Who Bore the Burden of Wage Arrears in the Kyrgyz Republic?*

by

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Abstract

Despite large falls in output in the FSU, rather than firing workers, workers were subjected to long spells of unpaid leave or non-payment of wages (wage arrears). Wage arrears is a significant problem in the countries of the FSU, particularly in light of price liberalization on most goods and services as part of the transition away from a command economy. Here we examine if particular workers were more likely to experience non-payment of wages. As enterprises tried to reduce financial outlays it is not evident if more costly, skilled, labour would experience greater non-payment of wages, or whether cheaper, less skilled, labour would fare worse. Sectoral or regional differences could also be more important determinants. Recently available data household data for the Kyrgyz Republic is used to examine the incidence of wage arrears in 1993 and 1996.

Keywords: transition; wage arrears; labour demand.
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1 Introduction

The non-payment of wages to workers is a relatively unknown phenomenon in most industrial countries but in countries of the FSU wage arrears was not uncommon and increased after the early 1990s. The widespread occurrence of wage arrears has obvious consequences to welfare given the change in economic system towards price liberalization and is an unusual tool for manipulating employment levels, as will be shown, and hence deserves a special focus.

In countries of the FSU the implementation of the reform policies in the early 1990s failed to create a competitive market-based environment but led to what has been called a "transformation crisis", with protracted falls in output and high inflation (see Poser (1999)). Despite these occurrences there were only small movements in unemployment. Official unemployment statistics[1] reported unemployment to be less than 1% of the labour force until the mid-90s increasing to 3-4% between 1995-1996 ((E.B.R.D. 1998)).

The lack of adjustment in employment can be explained by the use of various means by employers to maintain workers' attachment to the enterprise while the firm experienced financial difficulties. Employers would vary workers' working schedules (by reducing hours of work or placing workers on unpaid leave) or costlessly retain workers through the non-payment of wages (wage arrears). This paper focuses on this latter occurrence, the incidence of wage arrears.

The decision to delay wage payments rather than cut wages in the short run can be seen as a consequence of the former having a greater budgetary impact in reducing firms production costs since wage arrears represent an immediate reduction in production costs. Hence the total outlay in the wage bill is greater reduced by the non-payment of wages, even if temporarily, than only a partial reduction in costs from a cut in wages or from partial wage payments. This is reinforced by the resistance to reduce employment levels and implies a greater budgetary impact. Given the economic conditions, and the recent liberalization of prices, a promise to pay (full) wages with an unknown delay is likely to have been more acceptable to workers than an explicit cut in wages, even assuming firms has the cash flow to pay them. If the incidence of wage arrears is widespread this will reduce the risk of firms losing skilled labour, since workers are no more likely to be paid

[1] Includes only the registered unemployed.

at another firm. The non-payment of wages, sometimes with substantial delay (as in the highly publicized case of the Russian miners and teachers in 1996 who had not been paid for several years) is an effective reduction in the wage to the worker given the levels of inflation that have been prevailing over the years (see Table 4 in the Appendix), reducing production costs to the enterprise. Studies examining the prevalence of wage arrears in Russia estimated wage arrears to be as high as 30% in the mid 1990s, peaking to 45% in 1996, see Desai and Idson (1997) and Earle and Sabirianova (1999). As well as examining which workers were more likely to experience wage arrears, this analysis also has important implications for welfare since arrears represents the loss of a major source of household income, particularly given the recent liberalization of prices on goods and services.

From the start of the reforms, firms did not adhere to strict budget constraints that were needed to turn loss-making enterprises into profit-making firms, with some firms still benefiting from subsidized inputs and energy prices. Many enterprises remained in production despite the lack of demand for their output, as well as enduring delays in payment from other firms in the chain of production for the payment of inputs and outputs leaving and entering the firm. As a way around the cash shortage, especially in agricultural based enterprises, workers were often paid in-kind in the form of unsold goods and would then sell or barter the products themselves, see Oxenstierna (1990). Although not a new practice, the payment of wages in-kind has increased since the reform process began as firms became even more cash constrained. Even when not paid in cash or in-kind, workers remain attached to the firm in the hope of being paid or in order to gain access to the non-monetary benefits that firms provide, see Evans-Klock and Samorodov (1998) and Rein, Friedman, and Worgotter (1997). Initially instead of actually laying off workers, those employed were subjected to reduced hours, extended leave, increased maternity leave for women (although positions previously kept available for women on maternity leave were later withdrawn) and the late payment of salaries and wages, while the enterprise went through bad times. These mechanisms had the result of decreasing the firms' wage bill, often costlessly (particularly in times of high inflation), with workers not entitled to severance pay, while still maintaining a supply of skilled labour should demand pick up. It was shown in Namazie (2001b) that given the institutional features of the labour market, which were part of the Soviet system, it was in the enterprise's interest

to maintain its work force in the early period of the transition process and adjust other factors, such as intensity of workers' working schedule and current wage costs.

The inherited Soviet system of wage payment rewarded workers according to a variety of attributes, such as qualifications, years in service, industry or region. It is not evident if more costly, skilled, workers were more likely to experience delays in payment compared to the less skilled, and relatively cheaper, workers or whether sectorial or regional conditions were more important. Lehmann, Wadsworth, and Acquisti (1997) have modeled the incidence of wage arrears in Russia and find that regional differences are more important than ownership type and that few individual worker characteristics are significant.

Unlike Russia, little is known about the affects of reform in Central Asia and this paper aims to provide an understanding of the process of reform in one of the newly created independent states. This paper focuses on the incidence of wage arrears in the Kyrgyz Republic, one of the less developed and highly rural economies of the CIS. The Kyrgyz Republic is a small land-locked mountainous country of approximately 4.6m people. The Republic is one of the poorest and less developed out of the five Republics in Central Asia. The Kyrgyz Republic experienced falls in GDP of 20% with only positive rates of growth emerging in late 1995, see Table for 4 on page 20. The unemployment figures for the Kyrgyz Republic[2] are below Russia's, despite the well-known problem of surplus labour in Central Asia, and doubled from 2% in late 1994 to over 4% in 1996, the first year of positive growth in GDP.

The introduction of policy reform in Central Asia has not been too dissimilar from that in Russia after the collapse of the Union. However the consequences of the reform process have precipitated differing affects due to differences in resources, industrialization and development of the different economies in Central Asia, and these differences warrant a separate analysis of the affects of reform. This paper examines whether there are indeed any real discernible features amongst those experiencing wage arrears across different demographic features, using probit regression to investigate the incidence of wage arrears.

[2]Unemployment figures from official statistics are based on registered unemployment.

2 Possible Explanations

In the FSU, places of employment at enterprises were not only sources of wage income but also institutions through which other facilities and benefits were provided to all family members, working and non-working. These services included health and education facilities, child care, subsidized canteens and often also housing. To a greater extent than in Central and Eastern Europe, firms in the FSU provided a wider range of services usually provided by municipalities or other branches of government in market economies.

Also under the Soviet system, wage rates were set centrally and strictly regulated. Wage levels were largely determined by a tariff system of around 20 coefficients, based on qualifications and occupation. Workers worked their way up the tariff system according to their rank with the first grade for each profession being determined by an obligatory minimum wage to maintain a certain standard of living, see Shcherbakov (1991) and Oxenstierna (1990). This egalitarian policy to suppress wage differentials had a bias towards blue collar workers particularly in productive rather than non-productive sectors. However non-monetary fringe benefits were often used by employers as a method of rewarding more valued workers, and these would include better housing, the use of a dacha and licences to purchase rationed goods amongst other things; so the more highly educated or privileged elite would in fact be better off despite relative equalities in money wage income.

It is not obvious that there will be systematic biases against certain groups of workers in the non-payment of wages. Different regions may be affected in different ways due to the sectorial distribution of labour across regions, and hence workers may have suffered in a random ad hoc way, with workers experiencing delays in payment at different intervals of time and over differing lengths of time. It is not clear that even within firms managers have a particular policy of differentiating which workers are to be paid or not. Earle and Sabirianova (1999) postulate that if all employers in a region decide not to pay their employees wages this creates a "lock-in" effect for workers to the firm where they are employed. If all workers in the area are experiencing similar problems of wage arrears, this provides few alternative work opportunities. In addition, since workers are unlikely to receive unpaid wages if they leave their place of employment, this also creates an incentive for workers to remain at their place of employment particularly if they are no more likely to be paid if they worked in another firm.

Lehmann, Wadsworth, and Acquisti (1997) have modeled the incidence of wage arrears in Russia and find that regional differences are more important than ownership type and they also find little significant differences across worker characteristics. The authors also find that although younger workers, females and the more educated are more likely to experience wage arrears, the adjustment mechanism has been mainly through prices, in terms of falling real wages, rather than varying labour demand. There is little evidence that skilled workers are less likely to suffer from wage arrears, and so highly skilled workers may prefer to remain at enterprises where they may benefit from non-monetary facilities/services that are not provided outside state enterprises, since they are no more likely to receive wages in non-state enterprises.

One way of reducing financial pressure for the firm is to reduce production costs. Firms face a trade-off between delaying the wage payment of more costly workers, which would reduce the production costs, at the risk of losing those workers who tend to be highly skilled or experienced workers who would be needed when the demand in the economy improved. Due to the previous rewarding system, workers in productive rather than the non-productive sectors were often paid more and hence higher education levels were not necessarily an indication of a person being highly paid. Rather remuneration depended on the nature of the industry and sector and so it is not clear that better educated workers would experience lower incidences of wage arrears. In fact in the Kyrgyz Republic although wage levels dropped across all sectors, mining, trade and finance sectors paid the highest wage, see M.L.S.P. (1998).

Alternatively younger and less experienced workers may appear to be more at risk as they have no specific skills of value to the firm and would seem more dispensable. However they are relatively cheap and hence less expensive in terms of costs. Many managers had started their career at low ranks and worked their way up the firm hierarchy and may not be so easily inclined to penalize low ranking workers. In addition individuals in high ranking positions are also likely to be able to influence the payment of their own wage and hence may experience lower wage arrears despite the advantage of reducing costs if the salaries of such workers were withheld, see Desai and Idson (1997).

There are few women in very senior positions and women throughout the Soviet period have tended to work both at home as well as in the factories in positions that facilitate

the flexible schedules required by many who have dependents to look after. As a result many women are concentrated in lower paid and more flexible jobs that also render them relatively less expensive and so it is not clear if there are systematic gender biases against women. Withholding wage payments to highly paid workers will have a greater effect of reducing the enterprises wage bill as well as appealing to fairness. In fact, it may be that regional disparities play a more determining role, with regions less resource-rich being affected or the effects being concentrated in declining industries, agricultural sectors, company towns, etc. that lead to a high incidence of wage arrears amongst workers in that area.

This paper examines the phenomenon of wage arrears in which employees are not paid their monthly wages given they have worked over the previous month. Workers who are paid in-kind are seen as being paid their equivalent salary, and hence are not considered to be experiencing wage arrears. By modelling the incidence of wage arrears across a number of characteristics we examine whether certain groups of workers are more likely to experience wage arrears than others.

3 Wage Arrear Data

The empirical analysis is based on nationally representative data from the Kyrgyz Multi-purpose Poverty Survey (KMPS) for the Fall of 1993 and 1996. These surveys are World Bank sponsored household surveys, based on the World Bank's well-established Living Standard Measurement Survey. The 1993 survey was designed for the purpose of identifying the poor, while the 1996 Survey was more in line with the standard LSMS format.

A stratified multi-stage sampling procedure was followed so that, in principle, every household had a non-zero random chance of falling into the sample. This paper draws largely from the Adult Questionnaire, and in particular the section related to time use or employment for those respondents aged 16 years and older. In both years roughly 2,000 households and 10,000 individuals were interviewed. Definitions pertaining to the labour market used in the analysis have been taken from ILO guidelines as far as the survey allows, see Blyton (1989) and Hughes (1989).

One drawback of cross-sectional data is that it is a snapshot of events for a particular year, with many questions based on responses referring to a month recall period. Longi-

tudinal data or panel surveys make it is possible to see how survey magnitudes change for individual households. Panel data would permit the estimation of the persistence of wage arrears, examining dynamics at the individual level by estimating how observations change for a given individual, while controlling for variability across respondents. Panel data are not available for the Kyrgyz Republic but the comprehensiveness of the nationally representative surveys allows for meaningful estimations and implications to be drawn. Firm level data would also have been a useful source for analyzing incidences within firms of delays in wage payments but again such data are not available.

For this analysis, the incidence of wage arrears is defined as a person who is employed and who has not received payment in the last month. Wage arrears is estimated across only employees, *excluding* the self-employed and employers, and includes those working above the retirement age; 55 years for women and 60 years for men. Women on maternity leave are excluded from the analysis. The number of observations used in this analysis are $2,687$ for the Fall of 1993 and $1,732$ for the Fall of 1996. The question pertaining to wages in the 1993 questionnaire was "How much did they pay you at your primary place of employment during the last 30 days after any deductions for taxes? If the payments were made not in Soms, convert it into Soms and give the total". In 1996 the question asked was "In the past month, how much salary did you receive from this work? Include cash and barter goods". In 1996 the employed were also asked about their monthly salary, but this question was not asked in 1993. The 1993 survey does not provide information as to whether the payment the worker received was the total amount or a partial payment. Analysis of the 1996 household survey data and anecdotal evidence suggests that workers are paid in full, whether in cash or in-kind or in both, either on time or with delay. There is little evidence of partial payment and so workers are considered here either to be paid in full or paid with delay.

There are no means to distinguish in which sector the employed worked in 1993 but there is information on occupation type and ownership of the enterprise. Here full-time workers are defined as those working 41 hours or more a week. Another important consideration is that in the 1993 data there are 877 observations of workers with unreported hours of work. Though they are classified as employed and not on involuntary or administrative leave, these observations are included in the analysis of wage arrears and are

categorized as those with "Unreported hours". Around three-quarters of these responses report wage arrears and the majority are from less skilled occupations.

In addition to modelling the incidence of wage arrears it would be useful to test if the amount of wages outstanding and the number of months over which wage arrears had accumulated were important factors. The former would bear relevance to whether higher paid workers were in fact less likely to experience delays in wage payments, while the latter would have indicated if certain workers experienced wage arrears more often. Again due to insufficient data only the incidence of wage arrears is examined in this analysis.

4 A Picture of Arrears in Kyrgyzstan

Table 1 provides summary statistics of the incidence of wage arrears by worker characteristics. As many as 58% of workers in the fall of 1993 experienced delays in wage payments, and by 1996 the incidence had fallen to 24% of workers, a sizeable decrease from an initially high level. This is a considerable fall and although it reflects the incidence of wage arrears in the Fall of 1996, the problem of "mass wage arrears" was still a significant problem throughout 1996, see M.L.S.P. (1998). However it is important to take account of the fact that the analysis is amongst those employed, and there are likely to be a high incidence of non-payment amongst those individuals who were workers but have now either left the labour force or are unemployed, as noted in Desai and Idson (2000) who examine wage arrears in Russia. This is certainly consistent with the adjustment of worker quantity over this period (see changes in the labour market between 1993 and 1996 in Table 5 in the Appendix on page 21). However by 1996 the problem of wage arrears was high on the Government agenda and according to reports by the late 1990s intergovernmental relations were re-examined and a new institutional setup was established to eliminate local wage arrears and encourage local revenue efforts, see I.M.F. (1998).

Men had a higher incidence of wage arrears than women, albeit only slightly higher in 1993. The incidence of wage arrears was high across young and prime aged workers, with only older workers over 50 years of age having significantly lower incidences. With-in group incidences were also high for both these former groups and followed the same trend, with over 50% of prime age workers, 30-49, experiencing wage arrears. In 1996 the incidence had increased slightly for this group, but with-in group incidences had fallen for all groups

but was roughly 20-25% for all workers except those of retirement age. In 1993, those with higher education had a higher incidence than those with high school education, 47% compared to 32%, though the incidence was still relatively high for workers with less than high school education, 22%. However with-in group incidences were higher for the higher education group, with over half of those with higher education experiencing wage arrears. In 1996, the pattern had shifted a little, with over half of those experiencing wage arrears having only high school education. There was little difference across groups for with-in group incidences, though those with higher education had a slightly lower incidence of 18% compared to around 28% for the other two categories. Across occupation groups in 1993, less skilled workers appeared to experience a greater proportion of wage arrears. This reflects the general distribution of workers across these categories. Within group incidences illustrate that the incidence of wage arrears was high across all workers, though military and legislative workers had a slightly lower incidence, around 20% and elementary workers had a particularly high incidence of 75%. In 1996, using sector information, over half the incidence of wage arrears were in agriculture. Again within group incidences were in general lower and averaged around 25-30% for most groups, and was lower only for workers in the transport and financial sector. Despite the relatively high proportion of workers working less than full-time, 25% in 1993 and 32% in 1996[3], 70% of those experiencing wage arrears were full-time workers in 1993 while in 1996 the incidence was relatively uniform across the two groups. However, for those workers on less than full-time schedules in 1996, the incidence of wage arrears was much higher, 39% compared to 16% for full-time workers. Regional differences were also significant. Workers in rural areas experienced more wage arrears than urban workers, while within group incidences for rural workers were as high as 73% in 1993, dropping to 31% in 1996 (the incidence of wage arrears across ethnic group and enterprise ownership type is presented in Appendix: 6, on page 22). Here again the data illustrates high incidences amongst agricultural and less skilled workers in 1993. Though incidences had fallen by 1996, interestingly after agricultural workers, service sector and manufacturing workers who are relatively highly paid, experienced the next highest incidence of wage arrears, 18% and 12% respectively.

[3]Figures calculated using the KPMS 1993 and 1996 data, see Namazie (2001a).

5 Modelling Wage Arrears

Summary statistics provide a general pattern of wage arrears across different characteristics but do not illustrate which characteristics are more important. Here probit regression analysis is used to examine which characteristics are more correlated with delays in wage payments.

5.1 The model

We model the incidence of wage arrears using a binary choice model, for details see Greene (1997). The model is built around the regression model, $Y_i = X_i\beta + \epsilon_i$, where $Y_i = 1$ if a worker receives no salary over the previous month, and $Y_i = 0$ otherwise. X is the set of explanatory variables and β is the set of parameters. The error term ϵ is defined as having $E[\epsilon] = 0$ and $Var[\epsilon] = \sigma^2$.

We define

$$\begin{aligned} \Pr(Y_i &= 1) = 1 - \Pr(Y_i = 0) && (1) \\ &\equiv 1 - \Pr(\epsilon = -X\beta) = \Phi(X\beta) && (2) \end{aligned}$$

where $\Phi(.)$ is the cumulative distribution function. For the purpose of this analysis we assume ϵ follows a normal distribution and hence a probit model[4] is applied.

The resulting coefficients cannot be interpreted in the same way as in the linear regression model, and so they are transformed into marginal effects[5],

$$\begin{aligned} \frac{dE[y|x]}{\partial x} &= \{\frac{d\Phi(\beta' X)}{d(\beta' X)}\}\beta \\ &= \phi(\beta' X)\beta \qquad (3) \end{aligned}$$

where $\phi(.)$ is the standard normal distribution.

[4] An alternative distribution to the probit model is the logit model, based on the logistic cumulative distribution function. However, when applied to relatively large sample sizes, as used here, the results are robust to the choice of distribution function used.

[5] In the regression estimation the marginal effects are calculated at the mean observation, rather than the mean of the marginal effects across all observations. Given the relatively large sample size that these estimations are based on the results are robust.

Table 1: Incidence of wage arrears across selected characteristics

(s.e. in parenthesis)	**1993**	**1996**	**1993**	**1996**
Total	*57.5* (0.010)	*23.8* (0.010)		
	across group incidences		*with-in group incidences*	
Gender				
Male	60.4 (0.013)	61.1 (0.024)	60.8 (0.013)	26.3 (0.014)
Female	39.6 (0.013)	38.9 (0.024)	53.5 (0.015)	20.8 (0.015)
Age groups				
16-29	39.4 (0.013)	35.4 (0.024)	65.3 (0.016)	25.8 (0.019)
30-49	49.6 (0.013)	57.1 (0.025)	54.3 (0.014)	24.5 (0.014)
50-54/59	9.0 (0.008)	6.5 (0.012)	52.2 (0.031)	19.4 (0.034)
55/60+	2.0 (0.004)	1.0 (0.005)	41.4 (0.059)	6.4 (0.031)
Education Level				
Less than High School	21.6 (0.011)	10.2 (0.015)	52.1 (0.020)	27.4 (0.037)
High School	32.0 (0.012)	52.9 (0.025)	75.4 (0.017)	29.2 (0.017)
Higher Education	46.5 (0.013)	36.8 (0.024)	51.6 (0.014)	18.0 (0.014)
Occupation				
Military	0.1 (0.001)		25.0 (0.153)	
Legislators	0.75 (0.002)		22.5 (0.060)	
Professional	9.2 (0.008)		45.1 (0.029)	
Technicians	8.3 (0.007)		42.3 (0.029)	
Clerks	3.9 (0.005)		41.3 (0.042)	
Service Workers	4.1 (0.005)		44.8 (0.043)	
Agri & fishery workers	2.8 (0.004)		83.7 (0.053)	
Craft & related trade	10.9 (0.008)		50.0 (0.028)	
Plant & Machine operators	17.1 (0.010)		58.7 (0.024)	
Elementary Occupations	42.9 (0.013)		74.9 (0.015)	
Sector				
Agriculture		54.4 (0.025)		35.2 (0.020)
Mining		1.0 (0.005)		26.7 (0.114)
Manufacturing		12.2 (0.016)		24.5 (0.031)
Elec. gas, water		2.6 (0.008)		23.8 (0.066)
Construction		4.2 (0.010)		28.6 (0.060)
Commerce		3.9 (0.010)		17.9 (0.042)
Transport		2.3 (0.007)		8.5 (0.027)
Financial		0.5 (0.004)		5.9 (0.040)
Services		18.8 (0.019)		13.4 (0.015)
Employment Status				
Less than Full-time	29.8 (0.015)	54.9 (0.025)	47.6 (0.016)	39.3 (0.021)
Full-time	70.2 (0.015)	45.1 (0.025)	52.4 (0.014)	16.1 (0.011)
Settlement				
Urban	18.3 (0.010)	21.9 (0.021)	30.0 (0.015)	13.2 (0.013)
Rural	81.7 (0.010)	78.1 (0.021)	72.7 (0.011)	30.8 (0.010)

Source: Author's calculations based on KMPS 1993, 1996

For both years, the incidence of non-payment is modelled against independent variables comprising individual characteristics; age, gender, education attainment, ethnicity and characteristics related to employment; ownership of enterprise, occupation/sector, worker type and hours of work. Regional disparities were controlled for at the oblast (county) level. A non-linear relationship is allowed for in the variables; age, hours worked a week in both years, and in the 1996 data, salary, years worked in the occupation and years worked with the firm were also assumed to be non-linear. The respective squared terms are included in each year. Robust estimates of the standard errors are calculated based on the Huber/White/sandwich estimator, see Huber (1967), White (1980) and White (1982).

Omitted variable problem

In 1993 respondents were not asked about their monthly salary but only how much they received in the last month (see Section 3 on page 6 for details of the precise question asked). The level of workers' salaries is likely to be an important explanatory variable in the incidence of wage arrears. Although the lack of this information is important given that in 1993 salaries were set according to a specified grid system dependent on occupational and demographic variables, meaningful results can still be derived from estimating the model since variables controlling for these differences are included. Yatchew and Griliches (1985) demonstrate that if the conditional distribution of the omitted variable, given the included variables, depends on these included variables the resulting coefficients will be consistent estimators, but however there will be *bias in the coefficients*. This will also be the case, even if the omitted variable is uncorrelated with the included variables. However in 1993 the inflation rate was over 700% and the real value of wages were extremely low and so it is not clear how much explanatory power the actual real wage variable would have in such circumstances. Although the specification for 1993 should ideally include the log of the real monthly wage, the regression can provide some meaningful results given the economic environment in the Kyrgyz Republic in 1993.

6 Regression Results

The results of the probit regression and marginal effects are reported in Table 2 and Table 3. We examine whether the incidence of wage arrears is determined by work-related characteristics and regional effects or whether personal or individual characteristics greatly

affect the incidence of wage arrears. Model I includes the work-related characteristics while Model II consists of Model I variables, plus personal or individual characteristics.

6.1 Results for 1993

Table 2 below illustrates the results for workers in 1993. From the results of Model I, across the different occupations it can be seen that highly qualified workers have a lower probability of experiencing wage arrears than workers engaging in elementary occupations. This is reinforced with the education variable, with workers with secondary school level only having a higher probability of experiencing wage arrears than workers with higher education. Workers who were officially placed on a reduced working schedule are not significantly different from those who were not. However workers who did not report working any hours over the past week are found to be more likely to experience wage arrears. This would suggest that workers who are working in particular enterprises where wage arrears are prevalent may actually reduce their hours, totally in this case, rather than be put officially on a reduced schedule. This variable is also highly significant in Model II. Although there are workers who did not report working any hours over the past week across all occupations groups, the incidence is highest amongst less-skilled workers and relatively high (10%) amongst skilled workers in the category technicians and clerical workers. Looking at differences across enterprise ownership, workers in work collectives and "other" defined enterprises have a higher probability of experiencing wage arrears than workers in State enterprises. In addition, despite controlling for differences across oblasts, workers in rural areas have a higher probability of experiencing wage arrears compared to urban workers. All this suggests that agricultural workers, particularly low skilled workers are likely to fair much worse in terms of delays in wage payments. In general less-skilled and less qualified workers in agricultural based work have a greater probability of experience wage arrears in 1993. Looking at Model II which includes variables reflecting personal characteristics, such as age and gender, it can be seen that although these variables are not significant except for the ethnicity dummies (which are jointly significant), the inclusion of these variables does improve the fit of the model greatly. The constant term is significant in both specifications of the model, indicating the importance of the omitted dummy characteristics, even when personal characteristics are included. Again this indicates that less

skilled male workers in rural areas fare worse and that work and enterprise characteristics specified in the regressions do not capture to a large extent the incidence of wage arrears.

Table 2: Results of Probit Regresson, 1993

Total workers	Model I			Model II		
	Total Coeff.	Marginal Coeff.	t	Total Coeff.	Marginal Coeff.	t
Constant	1.00		7.39 *	1.48		4.65*
Age				-0.02	-0.01	1.42
Age^2				0.02	0.01	1.04
Male (*Female)*				0.14	0.05	2.09 *
Occupation Group (*Elementary occupations)*						
Managers	-1.04	-0.39	5.55 *	-1.05	-0.39	5.62 *
Professions	-0.36	-0.14	3.36 *	-0.34	-0.13	3.03 *
Technicians	-0.46	-0.18	4.45 *	-0.43	-0.17	4.10 *
Clerical	-0.43	-0.17	3.26 *	-0.38	-0.15	2.85 *
Personal Serv.	-0.38	-0.15	2.85 *	-0.40	-0.16	2.98 *
Agri. Labour	-0.04	-0.01	0.15	-0.08	-0.03	0.33
Craft	-0.11	-0.04	1.12	-0.18	-0.07	1.71
Operatives	-0.16	-0.06	1.81	-0.21	-0.08	2.21 *
Education Level (*Higher education)*						
Less than High School	-0.05	-0.02	0.74	-0.05	-0.02	0.65
High School	0.14	.05	1.77	0.16	0.06	1.96 *
Work Characteristics						
hours/week	-0.01	-0.0002	1.84	-0.01	-0.002	2.06 *
$hours/week^2 * 1000$	0.07	0.03	2.57 *	0.01	0.03	2.70 *
Unreported hours	0.34	0.13	2.97 *	0.32	0.12	2.73 *
Reduced hours	0.004	0.001	0.02	0.01	0.002	0.02
Enterprise (*State)*						
Public Organization	-0.23	-0.09	1.11	-0.22	-0.09	1.05
Work collective	0.38	0.14	5.07 *	0.37	0.14	4.96 *
Private Individual	0.31	0.11	1.93	0.30	0.11	1.85
Other	0.56	0.19	2.91 *	0.57	0.19	2.95 *
Type of Region (*Rural)*						
Urban	-0.94	-0.36	14.08 *	-0.89	-0.34	12.55 *
Raions						
Ethnicity	*not included*					
Observations	2517			2517		
Wald Chi^2	776.11 (25)			805.72 (32)		
Loglikihood	-1326.42			-1311.61		

Notes: The dependent variable is y =1,wage arrear.

Omitted groups for dummy variables are in (italics).

* statistically significant at the 5% level

Source: Author's own calculations based on KMPS 1993

6.2 Results for 1996

Table 3 presents the results for workers in 1996. Again Model I estimates the incidence on largely work related characteristics. In 1996 hours of work are significant and negatively related to the incidence of wage arrears, reaching a maximum at 39 hours. This is relatively high, reflecting the hours of a full-time job. Those workers officially on a reduced work schedule however are not significantly different from those who are not. Across enterprises, workers in Public Organizations, Joint companies and farming communities have a lower probability of experiencing wage arrears than workers in State enterprises. Joint companies are likely to experience less wage arrears since many of them are ventures with foreign companies. Farming communities employ a relatively small percentage of workers less so than private farms, with only 5.3% employed in farming communities and 18.3% employed in private farms in 1996[6]. Across sectors, workers in the mining and transport sectors are less likely to experience wage arrears than agricultural workers. The former is not surprising as the mining sector is dominated by joint venture companies. Model II includes more personal characteristics as well as skills and worker characteristics. Interestingly these additional characteristics again are not significant but the inclusion of them does change the significance of the original variables defined in Model I. While in Model I (natural logarithm of) workers' salary was not significant it is significant in Model II and negatively related to the incidence of wage arrears, implying that controlling for age, gender and experience etc., workers with higher salaries are less likely to experience wage arrears. Hours worked is still significant in Model II but now reaches a maximum at 46 hours a week. Again greater hours are associated with a lower incidence of wage arrears, reflecting economic stability within the enterprise. In Model II farming communities are no longer significantly different from workers in State enterprise, with the only workers in the transport sector faring better than workers in State enterprises. In general, in 1996 educational differences were not so important and workers earning relatively lower salaries across all sectors except transport and services were just as likely to experience wage arrears as agricultural workers in State enterprises. In neither models are the differences between urban and rural workers significantly different.

Also interesting in these results is that the constant term is not significant in either

[6]Figures calculated using the KPMS 1996, see Namazie (2001a).

model though the overall fit of the regression is greatly improved from the 1993 results. This suggests that enterprise and job characteristics do explain to a larger extent the incidence of wage arrears which is what would be expected as the labour market tends to a more competitive market environment.

Table 3: Results of Probit Regression, 1996

All workers	Model I			Model II		
	Total Coeff.	Marginal Coeff.	t	Total Coeff.	Marginal Coeff.	t
Constant	0.45		1.61	0.14		0.26
Age				0.02	0.00	0.66
Age^2				-0.34	-0.09	1.08
Male (*Female)*				0.22	0.06	2.64 *
Education level (*Higher education)*						
Less than High School				-0.21	-0.05	1.42
High School				-0.01	-0.05	1.40
Worker type (*White collar)*						
Blue collar				0.06	0.02	0.57
Owner				0.56	0.18	1.35
Manu. Coop.				0.02	0.00	0.08
Professional				-0.21	-0.05	0.34
Skills/Experience						
Years in firm				-0.03	0.01	1.23
Years in firm$^2 * 100$				0.04	0.01	0.63
Yrs in occupation				0.05	0.01	2.30
Yrs in occup.$^2 * 100$				-0.06	-0.02	-1.0
Work Characteristics						
hours/week	-0.03	-0.01	3.68 *	-0.03	-0.01	3.84 *
hours/week$^2 * 100$	0.03	0.01	2.73 *	0.03	0.01	3.06 *
Reduced hours	0.52	0.16	2.64 *	0.58	0.18	2.86 *
Ln mthly Salary	-0.04	-0.01	1.08	-0.10	-0.02	1.99 *
Enterprise (*State)*						
Public Organization	-0.09	-0.02	0.26	-0.04	-0.01	0.10
Cooperative	-0.46	-0.10	3.48 *	-0.54	-0.11	3.72 *
Joint Company	-0.07	-0.02	0.50	-0.06	-0.02	0.44
Private Indiv.	-0.48	-0.10	2.45 *	-0.51	-0.10	2.69 *
Farming comm	-0.27	-0.06	1.46	-0.19	-0.04	0.99
Private farm	0.11	0.03	0.68	0.16	0.04	0.88
Sector (*Agriculture)*						
Mining	-0.42	-0.09	1.24	-0.33	-0.07	0.87
Manu.	0.07	0.02	0.40	0.17	0.05	0.90
Construction	-0.00	-0.00	0.01	0.15	0.04	0.52
Utility	0.07	0.02	0.32	0.11	0.03	0.45
Commerce	-0.14	-0.04	0.68	0.02	0.00	0.08
Transport	-0.52	-0.11	2.93 *	-0.53	-0.11	2.97 *
Finance	-1.05	-0.16	4.20 *	-0.94	-0.15	3.15 *
Services	-0.44	-0.11	3.24 *	-0.26	-0.06	1.68
Type of Region (*Rural)*						
Urban	0.17	0.05	1.36	0.18	0.05	1.42
Raions						
Ethnicity		*not included*				
Observations		1538		1538		
Wald Chi^2		201.27(25)		249.94 (42)		
Loglikihood		-691.71		-674.08		

Notes: The dependent variable is y =1,wage arrear.
Omitted groups for dummy variables are in (italics).
* statistically significant at the 5% level
Source: Author's calculations based on KMPS 1996

7 Conclusion

The purpose of this paper was to examine the prevalence of wage arrears (delays in wage payments) to employed workers in 1993 and 1996 and to discern which workers were more likely to experience wage arrears than others. The main findings are that wage arrears were as high as 58% in 1993, and fell by 60% to 24% in 1996. This fall in the incidence of wage arrears can be attributed to the nature of the recorded wage arrears being amongst those who are currently working in each respective year. Although official unemployment figures portray otherwise, there has been a significant contraction in the labour market between 1993 and 1996, with the unemployment rate increasing significantly from 15% in 1993 to 28% in 1996. The incidence of wage arrears is likely to be high amongst those workers who have left the work force, but these incidences are not captured in the survey. The incidence was high across all workers in 1993, with few distinguishing personal or work-related characteristics. All workers had a relatively high probability of experiencing wage arrears and this is consistent with the worse economic situation in the early 1990s. Despite the tightening of the labour market, seen in falling employment rates and increasing unemployment, the incidence of wage arrears was still significant amongst the labour force. By 1996, there is evidence that the incidence of wage arrears was more concentrated amongst agricultural sector, and less skilled, and less costly, workers. The results suggest that general economic conditions rather than personal worker characteristics determined the pattern of wage arrears, particularly given the regional concentration of the sectors. The positive relationship between wage arrears and reduced working schedules illustrates that these are complementary tools and those firms unable to pay workers are also likely to reduce worker intensity.

This result has significant consequences for household welfare and provides support for the continuing problem of the 'working poor', for whom having a job is no guarantee of labour income and thus avoiding poverty. In addition, the continuation of enterprises reneging on contractual agreements to pay workers is a sign that necessarily institutions are not in place to ensure labour markets function as they should.

8 Appendix: Wage Arrears

Table 4: Economic Indicators 1992-1997

	1992	1993	1994	1995	1996	1997
Output, percentage change						
GDP constant prices	−19.0	−16.0	−20.0	−5.4	7.1	9.9
Industrial gross output	−26.4	−25.3	−23.5	−36.9	3.9	39.7
Agricultural gross output	−5.0	−10.0	−15.0	4.0	0.9	3.0
Gross average monthly wages in Soms (annual average)						
Nominal wages*	11.5	83.8	233.4	368.2	490.9	680.2
Real wages*	10.4	83.4	71.0	73.5	75.1	82.9
Percentage Change (based on end year)						
Consumer Prices	1,259	1,363	95.7	32.3	34.9	14.7
Producer Prices	*na*	224.6	96.7	17.0	23.0	26.0
Soms per US dollar (annual average)						
Exchange rate	226.2	6.1	10.8	10.8	12.8	17.4

*Source: EBRD (2000), *E.B.R.D. (1998) and E.B.R.D. (1997)*

Table 5: Labour force rates, 16+ and working-age, 1993 and 1996

16+		**Total**	**Male**	**Female**	**Urban**	**Rural**
(s.e. in parentheses)						
Participation	*1993*	0.66	0.76	0.56	0.63	0.67
Rates		(0.007)	(0.006)	(0.007)	(0.007)	(0.006)
	1996	0.54	0.66	0.43	0.53	0.55
		(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Employment	*1993*	0.85	0.85	0.86	0.84	0.86
Rate		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	1996	0.72	0.71	0.74	0.84	0.66
		(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
Unemployment	*1993*	0.15	0.15	0.14	0.16	0.14
Rate		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	1996	0.28	0.29	0.26	0.16	0.34
		(0.006)	(0.006)	(0.006)	(0.005)	(0.006)

Source: Author's calculations based on KMPS 1993 and 1996

Table 6: Incidence of wage arrears across additional characteristics, 1993

(s.e. in parenthesis)	**1993**	**1996**	**1993**	**1996**
	Across group incidences %		With-in group incidences %	
Ethnic Group				
Kyrgyz	63.0	65.3	66.8	26.6
	(0.013)	(0.024)	(0.013)	(0.014)
Russian	10.7	15.0	31.6	16.1
	(0.008)	(0.018)	(0.021)	(0.019)
OtherSlavs	3.3	1.0	53.3	12.9
	(0.005)	(0.005)	(0.053)	(0.060)
Uzbeks	15.6	12.5	58.9	27.9
	(0.010)	(0.016)	(0.025)	(0.034)
Other	7.5	6.2	57.3	21.9
	(0.007)	(0.012)	(0.10)	(0.039)
Ownership of Enterprise				
State	69.2	34.2	53.7	17.6
	(0.012)	(0.024)	(0.012)	(0.014)
Public/Social Organization	1.2	0.8	38.6	13.6
	(0.003)	(0.004)	(0.073)	(0.073)
Work Collective	25.1		74.3	
	(0.011)		(0.020)	
Private Individuals	2.1		44.8	
	(0.004)		(0.061)	
Other	2.5	11.2	75.0	71.4
	(0.004)	(0.016)	(0.010)	(0.057)
Cooperatives		7.0		17.5
		(0.013)		(0.030)
Joint-Stock/Venture		9.7		27.8
		(0.015)		(0.031)
Private		1.3		6.1
		(0.006)		(0.026)
Farming Community		6.5		29.2
		(0.012)		(0.048)
Private Farming		29.4		38.4
		(0.023)		(0.028)

Source: Author's own calculations based on KMPS 1993, 1996

Variable and Definitions for Tobit Regression

Arrears: Those classified as employed and working over the reference period but who had not received payment in the last month.

Education level:

Less than High School: Those individuals who had no more than 9 years of primary and secondary schooling. This category also includes those with no formal education.

High school only: 10 or more years of primary and secondary schooling and did not study elsewhere.

Higher Education: Includes those who undertook 10 or more years of primary and secondary schooling and completed one (or more) of a vocational course or 10 or more years of primary and secondary schooling and completed one (or more) of university level.

Reduced hours: Those officially placed on reduced working schedules, where less than full-time is taken as less than 41 hours a week. This variable tries to capture those workers who did not voluntarily decide their hours of work.

Ln mthly Salary received: Natural logarithm of monthly salary, in the 1996 data.

Hold Second job: If worker engaged in activities additional to primary employment in 1993, or held a second job in addition to primary employment in 1996.

Ln Income other labour activities: Natural logarithm of income from additional activities in 1993. Natural logarithm of income from secondary job in 1996.

Unreported hours: The 677 workers who reported positively to be employed but did not declare number of hours worked in the 1993 data set.

Type of Region: Urban or Rural.

Oblasts: Naryn, Talass, Djalal-abad, Issuk, Osh, Chui (the six oblasts) and Bishkek (capital).

Ethnicity: Kyrgyz, Russian, Other Slavs, Uzbeks, Others.

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