

## INCIDENCE OF WAGE ARREARS IN UKRAINE

*Applying Probit estimation techniques based on nationally representative household-level data, we develop the first empirical study of the determinants of wage arrears in Ukraine. It is shown that individual characteristics of workers are less contributive to the incidence of wage arrears than the characteristics of the enterprises. Our analysis also suggests that for firms, among the most significant determinants of wage arrears are regional location, industrial affiliation and type of ownership.*

The transition process in some republics of the Former Soviet Union, including Ukraine, has been accompanied by the rise of many distinguishing economic phenomena, the most peculiar of which seems to be an increase in the non-payment of wages. In such countries, wage arrears are spread over the whole economy, covering all the industries in all the regions. A significant share of the labor force has been suffered from delays in wage payments for several months. In our paper we try to investigate the determinants of wage arrears in regions. First, we analyze factors that may influence the incidence of wage arrears. Then we test some hypothesis using binary choice model. Finally, we make conclusions on the determinants of wage arrears in Ukraine.

In Ukraine, wage arrears started to rise in the end of 1994, when the initial financial stabilization was achieved after a prolonged period of hyperinflation. There was a constant increase in wage arrears during 1994-1999. Since that time, wage non-payments increased fourfold from UAH 575 million in the fourth quarter of 1995 to UAH 6,401 million in the end of 1999 [1]. Between 1996 and 1999 wage arrears amounted from 5.1 % to 4.9 % of nominal GDP, achieving its maximum level in 1998 - 6.4 %. Beginning from the second half of 1999, the cumulative amount of wage arrears started reducing. In 2000, wage arrears amounted UAH 4,928 million, constituting about 2.8 % of GDP; and in 2001 total amount of wage non-payments were equal to UAH 2,766 million, or 1.3 % of GDP [2]. Despite the decreasing of wage arrears in the last years, one can observe that for very long period of time wage arrears were the significant phenomena of Ukrainian economy. So, it is very important to understand the determinants of such phenomena to avoid it in future.

The determinants of wage arrears may be explained by the macroeconomic situation in the country as well as by special reasons inherited by the wage non-payments itself. On the one hand, liquidity problems in the Ukrainian economy together with the lack of credits to the real sector

from the Ukrainian banks may explain the diffusion of wage arrears to some extent. But as Earle and Sabirianova argue, wage arrears "have a somewhat independent dynamics" [3]. Enterprises (and this is also true for Ukraine) that do not face severe liquidity constraints use wage arrears.

The question that arises here is why do the firms choose wage arrears? Some economists consider wage arrears as a price adjustment mechanism [4]. Alfandari and Schaffer stress that firms consider wage arrears as a measure to extract tax concessions from the government [5]. At the same time some authors also agree that wage arrears may be used for avoiding taxation and extracting subsidies from national as well as local governments [3]. High tax rates on wages and profits together with tax payments priority over wage payments push the firms to look for possible ways to hide cash and to escape from the mandatory payments.

Another possible explanation of the country-wide diffusion of wage arrears comes from the underdeveloped system of legal infrastructure. And this is particularly true for Ukraine. The Law of Ukraine on Remuneration of Labour was adopted in Ukraine on March 24, 1995 [6]. Some provisions of the Law were similar to those of the Soviet time Labour Code. In particular, there was no strict definition of responsibilities for those who violated the requirements of paying wage in time. Since the amounts of wage arrears achieved huge levels in 1996-1997, several steps were made to improve the situation and to compensate the population for lost wages. The Law of Ukraine on Remuneration of Labour was amended in January 23, 1997 by provisions that regulate compensation of workers that did not receive their wages in time. The law also identifies authorities that supervise the fulfillment of the law. Those who violated the Law, *may be* subject to disciplinary, material, administrative, and even criminal responsibility, as it is stated in Article 36 of the Law. On the first sight, Ukrainian legislation regarding wage payments may prevent all the possible problems connected with wage

non-payments. Unfortunately, poor development of legal infrastructure and law enforcement allow the managers to "postpone" wage bill payments. Unfortunately, the Law does not stipulate the sanctions that could be used against employees that do not pay wages in each particular case. Besides, non-paid workers simply do not have legal force to protect themselves. Very often, when the workers turn to the court, the employees – defendants claimed about their bankruptcy and refuse to pay wages. Usually, trade unions constituted the force that protect their members rather effectively. Unfortunately, trade unions turn out not to be that force that may make the managers to pay the wage bills in Ukraine. Most of the trade unions of the state-owned or newly privatized companies (which are extremely badly hurt by wage arrears) remained loyal to the company management and do not really contribute to the improvement of the performance of wages.

Another factor, according to Earle and Sabirianova, that allows the firms to shrink away from paying wages is poor monitoring of managers [3]. This is particularly true for state-owned enterprises and large *de novo* privatized firms where the system of supervision does not work properly and where Soviet-type management does not create sufficient incentives to seek for improvement of the firm performance. It can be suggested that such incentives are much higher in newly created private firms as well as in joint venture companies and, as result, wage arrears are lower.

There are many other important factors that contribute a lot to diffusion of wage arrears in the economy. But their exploration is beyond the scope of this paper. We concentrate our empirical analysis on the determinants of wage arrears in Ukraine in micro level using household level data.

*Hypotheses.* In this paper, we test some of the hypotheses about the determinants of wage arrears in Ukraine similar to those that have already been tested for the Russian Federation [3, 4]. We test whether age and gender of a worker influence the probability of wage arrears for him or her. It is possible to check whether firms' characteristics are more important determinants of wage arrears than demographic characteristics of the individual. We check whether individuals are less likely to be subject to wage arrears if they work fewer hours a week (say, less than 20 hours a week). It can be argued that the smaller the amount of hours worked, the lower the

probability of wage arrears. We also try to check the influence of presence of payments in kind on the incidence of wage arrears.

Since data set for individuals is rather limited, our analysis is concentrated on the investigation of the determinants of wage arrears associated with firms' activities. We also check the hypothesis that regional location, industrial affiliation, size, and ownership type of the enterprise are the factors that influence the incidence of wage arrears. We try to show the firms from the regions where there is high level of unemployment are more subject to wage arrears than firms from oblasts with lower level of employment where workers have more opportunities to move.

To investigate the determinants of the incidence of wage arrears for individuals we use probit model (binary choice model). The *model* is defined as follows:

$$\Pr(y_i \neq 0 | x_i) = \Phi(x_i b), \quad O)$$

where  $\Phi$  is the standard cumulative normal distribution;  $X_i$  is a vector of factors that may determine the probability of  $y_i$  to not be equal to zero;  $b$  – vector of the coefficients that shows the change in probit index ( $x_i b$ ) by  $b$  standard deviations<sup>1</sup>.

It is not useful and transparent to report coefficients from a probit unless only the sign and significance of the coefficients are of interest. Therefore, we look for the marginal effects that give us the change in the probability of the incidence of wage arrears with respect to different factors.

The model (1) was estimated on the basis of the data set of the surveys "Ukraine Small and Medium Enterprises Survey", conducted by the Kyiv International Institute of Sociology in February–July of 1999 [7]. The random sample was worked out by the Kyiv International Institute and is representative for all 24 oblasts of Ukraine, Kyiv City, and for the Autonomous Republic of Crimea. The data set that includes 3,267 interviews of employed members of households. The results of estimation are presented in Appendix.

*Results.* We can conclude after estimation that the firm characteristics are found to be more important determinants of wage arrears for the individuals compared to the personal characteristics of the worker. *Age and gender* of the worker do not show any influence on the incidence of wage arrears of workers. Therefore, one cannot make any conclusions about discrimination against workers

<sup>1</sup> The dependent variable  $y$  was constructed on the basis of the answers to question "Does the firm owe you any money?" and takes the 1 if an individual has wage arrears and 0 otherwise. Vector  $x_i$  includes several important characteristics: age, gender, regions, type of settlement dummies (urban, rural), industrial affiliation of the firm (agriculture, forestry, all the other industries including construction, manufacturing, transport and communications, trade, public catering, hotels, public utilities, recreation, health and education, finance, scientific services (research), other services), size of the firm, type of ownership of the firm, hours worked a week on the firm, percentage of salary paid in kind.

who are not paid. *Regional location* of the firm where the worker performs job also has impact on the probability for worker to be subject to wage arrears. Probability is higher for some western oblasts. Such results can be explained by the fact that in these regions, the level of registered unemployment was the highest in Ukraine in 1999 (Rivne 7.2%, Zhytomyr 7.2%, Ivano-Frankivsk - 6.2 %, Ternopil - 6.5 %, Chernivtsi - 4.3 %, Sumy - 6.9 % [1]). Since the workers have fewer opportunities to move in these regions, the firms chose to increase wage arrears rather than to lay off employees. These results are in line with predictions got by theory and the other investigations [8]. *Industrial affiliation* of the firm also influences the probability of workers to be subject to wage arrears. Compared to agriculture, the probability of workers to be subject to wage arrears is 46.5 percentage points lower for finance; 34.5 percentage points for trade and 26.3 - for catering; 17.3 - for transport, 15.1 - for health and education. These results are comparable to the Russian estimates [4]. *Ownership type* of the firm is found to be a determinant of the incidence of wage arrears. For workers from private firms, the probability of being subject to wage arrears is 30 percentage points lower than for workers from state firms. For joint stock companies with less than 50 percent shares owned by state, this coefficient is lower - probability of wage arrears is lower by 11.8 percentage points. Employees on the joint-venture companies have probability of being liable to wage arrears by 14.8 percentage points lower than state enterprises. According to estimation results, if the worker works less than 20 hours a week, the probability to be subject to wage arrears for him or her is 5.8 percentage points higher than for the worker who works hard (40-50 hours a week). Another interesting finding of the estimation concerns with *the percentage of wages paid in kind*. It is found

that the higher the share of wage paid in kind, the lower the probability for the worker to be subject to wage arrears.

Our analysis shows that individual characteristics of the individuals (age and gender) do not have significant impact on the incidence of wage arrears. Taking all the estimators into consideration at once, one can infer that an employee on the private firm in Kyiv city from finance industry has the lowest probability of being subject to wage arrears. The worst situation faces the worker from Western region from agricultural sector on the state enterprise (likely, collective agricultural firm): the probability of being subject to wage arrears is the highest. At the same time, we cannot make any important conclusions about the influence of the personal characteristics of the individual on the probability of wage arrears, since we have only two of them (age and gender) in our regression.

Several important policy implications can be made. First, implementation of the provisions of the Labour Code should be improved, especially the control and punishment procedures over incidence of wage non-payments. Second, the trade unions should realize their role as protectors of the workers' concerns. Third, since mobile labor force is shown to face lower probability of wage arrears, more attention should be paid to the development of the institutions that increase the mobility of workers and reduce unemployment rates within the regions. Stimulation of development of private small and medium enterprises should also contribute to the decreasing of the incidence of wage arrears in Ukraine.

Finally, if one of the most important issues of market economy - payment of wages - is violated, it is very hard to expect that economic transition in the country would be successful: population, which is not get paid for the jobs, would probably not grant credibility to the reforms in general.

## APPENDIX

### The results of the estimation of the model: Workers'-Level Data

Independent Variables	Incidence of Wage Arrears (Probit Estimation)			Independent Variables	Incidence of Wage Arrears (Probit Estimation)		
	Probit Estimate		Marginal Effects, $d\Phi/dx_j = \phi(xb)bj$		Probit Estimate		Marginal Effects, $\partial\Phi/\partial x_j = \phi(xb)bj$
Age of the Worker				Vinnitsia	0.069	0.39	0.025
25-44 (benchmark)				Volyn	0.117	0.63	0.042
16-24	0.028	0.20	0.024	Dnipropetrovsk	-0.034	-0.28	-0.012
45-54	-0.073	-0.75	-0.024	Zakarpattia	-0.030	-0.18	-0.011
>55	-0.009	-0.05	-0.001	Zhytomyr	0.668***	3.14	0.243
Gender of the Worker				Zaporizhzhia	-0.336**	-2.06	-0.121
Female	-0.042	-0.060	-0.016	Ivano-Frankivsk, Ternopil and Chernivtsi	0.364***	2.74	0.131
Regional dummies				Kyiv and Chernihiv	0.085	0.67	0.031
Donetsk (benchmark)							
Crimea	-0.060	-0.41	-0.023				

## The continuation of the Appendix

Independent Variables	Incidence of Wage Arrears (Probit Estimation)			Independent Variables	Incidence of Wage Arrears (Probit Estimation)		
	Probit Estimate		Marginal Effects, $d\Phi/dx_j = \phi(xb)bj$		Probit Estimate		Marginal Effects, $a\Phi/dx_j = \phi(xb)bj$
Cherkassy and Kirovohrad	-0.029	-0.20	-0.011	Type of ownership of the firm			
Lviv	0.040	0.32	0.015	State			
Luhansk	0.434***	2.70	0.157	Private	-0.831***	-7.92	-0.301
Odesa	-0.218	-1.56	-0.079	Joint-Stock (25-50% of shares owned by state)	-0.326***	-2.85	-0.118
Mykolaiv	0.095	0.46	0.034	Joint-Stock (more than 50 % of shares owned by state)	0.026	0.24	0.010
Poltava	-0.014	-0.09	-0.004	Joint-Stock (more than 50 % of shares owned by private persons)	-0.102	-0.92	-0.037
Rivne	0.864***	4.17	0.313	Joint-Venture (more than 50% of shares owned by private persons)	-0.408**	-1.79	-0.148
Sumy	0.367**	1.96	0.132	Joint-Venture (more than 50 % of shares owned by state)	0.188	0.58	0.069
Kharkiv	0.069	0.50	0.026	Other	-0.200	-0.105	-0.072
Kherson	0.202	1.07	0.073	Hours worked a week on the firm			
Khmelnitsk	0.123	0.60	0.045	40–50 hours a week			
Kyiv City	-0.384***	-3.00	-0.139	Less than 20 hours a week	0.161*	1.66	0.058
Type of Settlement Dummies				20–39 hours a week	0.055	0.84	0.020
Rural (villages and settlements)				More than 50 hours a week	0.103	0.96	0.037
Urban (cities and towns)	-0.182	-2.82	-0.066	Percentage of salary paid in kind			
Industrial affiliation of the firm				11–40 percent of salary			
Agriculture, forestry				Zero percent	-0.797***	-8.18	-0.289
Construction	-0.113	-0.74	-0.041	1–10 percent	-0.156	-1.20	-0.056
Manufacturing	-0.105	-0.95	-0.038	41–70 percent	0.008	0.06	0.003
Transport, Communications	-0.479***	-3.90	-0.173	More than 70 percent	-0.998***	-9.2	-0.471
Trade	-0.955***	-6.53	-0.345	Constant	0.992	9.92	0.575
Public Catering	-0.728***	-3.76	-0.263				
Hotels, Recreation	-0.152	-1.12	-0.054				
Health, Education	-0.416***	-3.76	-0.151				
Finance	-0.987***	-5.46	-0.465				
Scientific services	0.129	0.53	0.047				
Other services	-0.490***	-3.15	-0.177				
Other industries	-0.177	-1.03	-0.063				
Size of the firm							
Large firm (> 250 workers)							
Small firm (< 50 workers)	-0.136	-1.81	-0.049				
Medium firm (< 250 workers)	-0.101	-1.45	-0.037				

Note: \*\*\* - significant at the 1 % level; \*\* - significant at the 5 % level; \* - significant at the 10 % level. Sample consists of employed individuals.

1. Тенденції української економіки.- 1999.-№ 12.
2. Тамсамо-2000-№7.
3. Earle J. S., Sabirianova K. Z. Understanding Wage Arrears in Russia- Stockholm: Stockholm School of Economics, SITE Working Paper-1999-№139.
4. Lehmann H., Wadsworth J., Alessandro A. Grime and Punishment: Job Insecurity and Wage Arrears in the Russian Federation // Journal of Comparative Economics.- 1999-№ 27- P. 595-617.
5. Alfandari G., Schafer M. 'Arrears' in the Russian Enterprise Sector /

Simon Commander, Qimiao Fan, Mark E. Schaffer (Eds.) Enterprise Restructuring and Economic Policy in Russia- Washington, DC: EDI/World.

6. Закон України про оплату праці.
7. "Ukraine Small and Medium Enterprises Survey", conducted by the Kyiv International Institute of Sociology in February-July of 1999 (data sets).
8. Лук'яненко І. Г., Ситник Т. В. Моделювання заборгованостей із заробітної платні на регіональному рівні // Наукові записки НАУКМА: Економіка-К., 1999.-Т. IX.-Ч. 2.-С. 111-114.

**О. Бойченко**

## ПОШИРЕННЯ ЗАБОРГОВАНОСТЕЙ ІЗ ЗАРОБІТНОЇ ПЛАТНІ

Застосовуючи модель біноміального вибору Probit та використовуючи дані про домогосподарства України, автор розробляє першу економетричну модель емпіричного дослідження факторів, що впливають на поширення заборгованостей із заробітної платні в Україні. Визначено, що індивідуальні характеристики працівників менше впливають на виникнення заборгованостей, ніж характеристики підприємств. Аналіз також показує, що для фірм найважливішими детермінантами заборгованостей із заробітної платні є регіональне розміщення фірми, галузь та тип власності.