supporting, or suppressing, the diffusion of wage arrears during this time period represents an important issue in understanding the forces leading to the widespread prevalence of this practice.

In the following sections, we develop hypotheses from both a neoclassical and an institutional perspective to address questions of both employee and employer behavior in relationship to wage arrears practices. The neoclassical model assumes that using wage arrears is an appropriate strategy of action functionally equivalent to cutting wages and proceeds to investigate the conditions, such as negative demand shocks or poor liquidity, that might make the strategy most efficient at the level of

the firm. In contrast, the institutional argument identifies the role of community-wide legitimacy as an important factor in the spread of new practices. From this perspective, the degree to which communities consider an organizational practice to be legitimate should influence the diffusion and maintenance of the practice, independently of whether it is efficient for individual organizations. We theorize that the more that the practice of wage areas is legitimized as an appropriate way of conducting business within a community, then the more likely that managers will use this practice and the less likely employees will oppose it through actions such as quitting (exit) and striking (voice).

### **The Neoclassical Model: Wage Arrears as Flexible Contracts**

The neoclassical wage adjustment model explains wage arrears as a flexible way for firms to cut wages in response to negative demand shocks. The argument can be illustrated with the aid of a simple supply and demand model. In the hypothetical initial situation shown in Figure 1, the market for a particular type of labor services clears at effective wage rate  $W_1$  and quantity (employment) level  $L_1$ , the point where the labor supply (S) and labor demand (D) functions intersect. At this initial equilibrium there is no unemployment ( $U=0$ ).

\*\*\* Insert Figure 1 Here\*\*\*

Starting from this situation, a negative shock to a firm's product demand results in a downward shift in its labor demand function, shown in the figure as the movement to  $D'$ , because the demand for labor is "derived" from the demand for the firm's product. If the wage is assumed to be completely flexible, it would fall to  $W^*$ , and a new equilibrium would be reached at employment level  $L^*$ , again with zero unemployment. In the case where the wage is "sticky" or "rigid" in a downward direction, however, unemployment rises. Referring to the figure, the wage fails to adjust and remains at  $W_1$ , employment falls to  $L_2$ , while unemployment rises to  $U_1 = L_2 - L_1$ . Intermediate cases exist whereby the effective wage adjusts only partially to some level between  $W_1$  and  $W^*$ , and employment falls to some

level between  $L_2$  and  $L^*$ . The degree of flexibility is indexed by the elasticity of wage response to the demand shock.

This model attributes unemployment to wage stickiness, and therefore any device that increases wage flexibility can be viewed as a virtue. Following this logic, wage arrears have attracted some explicit praise for their contribution to the “Russian way of labor adjustment.” Layard and Richter (1994), for instance, portray wage arrears as a form of “wage flexibility... explained by the willingness of workers to accept pay cuts in order to preserve jobs.” In its 1995 survey of the Russian economy, the OECD (1995) applauded the “remarkable flexibility...of real wages” and the use of “wage arrears...to finance this employment surplus.”

According to this perspective, wage arrears even have a number of advantages over more conventional wage contracts. Employers do not need to negotiate the effective wage reductions with employees: unlike a contractual wage cut, no transaction costs are incurred in a lengthy and uncertain renegotiation process, as wage arrears are decided by the firm unilaterally. Wage arrears provide firms with an adjustment mechanism that has very low implementation costs.

The neoclassical perspective that views wage arrears as an efficient response to negative demand shocks suggests the following hypothesis:

*Hypothesis 1: Declining firms are more likely to engage in wage arrears practices than expanding firms.*

The neoclassical hypothesis about the importance of transactional flexibility in explaining wage arrears practices would be difficult to reconcile with the presence of substantial arrears in firms that are hiring, expanding employment and sales, or raising wage rates.

A closely related argument stresses the role of wage arrears in alleviating the liquidity problems associated with demand shocks. Some economists have suggested that wage arrears are similar to a loan from the workers to enable the company to pay other obligations, thus to survive (Alfandari and Schaffer, 1996). Manifestations of illiquidity in transitional Russia have included not only arrears in

wage payments but also in interfirm relationships, bank debt, and taxes. Moreover, an extensive system of barter has emerged, with estimates of the share of non-cash receipts reaching more than 60 percent of sales in the late 1990s (OECD, 2000). This “demonetization” of the Russian economy (Clarke, 1998) may have led to wage arrears, suggesting the following hypothesis:

*Hypothesis 2: Firms with lower liquidity will be more likely to engage in wage arrears practices than firms with higher liquidity.*

The presence of arrears in firms with good liquidity as indicated by high profitability, low levels of payment arrears to and from other firms, and low levels of barter rather than cash payments would be difficult to explain from the neo-classical perspective.

Savings to the firm are equivalent with costs to the workers, of course. Why would workers have agreed to such large effective real wage reductions? The answer from the standard neoclassical paradigm is that they traded wages for continued employment. From this perspective, we can extend our hypotheses beyond firm behavior to also examine worker behavior. We consider two types of worker reactions to wage arrears: quits and strikes.

The neoclassical model of worker mobility focuses on the response of quits to wages, and a fundamental implication of the model is that quits rise in response to a decrease in wages, as workers search for better opportunities. This hypothesis has been corroborated by a number of empirical studies (Pencavel, 1972; Topel and Ward, 1992; Farber, 1994, 1999). Assuming that wage arrears are equivalent to wage cuts, we therefore hypothesize that:

*Hypothesis 3: Firms with higher wage arrears will have higher employee turnover than firms with lower amounts of wage arrears.*

Neoclassical research on strike behavior similarly treats wages as a fundamental determinant of the propensity to strike, with a hypothesized negative relationship (see, e.g., Kennan, 1986). Again, assuming that workers react to wage arrears the same way they do to wage cuts, we hypothesize that:

*Hypothesis 4: Firms with higher wage arrears will have a higher number of strikes than firms with lower amounts of wage arrears.*

### **Institutional Model: Wage Arrears as Legitimate Practices**

Institutional theories in diffusion studies do not necessarily oppose market efficiency explanations of why a certain number of firms initially adopt a particular organizational practice or structure. Instead, this perspective suggests that once an initial number of firms adopt a particular practice, then the eventual diffusion and reproduction of the practice can no longer be explained solely through its economic benefits. As an organizational practice becomes accepted as a legitimate form of behavior, the more likely it is to diffuse within an organizational field, even if its original economic functions dissipate (Fligstein, 1985; Tolbert and Zucker, 1983).

Much of the existing organizational research into diffusion processes identifies the industry as the meaningful organizational field within which legitimization processes operate (Davis, 1991; Fligstein, 1985; Palmer, Jennings and Zhou, 1993; Tolbert and Zucker, 1983; Westphal, Gulati, and Shortell 1997). In the Russian case, the practice of wage arrears has diffused across industries. Therefore, we must first identify the appropriate organizational field before we can hypothesize about how variation in the field may influence the adoption decisions of individual firms. For the purposes of this research, we use the unit of community defined as the *raion* (county) as the boundaries of the organizational field around which we develop our hypotheses. Russian *raions* are distinct administrative units, and studies have shown that the labor market tends to be highly local in Russia, as geographic mobility is difficult (see, e.g., Mitchneck and Plane, 1995). We will use the words “locality” and “community” interchangeably to refer to this unit of analysis.

Similar to research that uses the degree of adoption of an organizational practice within an industry as an indicator that a practice is legitimized, we use the cumulative past adoption of wage arrears within a *raion* as an indicator of the degree to which a practice is legitimized within a Russian community. We hypothesize that an important effect of the increasing usage of wage arrears within a



community is that firms will be more likely to engage in this practice, independently of the economic performance or liquidity of the firm:

*Hypothesis 5: Independent of firm performance and liquidity, firms operating in communities with a higher prevalence of wage arrears will be more likely to engage in wage arrears practices than firms operating in communities with a lower prevalence of arrears.*

Existing research emphasizes the effect of community-wide adoption of an organizational practice on the construction of collective knowledge and understanding about a new activity. Managers, however, do not benefit only from increased technical knowledge about a new innovation as it diffuses. They also learn the extent to which other stakeholders will contest the implementation of a new practice.<sup>2</sup> In the case of wage arrears, managers are not only looking at other managers as they learn about a new practice; they are also learning about the possible reactions of their actions by other social actors such as the state and workers. The passive acquiescence to a new activity by some community actors may be more important to managers than the active endorsement of the practice (Suchman, 1995). The cumulative adoption of a practice within a community therefore provides an important signal to managers that a practice is considered a legitimate form of organizational practice that can be used with few adverse consequences.

Further analysis of the reaction of other community actors to the practice of wage arrears leads us to focus on behavior of employees, the group of stakeholders most prominently affected by arrears. We theorize that managerial action influences the construction of community norms not only through its effect on managerial cognition, but also through its effect on workers' beliefs and opportunities.

One mechanism through which community norms influence worker behavior is the creation of collective beliefs about what is considered acceptable and normal behavior. Equity theory research

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<sup>2</sup> Aldrich and Fiol (1994) distinguish between "cognitive" and "socio-political" legitimacy, but the socio-political environment itself may have a cognitive component. Managerial beliefs about such issues as the impact of law or the possibility of strikes influence the way in which organizations shape, and are shaped by, the socio-political environment. See Edelman (1990) and Edelman, Uggen, and Erlanger (1999) for examples of the role of managers in constructing social meanings of legal regulation in the United States context.

into employee attitudes of pay fairness and job satisfaction demonstrates that employees compare their own experiences with relevant reference groups when judging their own situation (Dornstein, 1989; Kulik and Ambrose, 1992; Mowday, 1991). Moreover, individuals' assessment of their relative well-being is "influenced disproportionately by the vividness of the information that they have about others with whom they come in direct contact" (Frank 1985: 30). The widespread use of an organizational practice within a community will thereby increase its "normality" through the construction of a dominant standard shared by workers across multiple organizations. If the majority of people with whom workers come into contact experience wage arrears, then the less likely that any individual worker will consider his or her own experience to be outside the norm of accepted behavior.

Moreover, another important effect of a community standard of organizational behavior is that it decreases the opportunities of workers to find alternative employment, even if they so desired. Workers not only have few opportunities to change their situation, but, if they do leave the firm, they often lose the back wages due them from previous months worked. Widespread wage arrears in workers' local environments, in this case, decrease the incentives of workers to quit a firm that engages in this practice.

We apply the same measure of legitimacy used to examine the level of wage arrears used in firms – the degree of prevalence of a practice within a community – to examine worker reactions to the practice. We first hypothesize that the greater the extent of wage arrears within a community, then the lower the probability that workers in that community will quit a firm that engages in this practice:

*Hypothesis 6: The extent of wage arrears within a community will moderate the effect of firm-level wage arrears on employee turnover.*

The role of community standards in defining what is considered "acceptable" and "normal" organizational behavior, combined with the lack of opportunities for workers to find alternative forms of employment in communities with a high prevalence of arrears, suggests that community norms toward the practice of wage arrears will have an independent effect on employee quitting behavior.

While quitting is a form of exit, workers may also respond to wage arrears through voice (Hirschman, 1970). Our second measure of worker opposition relates to the propensity of employees to strike within a community. A number of researchers highlight the absence of collective mobilization as an important indicator of a legitimized practice. Jepperson (1991: 145) suggests that institutionalized practices “owe their survival to relatively self-activating social processes. Their persistence is not dependent notably, upon recurrent collective mobilization....” Clemens and Cook (1999: 445) make a similar point about the absence of collective mobilization as a defining feature of institutions when they write that institutionalized procedures pattern the actions of individuals and organization “without requiring repeated collective mobilization or authoritative intervention to achieve these regularities.” Tolbert and Zucker (1996) similarly suggest that “relatively low resistance by opposing groups” is an important indicator of the degree of institutionalization of an organizational practice.<sup>3</sup>

The relationship between the legitimization of a practice and the absence of collective mobilization is particularly applicable to the study of worker protest movements. Piven and Cloward (1977) point out that absolute or relative deprivation is not sufficient to explain worker movements. Instead, they emphasize that the “the social arrangements that are perceived as just and immutable must become to be seen as unjust and mutable” before collective action is initiated (Piven and Cloward, 1977: 12). The continued adoption of an organizational practice within a community may transform the nature of what is considered to be “just,” as a lack of alternative models may transform the normative environment in which workers operate. Just as importantly, however, the continued use of a practice within a community may transform beliefs about the relative permanence of a practice, i.e., what is “mutable.” The continued use of a practice over a long period of time reinforces a belief that there is

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<sup>3</sup> We use the concept of legitimization similarly to the way these authors use the concept of institutionalization. We focus on the cognitive acceptance of a practice as “normal” or “appropriate” without any assumptions that these beliefs represent a consensus on the ethical, legal, or technical merits of a particular practice.

little recourse for actors to engage in efforts to change it (see Suchman, 1995: 582-584). We hypothesize that the greater the prevalence of wage arrears within a community, the less likely that workers will strike against this practice:

*Hypothesis 7: The extent of wage arrears within a community will moderate the effect of firm-level wage arrears on employee strikes.*

Organizational researchers emphasize that strategic actors respond to the norms in the broader environment not only because they value or believe in these practices, but also because they become “experienced as possessing a reality of their own, a reality that confronts the individual as an external and coercive fact” (Berger and Luckman, 1966: 58, cited in Tolbert and Zucker, 1996). The belief in the “exteriority” of social practices as beyond the ability to change leads strategic actors to accept social norms as a stable component of the way the world is, even if that practice does not match a normative perception of the way the world should be (Powell and DiMaggio, 1991; Zucker, 1977). While much of organizational theory has applied this argument to managerial actions, an application to employee action also provides a relevant method to explore the impact of social constructions of legitimacy. Community norms influence behavior through the creation of incentives and values that drive individual decisions about what is profitable and possible in the present institutional context as well as through the construction of collective beliefs about the possibility for future changes to existing rule structures.

## **DATA AND METHODS**

The firm-level data that we study in this paper were collected to provide precise measures of wage arrears, growth, liquidity, labor, strikes, and turnover at the firm level for the period from 1991 to 1999. The data were collected during 2000 and 2001 as part of a larger study of Russian firms. Whenever possible, the variables we study in this paper are based on standard enterprise accounting information (precise line numbers from the Goskomstat, the Russian State Statistical Committee,

reporting forms), not on managerial interviews. The data from the responses to this questionnaire were also linked to other data sources (Goskomstat industrial and agricultural registries and balance sheets) to supplement and further check the provided information. If particular data could not be reconstructed through past recording records, interviewers then asked managers to answer a survey of the frequency of events or practices for each year. We describe below our sample, research design, and specific operationalizations of the variables of interest.

## Sample

The sample of industrial and agricultural firms was based on all industrial and agricultural employers of the employee-respondents to a nationwide household survey, the Russian Longitudinal Monitoring Survey (RLMS). The sampling for the RLMS involved regional stratification across 50 *raions* within 32 Russian *oblasts*, with the probability of selection proportional to population (except for the cities of Moscow and St. Petersburg, which were taken as self-representing). Household addresses were randomly selected for interviewing within the geographical sampling units. Thus, conditional on the same community stratification procedure, the firms in our sample constitute a national probability sample of industrial employers, with selection probability proportional to employment size.<sup>4</sup>

Unlike most surveys of firms, our procedure did not replace nonresponding firms with other observations, and interviewers expended great efforts to include every firm on their sample lists. As a result of this procedure, the response rate was approximately 64 percent among industrial firms (522 firms) and 73% among agricultural firms (75 firms). The regional and sectoral shares match those in the official statistics reasonably well, as shown in Biletsky et al. (2003). Response rates did not differ

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<sup>4</sup> To be precise, the RLMS involves a two-stage geographic stratification procedure followed by random drawing of households (residences); thus the probability for any household  $i$  to appear in the sample  $S_i$  is  $\Pr(i \in S_i) = \Pr(i \in U_1) * \Pr(i \in U_2 | U_1) * s/n_2$ , where  $U_1$  is the set of primary sampling units,  $U_2$  is the set of secondary sampling units,  $s$  is the sample size, and  $n_2$  is the total number of households in  $U_2$ . The probability that employer  $j$  is included in our firm sample  $S_j$  is then simply the joint probability equal to  $\Pr(i \in S_i) * \Pr(i \text{ contains an employee of } j)$ , if the distribution of employment across households is independent of the conditional probability of selecting  $i$ . The property of independence holds in the RLMS,

between the large firms in the government registries of enterprises and smaller firms that do not appear in the registry, so there is no evidence of size-related bias.

In total, the sample of firms, conditioned on a non-missing wage arrears variable (since this is necessary at each step in the analysis) is 560 firms, of which 486 come from the industrial firm survey and 74 from the agricultural firm survey. Firms interviewed before early 2000 did not provide information on 1999, as their accounts were not yet ready. The agricultural firm survey also includes information only through 1998.

### **Dependent Variables**

*Firm Wage Arrears (W)*. The standard measure of wage arrears in Russia – whether in individual firm balance sheets, in official Russian statistics or the minds of workers – is the stock of wages that is overdue (Earle and Sabirianova, 2002). The usual way managers express the overdue balance for their firms is in terms of monthly wage bills (payrolls). Thus, in our own interviews with managers, conducted when we were designing the data collection instrument, a common type of answer to a question about arrears would be, for example, “No, we don’t have this problem very much. Only one month.” In other cases, they might say, “Yes, unfortunately our firm, like most of those around here, has had some difficulties. Now we owe five months.”

Our data collection instrument measured this stock of wage arrears for each year, which we label  $W$ , using two different methods: first, by dividing the line item for wage arrears on the Goskomstat accounting balance sheet by the annual wage bill, and, second, by asking managers directly to report the number of overdue monthly wage bills for each year. The respondent for the former question was the accounting department, which keeps balance sheet data, while for the latter question it was a top manager. The two measures are extremely highly correlated, but the calculation based on accounting information requires information on the annual wage bill, which is frequently

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since the final drawing is random and therefore equal for all  $n_2$  households. See Swafford et al. (1997) for more information on the RLMS sampling procedure.

unavailable, particularly in the agricultural firm data, thus restricting the size of the sample for analysis. Therefore, our analysis in this paper is based on managerial reports.

*Worker Quits (Q) and Strikes (S).* Quit rates ( $Q$ ) for each year were calculated by dividing total voluntary separations by average employment for the corresponding year. These data were obtained from annual employment reports to the Goskomstat (the “P-4 form” in recent years), and again the precise line numbers were specified in our data collection instrument. The incidence of strikes (a dummy variable,  $S$ ) was measured through survey questions to top managers on whether work protests had occurred at the firm, including not only conventional work stoppages but also in a few cases hunger strikes, demonstrations, slowdowns, and other actions. The survey also asked for the main motivation for the protest, and it is interesting to note that more than 90 percent of the responses reported wage arrears as the cause; this variable is therefore very appropriate for our purposes.

### **Independent Variables**

*Firm Growth (G) and Liquidity (L).* We collected multiple measures of both firm growth and liquidity. One set of growth measures relates to performance of the firm in general: output growth, sales growth, and profitability. The second set of measures relates more directly to labor market behavior: growth in employment, real wages, nominal wages, and the hiring rate. Other growth proxies include the hiring rate and whether the firm received patents on any innovations. All these variables are represented with the notation  $G$ . Liquidity measures ( $L$ ) include profitability (which could also be viewed as a performance measure), frozen bank account in response to nonpayment of debts (*kartoteka*), barter in payments for inputs and outputs, and overdue receivables and payables. Changes in these variables are calculated for each year in which the data were collected.

*Community Wage Arrears (O).* As already mentioned, firms were sampled within 50 *raions* of Russia. The measure of the regional wage arrears norm is defined for each firm-year separately, as the average stock of wage arrears among the sampled agricultural and industrial firms in the firm’s *raion* in the previous year.

## **Control Variables**

We include industry indicators to proxy both for demand conditions and for differences in technology that may increase the propensity of firms to use wage arrears and of workers to strike and quit (for instance, due to differences in skill specificity). We similarly include a location code for whether a firm is located in a capital city, other city, or a non-city, the rationale being that workers' reactions to late wage payments may be influenced by their outside options in the local labor market. In general, the larger the urban area, the greater the number of outside options workers may be expected to have. Unionization is included because unions may resist arrears, although some observers believe that Russian unions have had little influence on labor market outcomes (e.g., Gimpelson and Lippoldt, 2001; Kapeliushnikov, 2001). Fringe benefits may also affect worker behavior, particularly their tendency to quit (Layard and Richter, 1995) and strike, while the measure of initial training costs captures the firm's costs of adjustment in replacing workers who quit. Because training costs are missing in about 10 percent of the cases, we impute the mean and include a control for nonreporting in some of the regressions.

## **Summary Statistics**

Table 1 shows the results from analyzing our survey data on the incidence and magnitude of the stock of wage arrears ( $W$ ) by year from 1991 to 1999. Consistent with other sources, the data show a negligible level of arrears in 1992, followed by a rapid increase. By 1998, about 60 percent of firms reported they had overdue wage debts, with an average of 4.3 monthly wage bills of overdue debt among affected firms. While there were relatively few with just a single monthly wage bill of arrears, more than 25 percent reported arrears exceeding 4 months. Thus, our data correspond well to other information on wage arrears in Russia (see Earle and Sabirianova, 2002).

\*\*\*INSERT TABLE 1 HERE\*\*\*



Table 2 presents the characteristics of the total sample in 1998.<sup>5</sup> Together with the control variables (industry, hiring rate, etc.), the table also shows our alternative measures of growth (denoted as  $G$ ): sales, output, real and nominal wages, and employment. Other growth proxies include the hiring rate and whether the firm received patents on any innovations. The magnitudes of these variables are very similar to what can be found in other studies of the Russian economy and labor markets (OECD, 2000; Kapeliushnikov, 2001). Finally, the table also shows the mean and standard deviation of our worker response measures, strikes ( $S$ ) and quits ( $Q$ ). Only about 5.5 percent of organizations experienced a strike in 1998, although again it is notable that nearly all of them attributed the incident to wage arrears. The quit rate, at 19.8 percent, is very similar to other reported figures (e.g., Gimpelson and Lippoldt, 2001; Kapeliushnikov, 2001).

\*\*\*INSERT TABLE 2 HERE\*\*\*

## Analysis

**Level of Firm Wage Arrears.** Our analysis of neo-classical Hypotheses 1 and 2 and the institutional Hypothesis 5 includes both bivariate and multivariate regression analysis. Given that most previous research has focused on the neoclassical explanation for arrears, we focus initial attention on investigating whether the data are roughly consistent with the adjustment and liquidity hypotheses through a bivariate examination of the extent to which wage arrears coincide with decline and illiquidity in our sample firms. This type of analysis is particularly valuable for identifying exceptions to a given theory: cases that do not seem to fit. Next, we analyze whether those firms that appear to violate the neoclassical argument (those that display liquidity and growth yet nonetheless have arrears) are more likely to be found in regions of high wage arrears (as would be predicted by the institutional argument). The hypotheses are then tested against each other in a multivariate regression framework that controls for other variables and for unobservable factors that may be correlated with arrears.

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<sup>5</sup> As noted above, the sample is smaller in 1999, so 1998 is the last year with a relatively full sample in the database. The time-varying characteristics are qualitatively similar in other years, however.

*Bivariate Cross-Sectional Analysis.* Beginning with Hypothesis 1 and 2, we implement some simple binary tests for data from one year of our dataset, 1998.<sup>6</sup> The neoclassical Hypothesis 1 that declining firms have higher expected wage arrears than expanding firms can be expressed as  $E(W_i/G_i < 0) > E(W_i/G_i > 0)$ , where  $W_i$  is the stock of wage arrears,  $G_i$  is a measure of growth, and subscript  $i$  indexes firms. Similarly, a simple binary version of Hypothesis 2 that illiquid firms have higher wage arrears than expanding firms can be expressed as  $E(W_i/L_i = 0) > E(W_i/L_i > 0)$ , where  $L_i$  is a measure of liquidity.

If the neoclassical position is sufficient to explain the level of wage arrears in a firm, then the data should show no cases of firms using wage arrears and also engaged in simultaneously expanding sales, output, employment, and wage rates. This can be expressed as  $E(W_i|G_i > 0) = 0$ . Similarly, no liquid firm should have arrears:  $E(W_i|L_i > 0) = 0$ .

To further examine the sufficiency of the wage adjustment explanation of arrears, we investigate whether wage arrears are present in a group of firms we label as the “best firms,” those showing the strongest growth. In particular, we define the best firms as growing firms occupying the topmost quartile in the positive part of the growth distribution, so that  $G_i > G_i^{+.75}$ , where  $G_i^{+.75}$  is the 75<sup>th</sup> percentile of the growth distribution truncated at  $G_i = 0$ . Again, the neoclassical model implies the hypothesis  $E(W_i|G_i > G_i^{+.75}) = 0$ , which we may test with our data. Our reasoning is that finding arrears in these best firms, which not only are not contracting but are actively expanding, would be a strong, direct contradiction of the neoclassical adjustment view. With respect to profitability, our only continuous measure of liquidity, we also consider a group of best firms in the top quartile in the positive part of the profitability distribution, measuring the extent to which the data contain substantial numbers of firms that have cash flow that is not only positive but excellent and, nonetheless, have wage arrears.

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<sup>6</sup> The choice of this year is arbitrary, and results for other years are quite similar.

The institutional perspective predicts that the neoclassical account will not only be insufficient to explain the adoption of a new organizational practice, but also that deviations from the neoclassical predictions should depend on the strength of the institutionalized norm in the broader environment. To provide a first test of Hypothesis 5, we therefore predict that deviations from the neoclassical adjustment perspective will be more likely in regions with a higher prevalence of wage arrears. Defining  $O_i$  as the *raion*-level average of  $W$ , for all firms in the same *raion* as  $i$ , we consider two categories of locations:  $O_i > O_{med}$  and  $O_i < O_{med}$ , where  $O_{med}$  is the median of  $O_i$ , thus defining the high and low-arrears *raions* around this median. The relevant test of Hypothesis 5 is then that the probability of finding growing firms with wage arrears is higher in high-arrears regions, thus that  $\text{Prob}(O_i > O_{med} | G_i > 0, W_i > 0) > \text{Prob}(O_i < O_{med} | G_i > 0, W_i > 0)$ . Similarly, growing firms without arrears are more likely to be found in the low-arrears regions, so that  $\text{Prob}(O_i < O_{med} | G_i > 0, W_i = 0) > \text{Prob}(O_i > O_{med} | G_i > 0, W_i = 0)$ . Analogous arguments can be made with respect to liquidity: high liquidity firms with arrears should be found in high-arrears regions, and high liquidity firms with no arrears should be found in low-arrears regions, according to Hypothesis 5.

**Multivariate Panel Regression.** The bivariate analysis described above does not take into account the possibility that other variables, observable and unobservable, may also affect firms' arrears decisions. If these variables are also correlated with the performance and local arrears measures, then the bivariate analysis would yield biased and inconsistent estimates of the coefficients of interest. We therefore make use of a rich set of firm characteristics in the data to control for observables and exploit panel data techniques to control for unobserved heterogeneity in estimating the feedback from arrears in the community to arrears in the firm. We estimate the effect of the potential determinants of arrears in a multivariate panel regression as follows:

$$W_{it} = \mathbf{b}'X_{it} + \mathbf{g}W_{it-1} + \mathbf{d}_1G_{it} + \mathbf{d}_2L_{it} + \mathbf{a}_t + u_{it},$$

so that  $W_{it}$  = wage arrears of firm  $i$  in year  $t$ ,  $X_{it}$  is the set of controls discussed with reference to Table 1,  $W_{it-1}$  is the lagged regional level of arrears,  $G_{it}$  is a measure of firm growth, and  $L_{it}$  is a measure of firm liquidity. The  $\mathbf{a}_t$  are year dummies, the  $\mathbf{b}$ ,  $\mathbf{g}$ ,  $\mathbf{d}_1$ , and  $\mathbf{d}_2$  are parameters to be estimated, and the  $u_{it}$  reflect the influence of unobserved factors on wage arrears.

A first test of the multivariate model maintains the assumption of a zero conditional mean of the  $u_{it}$ , estimating with pooled ordinary least squares (OLS). While we believe this is a useful starting point, one potential problem with these results could arise if there is some unobservable wage arrears effect that is correlated with  $W_{it-1}$ . Suppose, for example, that firms tend to cluster regionally, such that firms with a high unobserved “propensity to have arrears” tend to be found near each other. This propensity will be positively correlated with both  $W_{it}$  and  $W_{it-1}$ , imparting an upward bias to the estimated  $\mathbf{g}$ . A second type of model exploits our panel data to control for this correlated effect. We decompose the error term  $u_{it} = \mathbf{a}_i + \mathbf{e}_{it}$ , where  $\mathbf{a}_i$  reflects this propensity (and other unobserved fixed factors). We used a firm fixed effect model to implement this estimation.

### Worker Reactions

To test the neo-classical Hypotheses 3 and 4 and the institutional Hypotheses 6 and 7, we estimate the effect of firm-level arrears and their interaction with average community arrears on worker responses through voice (incidence of strikes and protests,  $S$ ) and exit (quit rate,  $Q$ ). We specify the following equations:

$$Q_{it} = \mathbf{j}_1 W_{it-1} + \mathbf{j}_2 W_{it-1} + \mathbf{j}_{12} W_{it-1} * W_{it-1} + \mathbf{h}' X_{it} + \mathbf{a}_{2i} + \mathbf{a}_{2t} + w_{it}$$

$$\text{Prob}(S_{it} = 1) = F(\mathbf{f}_1 W_{it-1} + \mathbf{f}_2 W_{it-1} + \mathbf{f}_{12} W_{it-1} * W_{it-1} + \mathbf{q}' X_{it} + \mathbf{a}_{1i} + v_{it}),$$

where  $F$  is the cumulative normal distribution function, so that the strike probability equation is estimated as a probit, and other variables are defined as before. Hypotheses 3 and 4 concern the direct effect of wage arrears on quit and strike behavior, implying that  $\mathbf{j}_1$  and  $\mathbf{f}_1$  are both  $> 0$ , as both types of responses are increasing in arrears. The critical parameters in these equations for Hypotheses 6 and 7

are the coefficients on the interaction  $W_{it-1} * W_{it-1}$ . According to Hypothesis 6,  $\beta_{12} < 0$ , as local wage arrears attenuate the effect of a firm's arrears on the extent to which workers react through strikes and protests. According to Hypothesis 7,  $\beta_{12} < 0$  as the propensity of a firm's workers to strike in response to their own arrears is reduced by the presence of arrears in their region. Again, we use panel regression to test this model against the data.

## RESULTS

### Level of Wage Arrears

**Bivariate Analysis.** The results of our initial bivariate analysis are presented in Table 3, which contains  $E(W_i/G_i < 0)$ ,  $E(W_i/G_i > 0)$ ,  $E(W_i/G_i > G_i^{+.75})$ , standard errors for these estimates of the means, significance levels for the difference of the means from zero, and  $t$ -tests for the difference of means  $E(W_i/G_i < 0) - E(W_i/G_i > 0)$ .<sup>7</sup> Taking for example growth as measured by increasing nominal wage rates, the mean level of arrears among firms raising their wages is 2.27 monthly wage bills, and it is 3.39 among those decreasing their nominal wages. The results provide some support for the neoclassical hypotheses, in that  $E(W_i/G_i < 0) > E(W_i/G_i > 0)$  and  $E(W_i/L_i < 0) > E(W_i/L_i > 0)$  for most of the variables – that is, for 11 of the 13 measures we investigate. But the difference is frequently small, and it is statistically significantly different from zero for only 7 measures.

\*\*\*INSERT TABLE 3 HERE\*\*\*

Moreover, average wage arrears are significantly greater than zero at the 1 percent level for both growing and declining firms and for both liquid and illiquid firms, regardless of how we measure firm growth and liquidity. Arrears are substantial even among the “best firms,” those among the top quartile of the growing and liquid firms in the sample; for example, the mean arrears among the 70 firms in the top quartile of those increasing nominal wages was 2.587 monthly wage bills. These

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<sup>7</sup> The results are presented for a single year, 1998, but as noted above we have computed this table for other years and obtained qualitatively similar results, which are available on request.

results provide a prima facie case against the neoclassical view, as they suggest there are many firms with wage arrears that are not accounted for by considerations of adjustment and illiquidity.

Can an institutional perspective help explain the presence of arrears in well-performing firms? Our first test of Hypothesis 5 examines whether such firms tend to be located disproportionately in communities with high arrears, defined as exceeding the median across all communities. The results are contained in Table 4, which shows  $\text{Prob}(O_i > O_{med} | G_i, W_i)$  for alternative measures of firm growth and liquidity and for firms with and without arrears, separately, again for 1998. Focusing first on the final column of the table, we find that the incidence of expanding firms with arrears is much higher in localities with above-median average arrears than in those with low arrears; for example, with respect to real wage growth, the table shows that 75 percent of firms that both use wage arrears and increase their real wages are located in high-arrears localities. Indeed, for every growth and liquidity measure the probability exceeds 50 percent, and for most measures the probability is substantially higher.

\*\*\*INSERT TABLE 4 HERE\*\*\*

The table also shows that the incidence of high growth firms with no arrears is highest in low-arrears regions. Taking real wage growth again as the example, only 29.6 percent of firms that do not use arrears and raise their real wages are located in localities with arrears above the median; thus, 70.4 percent of such firms are found in below-median arrears communities.

Table 4 also provides evidence on the issue of declining firms: a substantial number of these have no arrears whatsoever. For example, 119 firms in the sample are reducing real wages but do not use arrears. The table demonstrates, moreover, that declining firms with no arrears are much more likely to be found in low-arrears communities; only 36.1 percent of firms that lower their real wages but do not use arrears are found in the high-arrears communities, and the remaining 63.9 percent are in low-arrears communities. Conversely, declining firms using arrears tend to be located in communities with high arrears.

The evidence so far suggests that while economic decline and illiquidity are positively associated with arrears, as predicted by the neoclassical model, the data also show many firms that do not conform with the model, both growing firms that exhibit arrears and declining firms that do not. Moreover, these many exceptions appear to vary systematically by location: the growing firms with arrears are found in high-arrears communities, and the declining firms with no arrears are found in low-arrears communities. This suggests that there are strong community effects independent of the economic variables that are the focus of the neoclassical model.

***Multivariate Analysis.*** Table 5 presents the first set of results in a multivariate framework, based on pooled OLS and fixed effects estimations. In the specification shown, the growth and liquidity characteristics of firms are proxied by the annual growth rate of sales and nominal wages. Both of these measures are estimated to have negative effects on firm arrears  $W_{it}$ , consistent with the neoclassical explanation, but sales growth is statistically insignificant when firm fixed effects are included. In both the pooled OLS and fixed effects specification, however, the lagged local arrears  $W_{it-1}$  is estimated to have a positive and highly significant impact. The coefficient implies that an increase in  $W_{it-1}$  of one monthly wage bill tends to raise  $W_{it}$  by a third to a half of a monthly wage bill. The results for the control variables show that firms with low levels of unionization tend to have lower arrears, as do firms providing fringe benefits (housing, kindergartens, and training). More isolated communities (smaller cities and rural areas) tend to have higher arrears, as do particular industries (machine building and agriculture), which is consistent with previous research.

\*\*\*INSERT TABLE 5 HERE\*\*\*

Alternative tests of the two models against each other are shown in Table 6, which contains the results from specifying alternative measures of growth and liquidity into the firm fixed effect specification from Table 5. We consider these alternative measures separately because they are highly correlated with one another. Consistent with Hypotheses 1 and 2, all the growth and liquidity variables

have the correct signs – negative for every variable except the dummy for frozen bank account. Most of these variables are statistically significant, but some of them only weakly so. Regardless of the specification, however, the effect of lagged local wage arrears remains large and highly statistically significant. The magnitude ranges from around .3 to .4, depending on the exact specification.<sup>8</sup> These results provide strong support for Hypothesis 5 that wage arrears become legitimized through interactions in local communities.

\*\*\*INSERT TABLE 6 HERE\*\*\*

### **Worker Reactions**

Our final sets of results concern the mechanisms through which community legitimization processes may take place: worker responses through voice (strikes and protests) and exit (quits). Table 7 presents the findings from this analysis. In both cases, the data provide some support for neoclassical Hypotheses 3 and 4 – with respect to firms in communities with low arrears. In such localities, an increase in  $W_{it-1}$  of one monthly wage bill tends to raise the strike probability by 0.3 percent and the quit rate by 1.2 percent. The results also show, however, that worker responses to arrears are strongly affected by the extent of arrears in their local environment. With respect to quit behavior, the coefficient on the interaction term of  $-0.0023$  is highly significant and implies that after local wage arrears reach a level of about 5 monthly wage bills, on average, workers stop responding to their own arrears by quitting.<sup>9</sup> With respect to the probability of strike and protest behavior, the marginal effect on the interaction term is  $-0.0007$  and statistically significant, implying that around a level of  $O_{it-1} = 4$ , workers no longer respond to an increase in their own arrears by striking. These results imply that the neoclassical model applies only to communities with low arrears; in those where

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<sup>8</sup> We estimated many versions of these equations, all of them producing similar findings to those in Table 6. Among other specifications, we included all of our growth and liquidity measures in a single “kitchen sink” regression, and the estimated local wage arrears effect remained large and highly significant. The coefficients on the growth and liquidity measures are much more sensitive, due to multicollinearity among these variables, so we prefer the specifications shown in Table 6.

<sup>9</sup> Although the possible presence of correlated unobserved heterogeneity is less obvious in this equation than in the wage arrears function, we also estimated the quit function including firm fixed effects. The results were qualitatively similar, and  $J_{12}$  remained highly statistically significant.



arrears are high, the responses of workers are inconsistent with this model. By contrast, our findings strongly support the institutional hypotheses that the level of arrears in the community attenuates the exit and voice responses of workers to their own arrears.

\*\*\*INSERT TABLE 7 HERE\*\*\*

## **DISCUSSION**

We have examined both neoclassical and institutional explanations of why wage arrears have spread so widely in Russia during the 1990s. Our results support the viewpoint that the poor economic environment in Russia has led some firms to adopt wage arrears practices. Yet the evidence also shows that this theoretical perspective is insufficient to explain the patterns of wage arrears practices in Russia. For instance, the wage adjustment story suggests that firms that engage in wage arrears should be downsizing employment and reducing wages in the face of declining sales and output. Our data shows that this is not correct. Many firms that implement wage arrears are simultaneously hiring new employees and expanding their activities.

Similarly, the wage adjustment explanation provides little insight into the strong local variation in the level of wage arrears and employee opposition to this practice. Even after controlling for firm performance, the community in which a firm operates clearly influences the decision of whether to engage in this practice. Moreover, a similar community difference is observed in the data on strikes and quits. Workers are not simply responding to their immediate experience of wage arrears in their own firms but are clearly influenced by the broader community context in which they find themselves. We have argued that these workers interpret wage arrears differently than workers in other communities. In some communities wage arrears represent an exceptional activity that is actively opposed, while in others wage arrears have become a legitimate organizational practice that is rarely contested.

The linkage between organizational adoption and worker opposition provides an important explanation of why wage arrears spread in Russia during the 1990s. If workers perceive wage arrears as an external component of the environment beyond their ability to influence, then it is less likely that workers will engage in active mobilization to try to effect change. The lack of opposition from workers increases the perception among managers that they can adopt wage arrears practices with relatively little cost. Both firm and employee actions (or lack of action) have contributed to the growing acceptance of wage arrears as a legitimate organizational practice in many Russian communities.

Yet why don't Russian workers engage in collective action to try to change this vicious circle? On one hand, the lack of worker collective mobilization may be viewed as a "rational" response to an institutional environment in which workers have little power to change existing rules and beliefs. Workers may not seek to quit in these environments simply because there are no alternative forms of employment available. Moreover, employees may not strike because they are truly powerless in these communities to force monopolistic organizations to change their practice. However, as Piven and Cloward (1977: 7) remark, workers often "become defiant. They challenge traditional authorities, and the rules laid down by those authorities." An objective calculation of "interest" is difficult to calculate under these conditions because workers often engage in the types of behavior that transform both their own and their employers' interests.

A comparison of the Russian case to the Great Depression in the United States further illustrates the importance of historical process and subjective belief in defining what is, and what is not, open to strategic contestation. During the Great Depression, numerous firms failed to meet contractual obligations, leading to widespread bankruptcy and lay-offs. Yet there is little evidence that American organizations engaged in widespread use of wage arrears during this time period. The ability of the state to enforce a rule of law provides one explanation of why American firms in the Depression differed from contemporary Russian firms. However, a second powerful constraint on

employer behavior during the U.S. Depression was worker activism. For instance, worker strikes shut down the entire town of San Francisco in 1933 over a worker dispute concerning wage payments and amounts (see Starr, 1996).

Even under difficult economic conditions, U.S. workers perceived that they had the ability to change the practices of managers. By engaging in active opposition, they in turn shaped the broader institutional environment in which organizations operated. In comparison, many Russian workers during the 1990s did not engage in active efforts to change the social norms in which they lived. Instead of being constantly challenged, the practice of wage arrears became a relatively stable part of the environment in a number of localities in the Russian environment. Workers clearly dislike wage arrears, yet their inaction in attempting to end this practice only strengthens the ability of managers to adopt it with few adverse consequences.<sup>10</sup>

Our emphasis on the relationship between community norms of legitimate behavior and the collective mobilization of workers relates to recent attempts to bridge research between organizational and social movement theory (see Davis and Thompson, 1994; Strang and Soule, 1998). In particular, the ideas of cognitive frames in the social movement literature are clearly related to the concept of cognitive beliefs in the institutional literature. Social movement theorists posit that frames provide the meaning by which individuals define what is possible within their environments: “the social arrangements that are perceived as just and immutable must become to be seen as unjust and mutable” before collective action is initiated (Piven and Cloward, 1977: 12). Similarly, we have argued that an important consequence of community norms in organizational activity is that they frame what is perceived as legitimate forms of organizational behavior. To managers, community norms define the “strategies of action” available to them. In western countries, for instance, a consistent policy of delayed wage payments remains outside the menu of strategic options that most organizations analyze

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<sup>10</sup> Javeline (2003) makes a similar point in her analysis of workers’ attitudes. She finds that individuals who can identify specific blame for wage arrears are more likely to strike, independently of their normative attitudes toward this practice.

when faced with negative demand shocks. In Russia during the 1990s, however, this strategy became a legitimate alternative that most managers consciously considered, even if they ultimately decided that it was not the appropriate strategy for their particular firm.

Community norms are important not only because they frame the set of strategic actions open to managers, but also because they similarly frame the set of organizational strategies that other groups of actors consider to be normal and appropriate within a community. The lack of action among potential opponents to a new practice may be as important an indicator of the legitimacy of an organizational practice as is the presence of managerial action in adopting the new activity. We have emphasized the importance of social norms in defining what employees consider to be possible within a community. If workers believe that an organizational practice is outside their ability to change, then the less likely they will be to actively oppose it, independently of whether they consider it to be just or unjust.

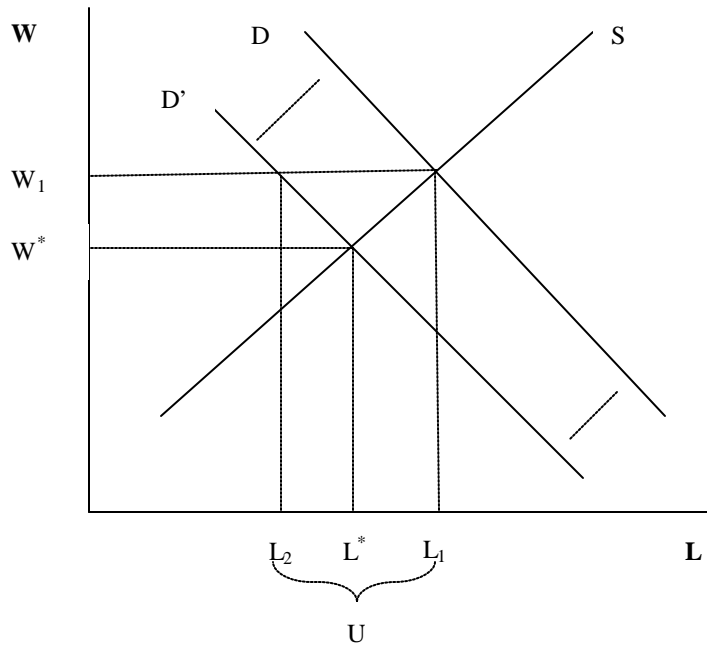
A limitation of our analysis is that, besides remarking on the general illegality of this practice, we have not explicitly examined the role of the state in the diffusion of wage arrears in Russia. Clearly, an important factor in the Russian case is the weak rule of law that exists in the country as a whole, thereby limiting the availability of options that workers have in using political mechanisms to curtail practices they consider to be unjust. A direct analysis of state action is needed in the Russian case because the assumption that state agencies will enforce the law cannot be assumed.

However, an important conclusion of this study is that the relationship between community norms and organizational practice extends beyond the study of state and markets. In the absence of law enforcement by the state, managers acted to construct and maintain their own norms of legitimate behavior. The increasing adoption of wage arrears increased the community-wide use of this practice, which, at the same time, decreased employee opposition to it. In this way, institutional theory shares a common assumption with recent research in the economic history literature that emphasizes the important role of path dependent trajectories of institutional persistence and change (North, 1990,

1996). Collective outcomes in organizational systems cannot be explained solely as a product of efficient market processes; instead, the ways in which communities construct and contest social norms of legitimate behavior must also be examined.

The wage arrears case demonstrates that the evolution of these norms cannot be explained solely through a study of the regulatory rules or normative values of a community. Community norms may emerge from the interaction of local actors as they develop collective routines and knowledge through common experience and history. Both managers and employees shape, and are shaped by, the community in which they operate. The institutional dynamics by which communities construct and confer legitimacy therefore have important effects on both the diffusion and persistence of new forms of organizational behavior.

**Figure 1: Neoclassical Wage Adjustment Model**



**Table 1: Incidence and Magnitude of Wage Arrears in the Firm Sample, 1991-1999**

	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>
Proportion of firms with wage arrears	0.075	0.098	0.132	0.221	0.375	0.483	0.597	0.586	0.255
Mean stock of wage arrears, $W$ (monthly wage bills)	0.147	0.255	0.334	0.644	1.143	1.725	2.363	2.501	0.709
Frequency distribution of $W$ (stock of arrears)									
0	0.925	0.904	0.870	0.780	0.625	0.517	0.403	0.414	0.745
1 month	0.037	0.035	0.041	0.064	0.075	0.064	0.081	0.080	0.068
2-3 months	0.028	0.041	0.060	0.106	0.208	0.234	0.277	0.246	0.126
4-6 months	0.006	0.014	0.021	0.037	0.063	0.146	0.145	0.150	0.043
>6 months	0.004	0.006	0.008	0.014	0.029	0.039	0.094	0.109	0.018
$E(W W>0)$	1.974	2.661	2.575	2.921	3.051	3.571	3.960	4.269	2.775
N (sample size)	509	512	516	517	523	534	553	560	278

Notes: Sample consists of agricultural and industrial firms responding to wage arrears question.

**Table 2: Summary Statistics, 1998**

<i>Variable Name</i>	<i>Mean</i>	<i>Variable Name</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>
Industry (N=560)		Hiring costs			
Energy / Fuel	0.080	Number of days for hiring and training	499	87.960	91.539
Metallurgy / Chemicals	0.077	Non-reported training costs (dummy)	560	0.109	0.312
Machine Building	0.313				
Building Materials / Wood	0.105	Growth measures, <i>G</i>			
Light	0.084	Hiring rate (ratio to average employment)	412	0.209	0.258
Food	0.132	One-year growth in sales	410	-0.238	0.502
Other manufacturing	0.075	One-year growth in output	454	-0.248	0.440
Agriculture	0.134	One-year growth in real wages	424	-0.162	0.327
Location (N=560)		One-year growth in nominal wages	424	0.063	0.317
Moscow or St. Petersburg	0.113	One-year growth in employment	467	-0.094	0.216
Regional Capital City	0.352	Received patents (dummy)	474	0.152	0.359
Other City	0.327				
Non-City	0.209	Liquidity measures, <i>L</i>			
Union Density (N=541)		Profitability (profit/output)	452	-0.192	1.039
0-9%	0.196	Positive profit (dummy)	454	0.557	0.497
10-59%	0.104	Frozen bank account (dummy)	545	0.640	0.480
60-79%	0.091	Barter in payments for inputs (dummy)	451	0.772	0.420
80-89%	0.092	Barter in sales (dummy)	479	0.791	0.407
90-99%	0.237	Overdue receivables (dummy)	423	0.752	0.432
100%	0.281	Overdue payables (dummy)	422	0.758	0.429
Fringe benefits provided by firm					
Training (dummy, N=554)	0.561	Worker responses			
Kindergarten (dummy, N=555)	0.268	Occurrence of strikes, <i>S</i> (dummy)	560	0.055	0.229
Housing (dummy, N=550)	0.245	Quit rate, <i>Q</i> (ratio to average employment)	417	0.198	0.209



**Table 3: Wage Arrears by Growth and Liquidity of Firms, 1998**

<i>Growth and Liquidity Measures</i>	<i>Definition of Expanding/Liquid Firms</i>	<i>Mean Wage Arrears</i>			
		<i>Declining Firms</i> E( $W_i/G_i < 0$ )	<i>Expanding Firms</i> E( $W_i/G_i > 0$ )	<i>t-test for difference:</i> E( $W_i/G_i > 0$ ) – E( $W_i/G_i < 0$ )	<i>Best Firms</i> E( $W_i/G_i > G_i^{+.75}$ )
Sales	Positive real sales growth	2.696 <sup>a</sup> (0.191) [314]	2.528 <sup>a</sup> (0.355) [96]	0.423	2.965 <sup>a</sup> (1.022) [23]
Output	Positive real output growth	2.551 <sup>a</sup> (0.180) [356]	2.687 <sup>a</sup> (0.319) [98]	-0.357	3.188 <sup>a</sup> (0.819) [24]
Real wages	Increase in real wages	2.526 <sup>a</sup> (0.181) [308]	2.897 <sup>a</sup> (0.365) [116]	-1.006	3.231 <sup>a</sup> (0.897) [26]
Nominal wages	Increase in nominal wages	3.390 <sup>a</sup> (0.316) [135]	2.271 <sup>a</sup> (0.188) [289]	3.198 <sup>a</sup>	2.587 <sup>a</sup> (0.501) [70]
Employment	Increase in employment	3.063 <sup>a</sup> (0.202) [321]	1.716 <sup>a</sup> (0.219) [146]	4.032 <sup>a</sup>	1.649 <sup>a</sup> (0.303) [37]
Hiring rate	Hiring rate above the median	3.193 <sup>a</sup> (0.271) [207]	2.358 <sup>a</sup> (0.213) [205]	2.416 <sup>b</sup>	2.510 <sup>a</sup> (0.287) [103]
Profitability (profit/output)	Positive profit	4.001 <sup>a</sup> (0.286) [201]	1.580 <sup>a</sup> (0.145) [253]	7.993 <sup>a</sup>	1.591 <sup>a</sup> (0.340) [64]
Received patents (dummy)	Received patents	2.191 <sup>a</sup> [402]	1.704 <sup>a</sup> [72]	1.314	-
Frozen bank account (dummy)	Account not frozen	3.515 <sup>a</sup> [349]	0.812 <sup>a</sup> [196]	9.765 <sup>a</sup>	-
Barter in payments for inputs (dummy)	No barter payments for inputs	2.739 <sup>a</sup> [348]	2.538 <sup>a</sup> [103]	0.554	-
Barter in sales (dummy)	No barter received for sales	2.801 <sup>a</sup> [379]	2.300 <sup>a</sup> [100]	1.369	-
Overdue receivables (dummy)	No overdue receivables	3.236 <sup>a</sup> [318]	1.274 <sup>a</sup> [105]	5.129 <sup>a</sup>	-
Overdue payables (dummy)	No overdue payables	3.291 <sup>a</sup> [320]	1.050 <sup>a</sup> [102]	5.840 <sup>a</sup>	-

Notes: Standard errors for the estimate of the mean wage arrears are in parentheses; numbers of observations are in brackets. <sup>a</sup> significant at 1% level; <sup>b</sup> significant at 5% level; <sup>c</sup> significant at 10% level. “Best firms” are defined at the 25% percentile of expanding firms for each variable.

**Table 4: Percentage of Firms Located in High-Wage Arrears Communities, by Growth and Liquidity of Firms, 1998**

<i>Growth and Liquidity Measures</i>	<i>Declining Firms (<math>G_i &lt; 0</math>)</i>		<i>Expanding Firms (<math>G_i &gt; 0</math>)</i>	
	$W_i = 0$	$W_i > 0$	$W_i = 0$	$W_i > 0$
	$\text{Prob}(O_i > O_{med}   G_i, W_i)$			
Sales	41.7 [120]	72.2 [194]	28.6 [35]	68.9 [61]
Output	37.9 [140]	70.8 [216]	25.0 [36]	66.1 [62]
Real wages	36.1 [119]	67.2 [189]	29.6 [44]	75.0 [72]
Nominal wages	29.3 [41]	67.0 [94]	36.1 [122]	70.7 [167]
Employment	38.0 [100]	69.7 [221]	30.4 [79]	68.7 [67]
Hiring rate	34.3 [73]	71.6 [134]	39.2 [79]	65.9 [126]
Profitability (profit/output)	43.8 [48]	72.6 [153]	33.1 [127]	69.1 [126]
Received patents (dummy)	31.8 [170]	69.8 [232]	36.8 [38]	64.7 [34]
Frozen bank account (dummy)	33.3 [69]	69.6 [280]	35.5 [155]	68.3 [41]
Barter in inputs (dummy)	37.2 [121]	67.8 [227]	29.3 [41]	75.8 [62]
Barter in sales (dummy)	39.8 [128]	68.1 [251]	22.2 [45]	72.7 [55]
Overdue receivables (dummy)	38.0 [92]	69.9 [226]	34.8 [69]	69.4 [36]
Overdue payables (dummy)	39.4 [94]	69.5 [226]	30.9 [68]	70.6 [34]

Notes: Numbers of observations with non-missing growth and liquidity measures for each cell are in brackets. “High-wage arrears locations” refer to the 24 out of 49 locations/*raions* with the highest average level of wage arrears. The *t*-test for the difference of means between firms without and with arrears ( $W_i = 0$  and  $W_i > 0$ , respectively) is significant at the 1% level for each measure of growth and liquidity, except for “received patents” among growing firms, where the significance level is 1.8%.

**Table 5: Wage Arrears Function Estimates**

<i>Independent variables</i>	<i>Pooled OLS</i>		<i>Firm Fixed Effects</i>	
	<i>Coeff.</i>	<i>t</i>	<i>Coeff.</i>	<i>t</i>
<i>O</i> : Lagged local wage arrears (months)	0.460 <sup>a</sup>	5.56	0.368 <sup>a</sup>	4.69
<i>G</i> : Sales growth	-0.306 <sup>a</sup>	-2.75	-0.110	-1.26
<i>L</i> : Nominal wage growth	-0.420 <sup>b</sup>	-1.99	-0.432 <sup>a</sup>	-2.65
Union density (100% is omitted)				
0-9%	-0.741 <sup>a</sup>	-2.82	1.027 <sup>b</sup>	1.96
10-59%	0.245	1.17	1.018 <sup>a</sup>	2.58
60-78%	-0.034	-0.15	1.006 <sup>a</sup>	2.91
80-89%	0.066	0.27	0.740 <sup>b</sup>	2.38
90-100%	0.129	0.97	0.540 <sup>b</sup>	2.16
Fringe benefits provided by firms (dummies)				
Training	-0.660 <sup>a</sup>	-4.77	-0.980 <sup>a</sup>	-3.56
Kindergartens	-0.003	-0.03	-0.153	-0.72
Housing purchase and construction	-0.299 <sup>b</sup>	-2.26	-0.098	-0.49
Training costs (days)	0.000	0.59	-	-
Non-reported training costs (dummy)	0.719 <sup>b</sup>	2.45	-	-
Federal districts (Central is omitted)				
North West	0.347	0.13	-	-
South	0.040	0.22	-	-
Volga	-0.048	-0.29	-	-
Urals	0.178	0.09	-	-
Siberia	0.617 <sup>b</sup>	2.26	-	-
Far East	0.168	0.43	-	-
Type of location (Moscow and St. Petersburg are omitted)				
Regional capital city	-0.134	-0.45	-	-
Other city	-0.367	-1.31	-	-
Non-city	-0.515	-1.48	-	-
Industry (Energy/Fuel is omitted)				
Metallurgy/Chemicals	-0.512	-2.32	-	-
Machine building	0.297	1.54	-	-
Building materials/Wood processing	-0.133	-0.54	-	-
Light	-0.811 <sup>a</sup>	-3.99	-	-
Food	-1.202 <sup>a</sup>	-6.02	-	-
Other manufacturing	-0.843 <sup>a</sup>	-3.65	-	-
Agriculture	2.153	5.59	-	-
Intercept	0.081	0.45	0.457	2.65
	$R^2 = 0.307$		$R^2$ within = 0.199	
			$R^2$ overall = 0.156	

Notes: Dependent variable =  $W_{it}$  (stock of wage arrears). <sup>a</sup> significant at 1% level; <sup>b</sup> significant at 5% level; <sup>c</sup> significant at 10% level; *t*-statistics are calculated with robust standard errors. N = 1624. Year dummies are included but not shown here.

**Table 6: Alternative Specifications of Growth and Liquidity Measures in Wage Arrears Functions**

<i>Independent variables</i>	<i>Model Specifications</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
$O_{it-1}$ : Lagged local wage arrears (months)	0.342 <sup>a</sup> (5.83)	0.377 <sup>a</sup> (5.95)	0.304 <sup>a</sup> (4.36)	0.301 <sup>a</sup> (4.50)
$G_{it}$ : Output growth	-0.116 <sup>c</sup> (-1.65)	-	-	-
$L_{it}$ : Frozen bank account (dummy)	0.834 <sup>a</sup> (7.43)	-	-	-
$G_{it}$ : One-year change in employment	-	-0.508 <sup>c</sup> (-1.77)	-	-
$L_{it}$ : Positive profit (dummy)	-	-0.712 <sup>a</sup> (-5.49)	-	-
$G_{it}$ : Rate of hiring	-	-	-0.788 <sup>b</sup> (-2.07)	-
$L_{it}$ : Profitability (profit/output)	-	-	-0.190 <sup>a</sup> (-2.71)	-
$G_{it}$ : Received patents (dummy)	-	-	-	-0.673 <sup>a</sup> (-3.33)
$L_{it}$ : Real wage growth	-	-	-	-0.255 <sup>b</sup> (-2.15)
N	2575	2244	1867	2126
R <sup>2</sup> within	0.213	0.233	0.240	0.189
R <sup>2</sup> overall	0.243	0.241	0.203	0.093

Notes: Dependent variable =  $W_{it}$  (stock of wage arrears). <sup>a</sup> significant at 1% level; <sup>b</sup> significant at 5% level; <sup>c</sup> significant at 10% level;  $t$ -statistics are calculated with robust standard errors. All five specifications use firm fixed effects, the same set of control variables as in Table 4, plus the additional growth and liquidity measures shown.

**Table 7: Worker Responses to Firm and Local Arrears**

<i>Independent variables</i>	<i>Strike Incidence (probit)</i>		<i>Quit Rate (OLS)</i>	
	<i>Marginal effect</i>	<i>t</i>	<i>Coef- ficient</i>	<i>t</i>
$W_{it-1}$	0.0030 <sup>a</sup>	4.92	0.0116 <sup>a</sup>	4.18
$W_{it-1}$	0.0011	1.05	0.0004	0.11
$W_{it-1} * W_{it-1}$	-0.0007 <sup>b</sup>	-2.35	-0.0023 <sup>a</sup>	-2.84
Union density (100% is omitted)				
0-9%	0.000	0.03	0.038 <sup>c</sup>	1.70
10-59%	0.003	0.66	0.020 <sup>c</sup>	1.67
60-78%	0.009 <sup>c</sup>	1.91	-0.010	-0.82
80-89%	0.005	1.23	0.004	0.36
90-100%	0.001	0.25	0.001	0.21
Fringe benefits provided by firms (dummies)				
Training	0.004 <sup>c</sup>	1.81	-0.019 <sup>b</sup>	-2.27
Kindergartens	-0.001	-0.43	-0.012 <sup>c</sup>	-1.69
Housing purchase and construction	0.004 <sup>c</sup>	1.78	-0.012 <sup>c</sup>	-1.79
Training costs (days) /100	0.002 <sup>a</sup>	3.05	-0.009 <sup>a</sup>	-2.83
Non-reported training costs (dummy)	0.002	0.55	0.003	0.26
Type of location (Moscow and St. Petersburg is omitted)				
Regional capital city	0.007	1.59	0.007	0.66
Other city	0.000	0.11	0.021 <sup>c</sup>	1.75
Non-city	-0.006	-1.32	-0.030 <sup>c</sup>	-1.78
Intercept			0.113	6.98
	N=3848		N=2358	
	Pseudo R <sup>2</sup> =0.213		R <sup>2</sup> =0.133	

Notes: Dependent variable in the strike incidence equation =  $S_{it}$  (dummy variable for strike or worker protest). Dependent variable in the quit rate equation =  $Q_{it}$  (ratio of number quitting to average employment). <sup>a</sup> significant at 1% level; <sup>b</sup> significant at 5% level; <sup>c</sup> significant at 10% level;  $t$ -statistics are calculated with robust standard errors. Year and industry dummies are included but not shown here.

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