

December 2002

Earnings in Poland: The Private Versus the Public Sector

Jacob Weisberg
Bar-Ilan University

Mieczslaw Waclaw Socha
Warsaw University

Follow this and additional works at: <http://digitalcommons.pepperdine.edu/jef>

Recommended Citation

Weisberg, Jacob and Socha, Mieczslaw Waclaw (2002) "Earnings in Poland: The Private Versus the Public Sector," *Journal of Entrepreneurial Finance and Business Ventures*: Vol. 7: Iss. 3, pp. 17-38.
Available at: <http://digitalcommons.pepperdine.edu/jef/vol7/iss3/3>

This Article is brought to you for free and open access by the Graziadio School of Business and Management at Pepperdine Digital Commons. It has been accepted for inclusion in The Journal of Entrepreneurial Finance by an authorized administrator of Pepperdine Digital Commons. For more information, please contact paul.stenis@pepperdine.edu.

Earnings in Poland: The Private versus the Public Sector

Jacob Weisberg^{*}
Bar-Ilan University, Israel

and

Mieczyslaw Waclaw Socha^{}**
Warsaw University

The transition of Poland to a free market economy, concurrent to a substantial increase of the private sector, promoted entrepreneurship, joint ventures, self-employment, labor reallocation, growth of financial markets and direct foreign investments. Previous studies have provided inconclusive evidence regarding earning disparities in Poland. The present study proposes a model that employs demographic, employment and organizational characteristics, revealing that earnings in the private sector are 9.8% higher than in the public sector; human capital characteristics are more influential in the private than in the public sector; the return to general training is higher for both workers with a higher education and those in the private sector; and the return to firm-specific-training is higher in the private sector. The results are discussed in light of the structure of a transitional economy and the changing labor market.

^{*} Jacob Weisberg received his Ph.D. from the London School of Economics, England. He is the Head of Management Studies at the Graduate School of Business Bar-Ilan University, Israel. His current research interests include wage determination, labor turnover, compensation and incentive schemes, appointment of CEOs in the U.S., leadership in Russian firms, and labor market issues in Poland. He has been published in *Economics of Education Review*, *Industrial Relations - Relations Industrielles*, *International Journal of Manpower*, *Scandinavian Journal of Management*, *Organizational Behavior*, etc.

^{**} Mieczyslaw W. Socha received his Ph. D. from Warsaw University, Warsaw (Poland). He is a professor at the Department of Economics, Warsaw University and the Head of the Chair of Economics at the Leon Kozminski Academy of Entrepreneurship and Management in Warsaw. His current research areas include unemployment, implication of the international trade and technological change on labor markets, wage distribution and determinants of self-employment in OECD countries. He has authored and/or co-authored 90 publications in Polish, English, Japanese and Romanian. His articles appeared in the *International Journal of Manpower*, *Monthly Labor Review*, *The Economics of Transition*, and *Acta Oeconomica*, among others.

Introduction

Economies in transition must contend with a long period of adjustment to free labor markets. Moving from an almost totally centralized economy to a free market economy led to a sharp increase of the private sector by joint ventures, entrepreneurship, financial markets, and influx of foreign investments. Nevertheless, it raises basic questions in regard to wage determination, the negotiation process, how to persuade high quality workers from the public sector to move to private firms, and so on. In contrast to the classic conventional market economy model, suggesting that financial incentives e.g. wages, profit sharing, stock options, are the motivators to move to the private sector, the Polish economic system experienced problems of trust and stability during the transition. Thus workers in the public sector were reluctant to give up tenure and move to the private sector, which is characterized by higher risks. Not only is there an economic change involved in the transition, but also a cultural change in the workers' perceptions of the new and unfamiliar system. One of the key questions that emerge in the course of such a change is whether or not the private sector which is profit-driven should pay a premium to its workers that they do not receive in the public sector.

Following the collapse of communism, Poland's economic transformation was initially characterized by a rapid growth in private sector employment and an increased number of self-employment,¹ concurrent with a sharp rise in the national level of unemployment and widening inequalities in earnings. This might indicate a reallocation of labor resulting from a new process of wage determination. However, empirical studies attempting to identify the wage differences between the two sectors have not been sufficiently comprehensive. Although they shed some light on the distribution of earnings by sectors, the results are far from conclusive.

The aim of this paper is three-fold: (1) to identify the factors determining earnings in the Polish labor market; (2) to identify differences in earning levels between the private and public sectors; (3) and to compare the factors affecting wage determination in the two sectors. Addressing these issues we consider questions of: (1) ownership and its effects on earnings; (2) privatization and earnings; (3) possible consequences for self-employment, emerging new ventures and entrepreneurs. The latter is a very important question not only for economies in transition, but also for almost all developing countries and some developed countries.

I. Wage Determination in a Market Economy

One of the questions firms are preoccupied with are the wages paid to its employees. Since the Polish private sector has been development mainly by entrepreneurial activities and privatization of state ownerships, the question of relative wages between the private sector versus the public sector is of most importance to the Polish economy. No single theoretical framework yet exists for wage formation in both industrialized and transitional economies. The literature typically offers two opposing approaches (see: Polachek and Siebert 1996).² The first relates to a competitive labor market, and suggests that wages are determined by adjusting for the supply and demand of labor. The second approach refers to the non-competitive (non-clearing) view of wage formation. The competitive labor market theory implies that after controlling for differences in labor quality and workplace characteristics, the only gaps between the compensation of

¹ The share of the private sector in employment was about 73% in 2000 (22% of them are self-employed) 1999, 1999 but the public sector was still a very large employer, accounting for 50.1% 23% of total salaried workers, particularly those in highly skilled, managerial and professional positions.

employees in different sectors should reflect differences in the opportunity costs of employment across sectors.

Three theoretical models are suggested in the literature of labor economics to explain the fact that different firms or industries do not pay the same wages to comparable workers ([Krueger and Summers 1988](#)).³ These are: (1) agency theories (some enterprises are not profit maximizers); (2) efficiency theories (higher-than-market level wages contribute to higher productivity); and (3) bargaining theories (union or insider's power). Yet despite the attempts to account for observed differences, existing empirical evidence does not provide sufficient support for either the theory of competitive wage determination or for non-clearing wage determination to establish a consensus among researchers. Indeed, there is even conflicting evidence as to which sector (public or private) pays higher wages^{4,2}.

A. *Wage Determination in Transitional Economies*

Why should private entrepreneurship and joint ventures companies, in a transitional economy pay higher wages than state companies for workers with comparable characteristics and skills? Standard competition theory ([see Polachek and Siebert 1996, ch. 7](#))⁵ explains such discrepancies in earnings by means of the theory of compensating differences, i.e., the differences in the non-pecuniary job attributes and working conditions (including the disadvantages of certain jobs) between the public and private sectors. Workers, especially older ones, may dislike working in private sector firms, which impose stricter supervision of their effort (particularly in small and medium-sized firms), non-standard employment contracts, longer working hours, and lower job security (which is subject to fluctuations in product demand, etc.).

Earning gaps may also reflect differences in the nature of compensation packages in the sectors, with the public sector in former communist countries typically offering more fringe benefits. Furthermore, in terms of agency theory, some public economic units that provide public goods are not profit maximizers, and employee remunerations are determined by non-market considerations, such as civil servant salary scales. As an employer, the government can also constrain earning increases in the public sector and impose formal or discretionary measures to control wages, in contrast to the free competition in the private sector. For instance, in Poland, implementation of the tax-based income policy, linking tax payments to the average wage increase within a firm, gave managers an incentive to hire especially low-paid workers to avoid taxation.³ On the other hand, as the [present](#) government in Poland was formed as a result of the actions of the labor movement against the previous regime, political pressure from workers in the state sector may lead to a relaxation of some of the financial constraints imposed upon state enterprises during the stabilization and transformation of the economy.

State-owned enterprises also differ in their motivation to pay their employees higher wages than those paid in private enterprises. Some operate in a non-competitive environment,

² For instance, in Australia ([Borland et al. 1998](#)) the average weekly earnings in the public sector are significantly higher than in the private sector due to differences in employee characteristics. Differences in the rate of return to human capital characteristics, however, show higher earnings for private sector employees. In Turkey, Tansel ([1999](#)) found that the wages of male workers in public administration are at parity or lower than their private sector counterparts, and that wages in state-owned enterprises are higher than in private firms.

³ From the beginning, firms with foreign capital were exempted from the tax, and public services paid out of the state budget were subject to special regulations. In 1991, private sector firms were exempted from the tax, and the wage tax was reduced by 50% for joint stock companies owned by the State Treasury.

enjoying the status of a monopoly (utilities, telecommunications, insurance services, etc.), while others behave like labor-managed firms. Prior to restructuring and privatization, managers in worker-dominated enterprises had little incentive to act in favor of profitability, as their worker councils and trade unions strongly opposed layoffs. On the whole, the public sector is characterized by a higher rate of unionization, the wage scale is more centralized, and wages are not as flexible as in the private sector.⁴

B *The Impact of Private Sector Development on Earnings*

The labor market is generally viewed as a dynamic mechanism, with workers continuously flowing into and out of the private sector enterprises and joint ventures, which succeed or fail in their operation, on the one hand, and state ownership companies on the other hand. The effects of privatization on wage determination must thus be examined. The transition of the Polish economy led to a marked decrease in both output and employment in the public sector (with the latter lagging behind the former), along with a rapid expansion of the private sector. During such a transformation, earnings in the expanding private sector can be expected to be higher than in the contracting public sector, as a result of greater productivity.

Another explanation for the higher earnings in the private sector is the slow process of restructuring and lower level of productivity in state firms (with an accompanying decline in the demand for labor). This in contrast to higher efficiency in the private sector due to more advanced technology and higher employee motivation. In the first stage of the transition, workers with the highest entrepreneurial skills and human capital tend to leave state enterprises and start their own businesses or to become self-employed. Private companies are then forced to recruit new employees, mainly from the pool of the unemployed and new entrants into the labor market. In order to attract workers with a higher level of human capital away from state firms, they offer higher wages. Restrictions on entry into the public sector, due to reductions in its labor force, then enhance the power of employees with high skills and long tenure (insiders) in respect to the determination of wages in state-owned enterprises. Consequently, rises in value-added per employee in these firms may be absorbed directly into the wages of those already employed by them, rather than into new investments which would create more jobs. Finally, earning differentials between state and private sector employees may reflect differences in working conditions and characteristics that influence productivity.

C *Empirical Evidence*

In recent years, researchers have shown an increased interest in earning distribution in post-communist countries.⁵ Studies have uncovered four major facts regarding these economies:

⁴ In Poland, the trade unions, which are sharply divided along political lines, fight to protect wages, jobs, and social benefits, competing for new members by escalating their claims. The private sector, on the other hand, is characterized by a large number of small and medium-sized companies, with no, or significantly less powerful, trade unions. In November 1998, 60% of private sector employees and 99.2% of the self-employed worked in enterprises with less than 50 workers (author's calculations based on Polish Labor Force Survey).

⁵ See: Adamchik and Bedi (2000); Arjun Bedi (1998); "Sector Choice, Multiple Job Holding and Wage Differentials: Evidence from Poland," *The Journal of Development Studies* 35 (October 1998): 162-179; E. Brainerd (1998); "Winners and Losers in Russia's Economic Transition," *American Economic Review* 88 (5:1998): 1094-1116; R.S.; Chase (1998); "Market for Communist Human Capital: Returns to Education and Experience in the Czech Republic and Slovakia," *Industrial and Labor Relations Review* 3 (1998): 401-423; T. Eriksson, J. Gottvald and P. Mrazek, "Managerial Pay Determinants—Czech Evidence" (Paper presented at 10th Annual EALE

1) earning inequalities have increased compared to the period before the transition; 2) the rate of return to education is increasing while the rate of return to experience has decreased;⁹ 3) wage inequalities are higher in the private sector, where a certain premium has been emerging after controlling for labor market employee characteristics,⁶⁴⁰ and 4) gender wage differentials exist in favor of men.

Aggregated statistics [show a significantly lower level of average monthly wages in the private than in the public sector. However, this gap has been closing gradually in recent years, from 0.80 in 1993 to 0.87 in 2000.](#)

[More rigorous Empirical](#) studies of wage determination in the Polish economy have found that [the average earnings in the private sector are higher than in the public sector, with a certain wage premium in the private sector](#) was identified by Rutkowski (1996; 1997),⁴⁴ Newell and Socha (1998),⁴² [and Bedi \(1998\),⁴³ and Adamchik and Bedi \(2000\).](#) However, the size of the premium found in these studies was different.

Rutkowski (1996; 1997) found a significant rise in the rate of return to education, from 5% in 1987 to 7-8% in 1992-1996. In the private sector, each additional year of schooling yielded a 0.8%-0.9% higher return than in the public sector. Experience also incurred a higher rate of return in the private sector – 0.6% over the public sector. In contrast to Rutkowski's results, Newell and Socha (1998) demonstrated that in 1996, workers employed in the private sector (with the exception of university graduates) earned less than workers in the public sector on an hourly basis. Male university graduates employed in the private sector received 73.2% more than men with only a primary school education, as compared to 65.2% in the public sector.. When experience, tenure, and firm size were included in the analysis, an earning premium for private sector workers was found (men: $\beta = 0.093$ and $\beta = 0.096$; women: $\beta = 0.053$ and $\beta = 0.102$, in the public and private sectors, respectively).

Rutkowski (1996; 1997) and Newell and Socha (1998) used standard Mincerian type of earning equation estimated by OLS, while Bedi [and Adamchik \(2000\)](#) [and Bedi \(1998\)](#) employed a switching regression model that includes employee's choice of sector to estimate earning differences. Bedi found, that after controlling for differences in personal characteristics on

[Conference, 17-20 September, 1988, Blankenberge, Belgium\); R.J. Flanagan \(1995\), "Wage Structures in the Transition of the Czech Economy" \(Working Paper 95/36, International Monetary Fund\); D.C. Jones and T. Kato, "The Determinants of Chief Executive Compensation in Transitional Economies: Evidence from Bulgaria," *Labor Economics* 3 \(1996\): 319-336; Ch. Kroneke and K. Smith, "Gender Wage Differences During the Transition Period in Estonia" \(Paper presented at the 10th Annual EALE Conference 17-20 September, 1998, Blankenberge, Belgium\); Keane and Prasad \(2002\); A. Krueger and J.S. Pischke \(1995\); ; "A Comparative Analysis of East and West German Labor Markets: Before and After Unification," *Differences and Changes in Wage Structures*, ed. R.B. Freeman and F. Katz \(Chicago: The University of Chicago Press, 1995\); D.V. Nesterova and K.Z. Sabirianova, "Investment in Human Capital Under Economic Transformation in Russia" \(Economic Education and Research Consortium Working Paper Series No 99/04, Moscow, December 1998\); A. Newell \(2001\); A. Newell and B. Reilly \(1999\); ; "The Gender Wage Gap in Russia," *Labor Economics* 3 \(1996\): 337-356; A. Newell A. and M.W. Socha \(1998\), "Wage Distribution in Poland: The Roles of Privatization and International Trade, 1992-1996," *Economics of Transition* 6 \(1998\): 47-65; R.; Noorkoiv, P., Orazem, A., Puur, and M. Vodopivec \(1997\), "How Estonia's Transition Affected Employment and Wages \(1989-1995\)," \(Working Paper No. 1837, World Bank, 1977\); P.; Orazem P. and M. Vodopivec \(1995\); ; "Winners and Losers in Transition: Returns to Education, Experience, and Gender in Slovenia," *World Bank Economic Review* 9 \(1995\): 201-230; J. Planovsky \(1999\); and ; "Wage Developments in the Post-transitional Slovak Economy" \(Paper presented at the 11th Annual EALE Conference, 23-26 September, 1999, Regensburg, Germany\); J. Rutkowski \(1996; 1997\).;](#)

⁶ After reviewing earlier literature on wage determination in post-communist economies, Svejnar (1999, p. 2834) concludes that the evidence that private firms pay higher wages is mixed and relates only to some countries.

motivating sector choice, monthly earnings in the private sector were 17% higher than in the public sector. Adamchik and Bedi found especially a large wage gap between private and public sectors for workers with university diplomas. The so-called conditional wage obtained by male worker with 5 years experience and university education in the private sector is higher by 18% (for females this advantage is as compared to -23% for females.

II. Model and Data

A. A Model of Wage Determination

The present study is based on a model different from those employed in previous studies. It proposes an a-priori sequential order of characteristics for the determination of earnings in the labor market (Weisberg and Socha, 2002). It relies on the assumption that the different organizational settings, industries, and sectors of the economy in which workers are employed may have a differential impact on their wage level, in addition to the factors previously studied. For example, firms that earn more profits are able to pay higher wages, and thereby attract workers who can produce a higher quality of work. The research model and its sequential components appear in Figure 1.

The first “block” contains demographic variables, which are the characteristics of workers that represent their human capital value in the labor market and for which they wish to be compensated. Additional characteristics that relate to some sort of discrimination in the labor market, such as gender, are also included here. The second “block” contains the employee’s employment background, which adds further information about the workers, such as work experience. The third “block” contains characteristics of the employee in the current job, such as tenure. The fourth “block” suggests that ALL the previous “blocks” can have a different impact on various firms e.g. firm size. The fifth “block” suggests that ALL the previous “blocks,” even if identical, will operate differentially in the labor market in the private and public sectors.

B. *Earnings Function*

Drawing on the logarithmic wage function of Mincer (1974),¹⁴ the level of earnings was transformed into ln earnings. We then formulated the following earnings function:

$$\ln(\text{earnings}) = c + \sum a_i * H_i + \sum b_i * O_i + \sum c_i * M + d * O + f * LM + e$$

where:

H_i =	demographics and human capital (education, gender, age, age ² , marital status)
O_i =	employment background (occupation, number of years of work, past unemployment periods)
M =	current job characteristics (number of hours of work per week, job status: permanent vs. temporary)
O =	organizational characteristic (firm size)
LM =	labor market affiliation (public vs. private sector)
a_i, b_i, c_i, d, f =	coefficients
c =	constant
e =	error term

C. *Method*

Sample: Available data in the Polish labor market showed problems of data collection and reliability (Socha and Weisberg, 1999). Nevertheless, data from the Polish Central Statistical Office appears to be the best reliable source. Accordingly, the data for our study was drawn from the Polish Labor Force Survey (LFS) of November 1995, including 54,800 respondents, of which 31,480 (about 57%) participate in the labor market (whether employed or unemployed). A sub-sample of 20%, (6,296) of the 31,480 [employed workers](#) was selected randomly (by an SPSS procedure). Since some of the workers in the sample did not know to which sector they belonged, and others were reluctant to disclose their earnings, they had to be excluded, leaving 3,780 employees in the final sample.⁷ However, a comparison between the final sample and those who were excluded shows, that both groups display similar characteristics.

⁷ The relatively small percentage of respondents who completed the question regarding the nature of their employer as private or public sector resulted mainly from the ambiguity of firm ownership, due particularly to the manner of the privatization process in Poland.

D. Variables

Data included variables relating to demographic features, past and current employment, organizational characteristics and sector affiliation, and earnings. The dependent variable was defined as the salaries earned by Polish employees in November 1995.⁸ In accordance with the model in Figure 1, the independent variables were classified into five groups: (1) demographic and human capital variables, including age, gender, marital status, and education; (2) employment background variables, including type of job, past unemployment, and work experience; (3) current job variables, including tenure, number of working hours, and years of employment in current job; (4) organizational factor, consisting of firm size; and (5) sector affiliation, dichotomized into private or public sector.

III. Empirical Results

A. Bi-variate Analysis

Table 1 shows the mean values of each variable included in the model for the total sample and for the public and private sectors separately. The results of T-test analyses show whether the difference between the two sectors is significant for each variable. Finally, the correlation of the independent variables with earnings is presented for the total sample, and for each of the two sectors.

The bi-variate analyses presented in Table 1 show the significant correlations between the independent variables and earnings, along with the differences between the private and the public sector. We then conducted a multivariate analysis on earnings in the Polish labor market in order to identify the factors which have an impact on determining salaries, as well as to compare the process of salaries determination in the two sectors. What we were attempting to find was the answer to the key question in this study: Are earnings higher/lower in the private/public sector after controlling for variables with a bearing on the level of salaries in the labor market.

B. Multivariate Regression

The hierarchical regression analysis employed the five categories ("blocks") of variables which were entered into the regression equation sequentially according to our model (see Figure 1).

The results of the regression analysis appear in Table 2, and show the total explained variance of the regression to be 34.6%.

In the first group (block) of demographic and human capital variables, which contributed 25.5% to the total explained variance, age correlates positively ($\beta = .465$) and significantly with earnings, while age relates negatively to earnings ($\beta = -.538$). Men earn more than women ($\beta = -.295$), and married workers significantly more ($\beta = .062$) than single workers. Finally, the higher the education, the higher the earnings ($\beta = .164$ for university graduates and $\beta = -.162$ for primary school education; secondary school education was not found to correlate significantly with earnings).

⁸ Average gross monthly wages and salaries in 1995 was 690,92 zloty, of which 560,67 zloty were net earnings. Earnings are comprised of wage rates and basic salaries, premiums, bonuses (e.g., for seniority, serving in management positions, etc.), remuneration for overtime, paid lay-offs, holidays, sick pay, allowances and claims benefits, payments out of profit, and other forms of compensation.

For the second block of employment background variables, the contribution to the total explained variance was 3.2%. Managers and professionals were found to correlate positively and significantly with earnings ($\beta = .153$), and low- and unskilled jobs yielded a negative relationship ($\beta = -.090$) with earnings. Skilled workers and the technical and clerical occupational group produced no significant relationship with earnings. Past unemployment was found to have a significantly negative effect on earnings ($\beta = -.052$), while a significant positive effect was found for the number of years of work experience in the labor market ($\beta = .198$).

The third block of variables, relating to current job, contributed 1.7% to the total explained variance. Tenure yielded a significant effect on earnings ($\beta = -.057$), as did the number of working hours per week ($\beta = .115$). No significant effect was found for years of employment with current employer.

The fourth block of variables, representing the organizational characteristic of firm size, contributed 3.5% to the total explained variance and showed that working in a large firm has a significant and positive effect on earnings ($\beta = .155$), whereas working in a small company has a significant negative effect ($\beta = -.089$ and $\beta = -.063$ for 1-5 and 6-20 workers, respectively).

The last variable included in the analysis – sector affiliation - differentiated between the public and private sectors, and yielded a significant and positive impact on earnings ($\beta = .098$). Thus, after controlling for all the other variables in the equation, **earnings in the private sector are 9.8% higher than earnings in the public sector.**

C. *Earning Differences: Private versus Public Sector*

After determining that, ceteris paribus, earnings are significantly higher in the private than in the public sector, we used two separate regression models to analyze the variables that influence wage levels in the two sectors.

The findings of this analysis indicate that the predictive power of our model (explained variance) is stronger in the private sector (37.5%) than in the public sector (33.5%), with a smaller number of significant variables. However, it is important to identify the relative contribution of each variable group in the model and to measure its differential impact on earnings in the two sectors. The demographic and human capital variables have a sounder impact in the private sector since they contributed 30.1% out of the 37.5% total explained variance, whereas in the public sector their contribution was relatively smaller – 23.8%, of the total explained variance of 33.5%. This is probably due to the fact that the private sector behaves in a more rational manner and rewards workers according to their human capital. Table 3 presents the factors which have the strongest influence on earnings in the two sectors of the Polish labor market.

For the first block of variables, relating to bio-demographics and human capital, the following results were obtained:

Age: Age is virtually synonymous with experience in the labor market, and is one measure of firm-specific human capital. It was found to have the strongest impact on earnings in the private sector ($\beta = .928$), but a weaker impact in the public sector $\beta = .357$. This suggests that age has a higher rate of return in respect to wages in a competitive market, such as prevails in the private sector.

Education: Education might be considered the employee's general (as opposed to

firm-specific) human capital. Although no significant effect was found for secondary school education, post-secondary and primary school education were found to have an impact on wage determination in both sectors. For each of these two groups, post-secondary and primary school education, the rate of return to education is higher in the private sector ($\beta = .193$ and $\beta = .167$, respectively) than in the public sector ($\beta = .159$ and $\beta = .140$, respectively). In both sectors post-secondary education yields a positive (higher) relationship with earnings, whereas primary school education reveals a negative relationship, and is associated with lower earnings than other education groups.

Gender: There would appear to be gender discrimination in respect to wages in Poland. Men earn more than women in both the public and private sectors ($\beta = -.289$ and $\beta = -.292$, respectively).

Marital Status: Married workers get higher wages in the public sector than single workers ($\beta = .080$). In the private sector the impact of marital status is not significant.

The second block of employment background variables yielded the following results:

Work Experience: The number of years of work experience in the labor market shows a significant and positive impact only in the public sector ($\beta = .274$). Surprisingly, no significant effect was found for work experience in the private sector.

Occupation: The rate of return for managers and professionals is higher in the public than in the private sector ($\beta = .171$ and $\beta = .139$, respectively), with public sector managers earning more than their private sector counterparts. For low- and unskilled workers, earning differences are significant only in the public sector, where these people get lower wages ($\beta = -.124$).

Past Unemployment: The number of past periods of unemployment has a significant and negative impact ($\beta = -.080$) only in the private sector. This means that the less history of unemployment a worker has, the higher his or her earnings.

The third block of variables, current employment characteristics, produced the following results:

Work Input: The number of working hours per week has a significant and positive impact on earnings only in the public sector ($\beta = .125$). Surprisingly, no significant impact on earnings was found for this variable in the private sector.

Job Status: In both sectors, holding a permanent job has a significant impact on earnings, with temporary workers reporting lower earnings.

The fourth block, organizational characteristic, focused on firm size. Very large firms (over 100 workers) show a positive impact, meaning that earnings are higher here than in smaller firms. This finding is stronger in the public sector ($\beta = .158$) than in the private sector ($\beta = .109$). Small firm size, on the other hand, is a disadvantage in terms of wages in both sectors, and particularly in the private sector.

IV. Discussion and Conclusions Summary and Conclusions

A. Main findings

This paper attempts to answer one of the most fundamental questions for labor market analysis: What is the impact of supply-side factors on the price of labor, and how does firm ownership affect earnings in a transitional economy? This is particularly important in economies in transition where privatization, foreign investments, entrepreneurs, joint ventures, etc. are increasing dramatically.

Previous empirical studies conducted in Poland produced equivocal evidence of earning differentials between the private and public sectors. Neither Rutkowski (1996; 1997)¹⁷ nor Newell and Socha (1998)¹⁸ used the techniques that make it possible to distinguish between the two sectors in terms of a net earnings premium. Rutkowski focused on the differences in the rate of return to education and experience, while Newell and Socha extended this approach to include additional characteristics, such as history of unemployment, industrial sector, and firm size. Bedi (1998)¹⁹ and Adamchik and Bedi (2000) assumed, ~~without serious any discussion,~~ that workers have well-specified preferences and free choice with respect to the sector in which they wish to work.

We took a different approach, proposing a comprehensive model to predict earning levels. The model is organized in a sequential order and employs five blocks of variables: demographics, employment background, current job, organizational characteristics, and sector affiliation. The logic of the sequential model is strongly grounded in the theory of wage determination, which maintains that the largest part of variations can be explained by human capital factors.

The major results of our analysis indicate that, ceteris paribus, earnings in the private sector comprised of new entrepreneurs and privatized companies are higher by 9.8% than in the public sector. Comparison of the two sectors reveals human capital variables to have a much stronger impact on determining wages in the private sector than in the public sector. This means that from an economic perspective it is worthwhile for workers to be employed in private firms.

The rate of return to general human capital, in the case of higher education, as well as to firm-specific human capital, is also higher in the private than in the public sector. The results of the statistical analysis indeed indicate that earnings are affected mainly by the variables that determine workers' "human capital value" in the labor market. These include age, education, gender, and marital status. Furthermore, these factors were found to have a higher impact on earnings in the private sector than in the public sector. The finding that private sector workers obtain a special wage premium for being employed in a more "competitive" environment than workers in the public sector implies that the supply-side forces in wage determination in this sector play a rather minor role. On the other hand if public sector workers take into account the relative earnings opportunities, they may choose employment in the private firms, or start up their own entrepreneurial activity. Self-employment may be especially attractive for new labor market entrants. A group of special interest is that of managers and professionals. The surprising results showed that they earn higher wages and have a higher rate of return in the public sector as compared to their counterparts in the private sector. This finding can be related to two possible explanations: first, the larger size of establishments in the public sector, compared to the private sector. This is in contrast to compensations for executives in capitalist economies, where firms are much larger in the private sector than in the public sector. Second, executives in the Polish public sector enterprises have more power to demand higher salaries, even if their firms are less

profitable, since state ownership control is less efficient, as compared to privately owned firms.

Our major conclusion is that Poland is, in fact, moving from a centralized to a free market economy, in which market forces operate according to the dynamics of a classical free market economy. However, the existing wage differentials indicate that the country is still in a transitional phase, with different mechanisms of wage determination existing in the public and private sectors.

Our theoretical considerations suggest that wage differences may be related to the enterprise ownership that affects its aims and behavior. However we were not able to distinguish between various ownership types of firms, i.e. between state-owned enterprises, privatized formerly state enterprises and new private firms, which emerged by entrepreneurs and joint ventures. Accordingly, we cannot verify the hypothesis that public firms characterized by higher union density or firms with stronger bargaining power, pay better. However, we cannot conclude that the coverage of union negotiated wages is rather small in both sectors. Additionally, many trade unions have been committed to economic reform, directly involved in policy making decisions at the national level and did not exploit their power to push wages up.

For the same reason we do not have any information on the scale of fringe benefits offered by the state and private firms. Available evidence from manufacturing enterprises in the first stage of transition (see Estrin et al., 1995)²⁰ show that: (a) social benefits have not been greatly reduced in either the state-owned or the privatized firms; and (b) newly emerged private firms offer a smaller but significant scale of non-wage benefits and expanding the scale of their provision.

Lower wages can also reflect the wage controls imposed in public sector organizations e.g. education, health, public administration financed by external state budget. However this is less relevant to the business enterprises owned by the state. In Polish manufacturing state-owned enterprises actual wage increases exceeded the wage norm by a considerable margin, however, the most important argument is, that wage levels and wage increases operated at the enterprise level and not for the individual worker. Thus constraints are not imposed on individual earnings.

It is worth noting that even if wage differentials arise from different, not observed, factors or mechanisms, our results give some rationale for changes in public policy in both sectors.

B. *Policy Implications*

We would like to suggest several implications for economic and social policy during transition. Since human capital is highly rewarded in the private sector, policy makers would do well to support investment in human capital, concurrent with the privatization of the state economy, as this may be the best way to raise the nation's standard of living and efficiency gains. Promoting new small businesses, entrepreneurship and self-employment may act as a route out of poverty or disadvantage.

The return to education in Poland (about 7%-8% for each additional year of schooling) is still lower than in countries with a comparable level of economic development. The higher return to education in the private sector, and particularly at the university level, may represent an added incentive to increase private investment in education.⁹ Policies that affect the employment of an

⁹ The lower share of employees with university diplomas in the private sector implies that shifts in employment from the public to the private sector will raise the demand for less educated workers, which should put upward pressure on their wages. However, we are dealing with the 1995 PLFS, a time when the process of privatization undoubtedly contributed to the growing skill intensity in large private companies.

educated labor force in the private sector may partially offset the impact of the decline in demand for less skilled workers and the rise in structural unemployment due to the implementation of skill-biased technology, competition from other countries via foreign trade, or the decreasing size of sectors with a large share of low-skilled employees (agriculture and mining being the best examples).

The downsizing of the public sector will also lead to an increase in average earnings in the country, with distributional consequences. Since private sector firms generally pay more for workers at both ends of the educational scale, a decrease in the size of the public sector will result in an increase in the earnings of those with university, post-secondary, and primary school education.

Moreover, the pronounced earning differentials between the two sectors indicate that private sector wages are strongly linked to external labor market conditions. One reason for this may be the greater opportunity for wage bargaining at the enterprise level in the private sector (where trade unions are often absent), whereas in the public sector wage determination is centralized and more closely linked to state policies. The increasing fragmentation of the labor force between employees in the state sector who receive relatively low wages paid out of the national budget, and those in the private sector, who enjoy a wage premium, clearly indicates that public sector employees suffer more from the transition to a free market economy.

Consequently, earning differentials have undoubtedly contributed to the growing social discontent and political populism of recent years. Although they reflect an ongoing process of restructuring, there is a danger that wage disparities may lead to chronic disparities in living standards, and therefore undermine the sustainability of economic transformation. Moreover, because of the relatively low salaries paid in public sector organizations, workers may have little interest in their restructuring, thereby limiting the flexibility of the internal labor market.

Finally, from the perspective of macroeconomic policy, higher wages in the private sector may force public sector managers to raise wages in order to attract skilled workers, even when this is not justified by increased productivity, but comes at the expense of profits. This practice is, in fact, very common in certain industries, such as mining. A higher growth in wages than in labor productivity can fuel wage inflation.

The new model employed in our study thus provides clear evidence of wage differentials in Poland. It remains to be seen whether these will have a positive or negative effect as the country continues its transition to a free market economy.

REFERENCES:

- Adamchik, Vera A., and Bedi, Arjun S., 2000, Wage Differentials Between the Public and the Private Sectors: Evidence from an Economy in Transition, *Labour Economics* 7, -203-224.
- Bedi, Arjun S., 1998, Sector Choice, Multiple Job Holding and Wage Differentials: Evidence from Poland, *The Journal of Development Studies* 35, 162-179.
- Brainerd, Elizabeth, 1988, Winners and Losers in Russia's Economic Transition, *American Economic Review* 5, 1094-1116.
- Borland, Jeff, Hirschberg, Joe and Lye, Jenny, 1998, Earnings of Public Sector and Private Sector Employees in Australia: Is There a Difference? *The Economic Record* 224, 36-53.
- Chase, Ronald S., 1998, Market for Communist Human Capital: Returns to Education and Experience in the Czech Republic and Slovakia, *Industrial and Labor Relations Review* 3, 401-423.
- Estrin, Saul, Schaffer, Mark E., and Singh, Inderjit J., 1995, The Provision of Social Benefits in State-owned, Privatized and Private Firms in Poland (Centre for Economic Performance, Discussion Paper No. 223, London School of Economics)
- Flanagan, Robert J., Wage Structures in the Transition of the Czech Economy. (Working Paper 95/36, International Monetary Fund);
- Gregory, Robert G. and Borland, J. (1999), Recent Developments in Public Sector Labor Markets", in Orley C. Ashenfelter and Card David, eds.: *Handbook of Labor Economics*, Volume 3, Elsevier, Amsterdam.
- Keane, Michael P., and Prasad, Edward S., -2002, Changes in the Structure of Earnings during the Polish Transition, (mimeo, University of Chicago, Chicago Ill.).
- Krueger, Allan B., and Summers, Laurence H., 1988, Efficiency Wages and the Inter-industry Wage Structure, *Econometrica* 2, 259-293.
- Krueger, Allan B., and Pischke, Jorn S., 1995, -A Comparative Analysis of East and West German Labor Markets: Before and After Unification, in Richard B. Freeman and Lawrence F. Katz eds.: *Differences and Changes in Wage Structures*, (University of Chicago Press, Chicago Ill.).
- Mincer, Jacob (1974). *Schooling, Experience and Earnings* (National Bureau of Economic Research, Columbia University Press, New York City).
- Newell, Andrew T., 2001, *The Distribution of Wages in Transition Countries*, (IZA:

Forschungsinstitut zur Zukunft der Arbeit - Diskussionspapiere 40 /267, Bonn)

- Newell, Andrew T., and Reilly, Barry, 1999, Rates of Return to Educational Qualifications in the Transitional Economies, *Education Economics* 1, 67-84.
- Newell, Andrew T., and Socha, Mieczyslaw W., 1998, Wage Distribution in Poland: The Roles of Privatization and International Trade, 1992-1996, *Economics of Transition* 6, 47-65.
- Noorkoiv, Rivo, Orazem, Peter, Puur, Allan, and Vodopivec, Milan, 1997, How Estonia's Transition Affected Employment and Wages (1989-1995), (Working Paper No. 1837, World Bank).
- Orazem, Peter and Vodopivec, Milan, 1995, Winners and Losers in Transition: Returns to Education, Experience, and Gender in Slovenia, *World Bank Economic Review* 9, 201-230.
- Planovsky, Jan, 1999, Wage Developments in the Post-transitional Slovak Economy, (Paper presented at the 11th Annual EALE Conference, 23-26 September, 1999, Regensburg, Germany).
- Polachek, Solomon W., and Siebert Stanley W., 1996, *The Economics of Earnings* (Cambridge University Press, Cambridge).
- Rutkowski, Jan, 1966, High Skill Pay Off: The Changing Wage Structure during the Transition in Poland, *Economics of Transition* 1, 89-112.
- Rutkowski, Jan, 1997, Low Wage Employment in Transitional Economies of Central and Eastern Europe, *MOST* 7, 105-130.
- Socha, Mieczyslaw W., and Weisberg, Jacob, "Labor Market Data Collection in Poland during a Period of Transition from a Centralized to a Market Economy", *Monthly Labor Review*. Vol. 122, No. 9, 1999: 9-21.
- Socha, Mieczyslaw W., and Weisberg, Jacob, "The Impact of Poland's Transition to a Market Economy on the Public and the Private Sectors and Employees' Characteristics Differences", *International Journal of Manpower*, (forthcoming).
- Svejnar, Jan, 1999, Labor Markets in the Transitional Central and East European Economies, in Orley C. Ashenfelter and David Card, eds.: *Handbook of Labor Economics*, Volume 3, Elsevier, Amsterdam .
- Tansel, Aysit, 1999, Public-Private Employment Choice, Wage Differentials and Gender in Turkey, (Working Paper No 797, Economic Growth Center, Yale University).

Figure 1: A Multi-Factor, Sequential Model of Wage determination

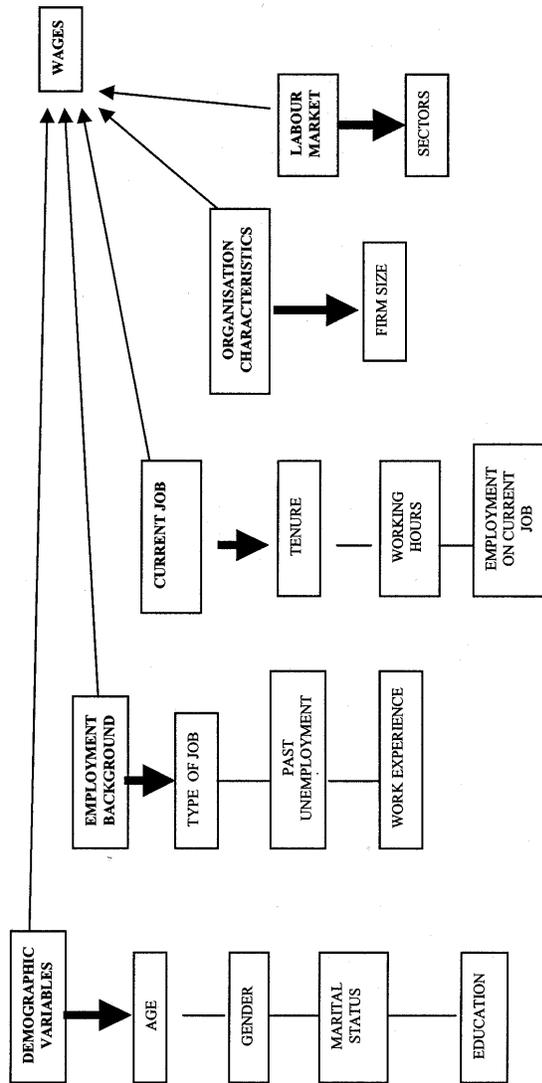


Table 1

Mean, Correlation with Earnings and T-Test Analysis for Total Sample, Public and Private Sectors

<u>VARIABLES</u>	Total Sample (N= 3780)		Public (N= 2516)		Private (N= 1230)		T-test between Sectors	
	Mean	Correlation Coefficient	Mean	Correlation Coefficient	Mean	Correlation Coefficient	F-Value	Significant
<u>Demographic Variables:</u>								
Age	37.996	0.145	39.291	0.142	35.312	0.152	125.46	.000
Gender (Male= 1; Female = 2)	1.47	-0.215	1.503	-0.240	1.389	-0.189	43.91	.000
Marital Status (Single = 0; Married= 1).	0.764	0.117	0.795	0.134	0.702	0.092	40.13	.000
Education (High)	0.176	0.266	0.211	0.241	0.102	0.362	69.12	.000
Education (Secondary)	0.328	0.003 ⁺	0.347	-0.018 ⁺	0.287	0.039 ⁺	13.80	.000
Education (Primary)	0.496	-0.204	0.441	-0.178	0.611	-0.258	97.65	.000
<u>Employment Background:</u>								
Occupation (Managers & Professionals)	0.170	0.266	0.207	0.237	0.093	0.372	77.31	.000
Occupation (Technical & Clerical)	0.324	-0.068	0.336	-0.074	0.299	-0.063	5.16	.023
Occupation (Skilled)	0.274	-0.008 ⁺	0.220	0.050	0.388	-0.085	120.98	.000
Occupation (Operators & Unskilled)	0.231	-0.153	0.237	-0.192	0.220	-0.093	1.40	.236
Past Unemployment (No. of Periods)	0.240	-0.109	0.144	-0.116	0.453	-0.099	213.89	.000
Work Experience (Years)	17.380	0.147	18.602	0.167	14.847	0.119	113.31	.000

Table 1 (Continued)

Mean, Correlation with Earnings and T-Test Analysis for Total Sample, Public and Private Sectors

<u>VARIABLES</u>	Total Sample (N= 3780)		Public (N= 2516)		Private (N= 1230)		T-test between Sectors	
	Mean	Correlation Coefficient	Mean	Correlation Coefficient	Mean	Correlation Coefficient	F-Value	Significant
<u>Current Job</u>								
Tenure (1= Permanent; 2= Temporary)	1.060	-0.095	1.035	-0.089	1.116	-0.101	99.13	.000
Working Hours (per week)	42.692	0.094	41.893	0.095	44.335	0.108	54.71	.000
Employment on Current Job (Years)	9.181	0.098	11.489	0.108	4.396	0.093	564.93	.000
<u>Organization Characteristics</u>								
Firm Size (1-5 Workers)	0.100	-0.104	0.035	-0.075	0.236	-0.133	414.17	.000
Firm Size (6-20 Workers)	0.177	-0.098	0.119	-0.104	0.298	-0.071	189.98	.000
Firm Size (21-50 Workers)	0.176	-0.042	0.182	-0.071	0.164	0.004 ⁺	1.79	.180
Firm Size (51-100 Workers)	0.119	-0.015 ⁺	0.135	-0.049	0.085	0.050 ⁺	19.816	.000
Firm Size (101+ Workers)	0.427	0.167	0.529	0.180	0.217	0.165	361.26	.000
<u>Labour Market:</u>								
Sectors (0-Public; 1- Private)	0.325	-0.013	nr	nr	Nr	nr	Nr	nr
Earnings	492.002	nr	494.214	nr	486.890	nr	.553	.457

Note: All correlations were tested by Spearman except age.

All the Correlations are Significant ($p < .05$) except those indicated by⁽⁺⁾

Table 2
Hierarchical Regression Analysis of Earnings in Poland (Total Sample)

	B	Std. Error	β	T	Sig.	$\Delta R^{(2)}$
(Constant)	5.848	0.099		59.114	0.000	
Demographic Variables						<u>25.5%</u>
Education (High)	0.175	0.022	0.164	7.780	0.000	0.082
Gender (1- Male, 2- Female)	-0.238	0.013	-0.295	-18.941	0.000	0.088
Education (Elementary)	-0.131	0.014	-0.162	-9.128	0.000	0.040
Age	0.019	0.005	0.465	4.114	0.010	0.028
AGESQ	0.000	0.000	-0.538	-5.144	0.000	0.012
Marital status (Single = 0; Married= 1)	0.060	0.015	0.062	3.893	0.003	0.005
Employment Background						<u>3.2%</u>
Occupation (Operators & Unskilled)	-0.087	0.015	-0.090	-5.714	0.000	0.011
Work Experience (Years)	0.008	0.003	0.198	5.310	0.000	0.008
Occupation (Managers)	0.165	0.023	0.153	7.317	0.000	0.007
Past unemployment (No. of Periods)	-0.035	0.010	-0.052	-3.373	0.001	0.006

Table 2 (Continued)
Hierarchical Regression Analysis of Earnings in Poland (Total Sample)

	B	Std. Error	β	T	Sig.	$\Delta R^{(2)}$
Current Job						<u>1.7%</u>
Working hours (per week)	0.006	0.001	0.115	7.502	0.000	0.013
Job Status (1-permanent 2-temporary)	-0.129	0.034	-0.057	-3.808	0.000	0.004
Organisation Characteristics						<u>3.5%</u>
Firm Size (101+ workers)	0.125	0.014	0.155	8.949	0.000	0.030
Firm Size (1-5 workers)	-0.130	0.024	-0.089	-5.454	0.000	0.003
Firm Size (6-20 workers)	-0.067	0.018	-0.063	-3.734	0.000	0.002
Labour Market						<u>0.7%</u>
Firm Ownership (0-Public, 1- Private)	0.086	0.015	0.098	5.853	0.000	0.007

- **$R^{(2)} = 34.6\%$**

Table 3

Hierarchical Regression Analysis of Earnings in Poland - Public vs. Private Sectors

	PUBLIC						PRIVATE						
	B	S.E.	β	t	Sig.	$\Delta R^{(2)}$	B	S.E.	β	t	Sig.	$\Delta R^{(2)}$	
(Constant)	5.889	0.128		46.087	0.000		5.941	0.145		41.052	0.000		
<u>Demographic Variables</u>						<u>23.8%</u>							<u>30.1%</u>
Education (High)	0.153	0.025	0.159	6.105	0.000	0.065	0.281	0.048	0.193	5.843	0.000	0.146	
Gender (1- Male, 2- Female)	-0.225	0.015	-0.289	-15.058	0.000	0.089	-0.260	0.023	-0.292	-11.237	0.000	0.081	
Education (Elementary)	-0.110	0.017	-0.140	-6.432	0.000	0.036	-0.149	0.026	-0.167	-5.699	0.000	0.031	
Age	0.015	0.006	0.357	2.602	0.009	0.028	0.038	0.007	0.928	5.265	0.000	0.026	
Marital status	0.078	0.018	0.080	4.340	0.000	0.014							
AGESQ	0.000	0.000	-0.486	-3.803	0.000	0.006	0.000	0.000	-0.841	-4.777	0.000	0.017	
<u>Employment Background</u>						<u>4.1%</u>							<u>2.7%</u>
Occupation (Operators & Unskilled)	-0.114	0.018	-0.124	-6.314	0.000	0.019						ns	
Work Experience (Years)	0.014	0.002	0.274	6.340	0.000	0.013						ns	
Occupation (Managers)	0.166	0.025	0.171	6.599	0.000	0.005	0.205	0.049	0.139	4.176	0.000	0.016	
Past unemployment (No. of Periods)	-0.024	0.014	-0.032	-1.760	0.078	0.004	-0.047	0.016	-0.080	-3.034	0.002	0.011	

Table 3 (Continued)
Hierarchical Regression Analysis of Earnings in Poland - Public vs. Private Sectors

	PUBLIC						PRIVATE						
	B	S.E.	β	t	Sig.	$\Delta R^{(2)}$	B	S.E.	β	T	Sig.	$\Delta R^{(2)}$	
<u>Current Job</u>						<u>1.9%</u>							<u>.5%</u>
Working hours (per week)	0.006	0.001	0.125	6.705	0.000	0.015							
Job Status (1-permanent 2-temporary)	-0.169	0.049	-0.061	-3.422	0.001	0.004	-0.107	0.047	-0.059	-2.280	0.023	0.005	
<u>Organisation Characteristics</u>						<u>3.7%</u>							<u>4.2%</u>
Firm Size (101+ workers)	0.124	0.016	0.158	7.940	0.000	0.033	0.111	0.031	0.109	3.530	0.000	0.030	
Firm Size (6-20 workers)	-0.066	0.023	-0.054	-2.847	0.004	0.002	-0.076	0.029	-0.082	-2.622	0.008	0.008	
Firm Size (1-5 workers)	-0.112	0.041	-0.049	-2.752	0.006	0.002	-0.143	0.033	-0.134	-4.364	0.000	0.004	

- $R^{(2)}$ = Public Sector = 33.5%; $R^{(2)}$ = Private Sector = 37.5%.
- ns = Not Significant