UDK: 331.5

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*The Evolution and Determinants of Slovenia's Wage Structure in the 1990s***

Summary

The paper analyzes the effects of Slovenia's transition to a market economy on the structure of wages. It describes the newly established wage-setting mechanism, discusses the factors expected to shape the wage structure and their predicted effects, and - based on the estimation of earnings functions - empirically analyzes the determinants of wages. The paper finds that during 1992-2001, the returns to education and work experience further increased, continuing their trend from the early transition. Controlling for skill and job characteristics, Slovenian women earned 9 to 10 percent less than men - the wage gap considered low by international standards. Wage inequality strongly increased in 1990-91, but the latter 1990s - the period when real wages rose for all points in the wage distribution - arrested this trend, due to disproportionate wage gains workers in the lower tail of the wage distribution, the development which can partly be attributed to the 1995 introduction of the minimum wage. Various firm characteristics also mattered, with wages of state, foreign-owned, and large firms exceeding wages in other ownership types, domestically-owned, and small firms.

Povzetek

Članek analizira učinke prehoda v tržno gospodarstvo na strukturo plač v Sloveniji. Za iztočnico opiše novi sistem določanja plač. Nato obravnava dejavnike, ki oblikujejo strukturo plač, opiše njihove pričakovane učinke in na podlagi ocenjenitve plačnih funkcij te dejavnike empirično analizira. Rezultati kažejo, da se je v letih 1992-2001 nadaljeval trend večanja nagrade po izobrazbi in delovnih izkušnjah, ki se je pričel v začetku tranzicije. V devetdesetih letih so plače žensk zaostajale za 9 do 10 odstotkov za plačami moških, pri čemer so upoštevane razlike v usposobljenosti med moškimi in ženskami in razlike v značilnostih njihovih delovnih mest. Po mednarodnih standardih je to razmeroma majhen razkorak. Rezultati tudi kažejo, da so se razlike v plačah močno povečale v letih 1990-91, v naslednjih letih, ko so se realne plače povečale v vseh delih plačne distribucije, pa se je ta trend zaustavil, kar je vsak deloma mogoče pripisati uvedbi minimalne plače v letu 1995. Članek tudi ugotavlja, da na plače vplivata tudi velikost in lastniška struktura.

1. Introduction

The transition to a market economy has produced dramatic changes in how the Slovenian labour market works. The related reforms shattered job security, replaced the previous rigid system of wage determination with collective bargaining, and strengthened financial discipline that squeezed subsidies for ailing enterprises. The disruption of the previously stable economic system caused major dislocations of workers. Not only the level of employment and unemployment, but also the transition rates among different labour market states and wages have been seriously affected. Employment has been drastically reduced, disproportionately affecting both young and old workers, as well as the less educated. Unemployment has soared, rising from its virtual absence in the mid-1980s into double digits in the 1990s. The probability of an employed worker becoming unemployed has increased sharply, while the probability of changing jobs has declined

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** I would like to thank the Statistical Office and the Pension and Disability Fund of the Republic of Slovenia for providing data, Slavi Pirš for useful consultations on the Slovenian wage system, and Zala Kalan and Tomaž Rejec for their excellent work in processing the data.

considerably. The chances of finding a job after becoming unemployed have declined.

Not surprisingly, the transition also produced large changes in the structure of wages. In their study of changes to the wage structure in Slovenia's early transition (1987-91), Orazem and Vodopivec (1995) revealed several dramatic findings:

- Relative wages and employment had risen for the most educated and fallen for the least educated. The apparent shift in relative labour demand towards the most educated had occurred in all industries.
- Relative wages and employment had risen with years of work experience. At pensionable age relative wages were growing even faster, while relative employment had plummeted – the effect consistent with a labour supply shock for pensionable-age workers.
- Women had gained relative to men in both wages and employment primarily because women occupied sectors less adversely affected by the transition.
- Overall wage inequality had increased.

The purpose of the present study is to follow up the study of Orazem and Vodopivec (1995) and investigate the development of the wage structure during the 1990s. It attempts to answer the following questions: Did returns to education and skills continue to grow during the 1990s? What happened to the gender-wage gap? What were the effects of the 1995 introduction of the minimum wage? Did any particular sector wages lag behind the economy average? How did firm characteristics (like ownership and financial standing) affect the formation of wages? What was the overall effect of various forces on wage inequality? The key findings of the study are that, during the 1990s, the returns to education and work experience continued to increase; that the female wage gap stabilised at about 9 -11 percent; and that – due to the disproportionate gains of the lower tail of wage distribution –wage inequality stopped growing (although those at the very top of the wage distribution also gained in relative terms).

The paper proceeds with an institutional background describing both the key features of the wage-setting mechanism under self-management and of the newly established wage determination system that was set up after the demolition of the previous system (Section 2). The forces expected to shape the wage structure during the transition, and their possible effects on wages, are discussed in Section 3. Section 4 describes the data sources, while Section 5 presents the results of the empirical analysis of the evolution of wages in 1992-2001. Section 6 provides some concluding remarks.

2. Institutional Background: Wage Setting in the 1990s

The systemic and political changes brought by transition reforms unleashed powerful forces which profoundly influenced labour market outcomes, including the determination of wages, in the 1990s. In this section we review the main institutional features that shaped the wage-setting process in the self-managed system, and the legislative and bargaining framework which was put in place after it was dismantled.

Under the self management system, the absence of explicit property rights dictated a specific wage-setting mechanism. Both government and workers had clearly delineated roles. The government set the firm's wage bill (called a 'socially warranted' wage bill) with the aim to even out differences in pay among firms – the objective was achieved through a massive inter-firm income redistribution.[1] Within government-fixed boundaries, the workers' role was to set individual wages within the firm. The wage scale was determined by a referendum of employees. Not surprisingly, in comparison to capitalist firms Yugoslav firms had extremely compressed wage scales. For example, in an enterprise with several thousand workers the pay of the highest paid manager was 4.54 times that of the lowest paid worker (for further details on wage determination, see Vodopivec, 1993).

The 1988 Yugoslav Law on Enterprises transferred decision-making rights from workers to equity owners, thus formally ending the era of self-management. Important changes occurred in both employment and wage poli-cies. The main novelty in the area of employment was the employer's right to lay off a worker (although this option was extremely costly for the employer). On the wage-setting front, the self-managed mechanism was replaced by a system with three components: the Labour Code, collective bargaining, and incomes policy.

The Yugoslav Labour Code was accepted in October 1989, while Slovenia adopted its own in April 1990 (Official Gazette of Slovenia, No. 14/ 1990) and amended it several times during the 1990s (a new Labour Code took effect in January

[1] For a quantification of redistributive flows for Slovenian firms in 1986, see Vodopivec (1993).

2003). The 1990 Labour Code removed administrative con-straints and collective decision-making, leaving wage determination as a managerial responsibility. Managerial discretion to set pay was not absolute, however the law introduced collective bargaining, a genuinely new component of wage setting. The outcomes of collective bargaining are binding for all employers (regardless of their participation in the bargaining process). The first general collective agreement for Slovenia was ratified in August 1990 and followed by several other general, as well as numerous industry collective agreements. The latter ones tend to follow the then-prevailing general collective agreement, but could specify more detailed conditions of pay as deemed appropriate for their specific areas.

General collective agreements, among others, prescribe the components of the wage and determine fringe benefits (such as the duration of vacations, reimbursement of transport costs for travelling to work, meals etc). According to these agreements, the components of wages are: (a) the basic wage, whose floor level is determined by collective and industry agreements; (b) wage supplements, for example, for difficult working conditions and for seniority; (c) supplements for an individual's successfulness; and (d) an 'income-sharing' component paid on the basis of a firm's business success.

The largest component of a worker's pay is the basic wage (usually determined as a multiple, say 1.35, of the minimum basic wage as determined by collective agreements). To determine the basic wage, collective agreements classify workers in nine categories, prescribing for each category its own minimum, basic wage (precise inflation-escalation clauses determine the basic wage for each category for each month). The classification of workers is based on the levels of education and – formal and on-the-job – training, or 'professional qualification.' The basic wage for the highest category has been repeatedly set at three times that of the lowest category (some industry agreements set slightly higher ratios). Up until 1997, firms in poor financial standing (a term that was not precisely defined) had the right to reduce the basic wage levels (by up to 20 percent till 1995, and by 10 percent during 1995-97). As an illustration, below we present the basic wage scale mandated by the supplement to the 1997 general collective agreement (Official Gazette of the Republic of Slovenia, No. 40, June 1997):

	Class	Coefficient	Basic monthly gross wage for full-time work (in SIT)
1	Simple work (no training, unfinished primary school education)	1	47,978
2	Less demanding work (short training, completed primary school education)	1.1	52,776
3	Medium demanding work (up to two years' professional/vocational education)	1.23	59,013
4	Demanding work (up to two-and-a-half years' professional/vocational education)	1.37	65,730
5	More demanding work (3 years of professional/vocational education, with a foreman's exam, or 4-5 years of such education)	1.55	74,366
6	Very demanding work (2 years of college-level education)	1.85	88,759
7	Extremely demanding work (4-5 years of college-level education)	2.10	100,745
8	Most demanding work (master's degree)	2.50	119,945
9	Exceptionally important and most demanding work (doctorate)	3.00	143,934

Bargaining agreements also specify many other conditions of pay. One of the most important ones is a seniority supplement that determines the minimum rate of returns to seniority (work experience). For example, Article 47 of the 1997 general collective agreement (Official Gazette of the Republic of Slovenia, No. 40) prescribes that a worker's pay is to be increased by at least 0.5 percent of their basic wage for each year of work experience (the same stipulation was in effect throughout the 1990s).

Parallel to the structure of basic wages imposed by collective agreements, a 1995 social agreement also introduced an inflation-adjusted minimum wage (Official Gazette of Slovenia No. 22/95). The minimum wage exceeds the basic wage of the lowest paid workers as stipulated by collective agreements valid for the same period because the minimum wage provision relates to the total payment received by the worker (including various supplements), and the basic wage is only one –

albeit the main – component of pay. For example, the minimum monthly wage in April 1997 (at the time the 1997 collective agreement was introduced) was SIT 56,781, compared to the basic wage of SIT 47,978 stipulated by the general collective agreement (see the Table above).[2]

Until 1997, incomes policies (which were a staple of the self-management system) continued to be an important component of the wage-setting system. The government repeatedly accepted laws which together limited the growth of the overall wage bill of enterprises. Since 1997, there has been no incomes policy general limit on the overall wage bill, and the only limitation on wage growth has been the requirement that the annual growth of managerial pay (the pay of highly-paid workers under so-called individual contracts) should be matched by growth of the payroll of those workers covered by collective agreements.

From the above description it is clear that Slovenian wage setting is a very structured, formally determined system. To what extent is this system responsive to market forces? In particular, one could hypothesise that wage policies which set minimum pay, index wages to inflation and fix the allowable range of pay within firms tend to compress wages. In what follows, we will investigate how the system works.

3. The Transition's Expected Impact on Wages

In transition economies one can hypothesise that the wage structure has been influenced by a whole series of forces. First, and arguably the most important, there are forces associated with the correction of distortions created by systemic constraints on the labour market – and the wage structure in particular – under socialism. Second, there are both short- and long-term changes in the structure of production that may affect the structure of wages. Third, there are short-term forces associated with disequilibrium and uncertainty created by the transition itself. Because these forces all came into play simultaneously, it is difficult to isolate the impact of any single factor.

Correction of distortions created by systemic constraints in the labour market. Under socialism, labour markets were characterised by 'over-full employment'. Citizens were obliged to work as a social responsibility, while social/state sector establishments were encouraged or pressured to create jobs beyond their production needs. In return, firms were insured by the state against losses. Egalitarian wage structures were imposed through so-called tariff systems and classified jobs in skill grades with centrally assigned wage rates. In Slovenia, the same outcome of wage egalitarianism was produced by the workers' collective decision-making on relative wages, coupled by government control of firms' payrolls (see above). These egalitarian pay policies tended to limit pay to skilled labour relative to the pay of unskilled labour, reducing gains from schooling, particularly university education.

Given the low returns to education, did the socialist systems under-invest in education? In principle, the answer is ambiguous: even though returns to skill acquisition were constrained by the system so too were the costs of skill acquisition. Education through the university level was provided free, and stipends were often granted to students while at school. This meant that the direct and opportunity costs of education were much lower than in the West. Data on tertiary enrolments in transition countries, however, overwhelmingly show that the demand for skilled labour grew tremendously – in the 1990s, the increase in the number of students ranged from 50 percent in Lithuania to a record 290 percent in Poland, with Hungary, Latvia, Romania and Slovenia, among others, more than doubling their student populations (Kraft and Vodopivec, 2002).

Partly due to society's pressure to work and partly due to child-care subsidies, women in socialist economies enjoyed higher labour force participation rates than women in Western economies. Relative wages for women were similar and in Slovenia they were even higher than in the West. Egalitarian wage policies tended to limit differences between all groups so that it might be expected women would have been treated relatively well in socialist systems.

Does the removal of these systemic constraints on labour market adjustments result in a move towards labour market outcomes more typical of Western economies? By definition, egalitarian wage policies involve implicit or explicit transfers from

[1] In addition to basic and minimum wages, Slovenia has also introduced the so-called 'guaranteed wage' used as a basis for the payment of certain cash benefits (such as social assistance). At its inception in 1982, the guaranteed wage applied to workers in illiquid enterprises, to be paid from special government reserves. Its level was partly based on the minimum basket of commodities, but it also included elements that had nothing to do with poverty (like the average number of family members per wage earner in the family). Currently, no wages or earnings are based on the guaranteed wage – all that has been preserved is the role of the guaranteed wage in defining cash benefits. However, the less-than-COLA adjustments in its level since 1982 further eroded the connection of the guaranteed wage to the subsistence level.

high-wage to low-wage workers. The removal of these egalitarian policies would be expected to increase wage inequality. Workers with skills in relatively stronger demand in the transition will have rising wages relative to those workers whose skills have become less necessary. The removal of state subsidies for failing firms meant that workers in profitable firms could gain relative to workers in unprofitable firms. Another consequence of the transition relates to the labour market position of women. Because women fared relatively well under socialism, one might presume that they would lose in the transition. If the formalised wage system under self-management limited forms' ability to discriminate, then the removal of these institutions might be expected to reduce the relative earnings of women.

Effects of changes in the structure of production. The transition caused both short- and long-term changes in the composition of final demand for products in Slovenia and these changes may have different effects on workers with different skills. Because socialist economies placed a particular emphasis on manufacturing and, within manufacturing, on heavy industries such as metallurgy, the abandonment of subsidies for these industries caused a permanent reduction of labour demand in those sectors. At the same time, service (for example, finance, insurance and real-estate, consulting, information services, catering and tourism) and retail sectors were underdeveloped under socialism and would be expected to have expanded in transition. In Slovenia, shifts seen in the final demand for products also represent a move away from relatively low-skill-intensive sectors (manufacturing, mining) towards more high-skill-intensive services.[3] The sectors adversely affected by such changes in production were also predominantly male, whereas the expanding sectors were relatively female intensive. Thus shifts in the composition of final demand tended to favour more educated workers and women.

The main short-term shift in final demand was associated with the breakdown of traditional trade links between Central and Eastern European countries associated with currency inconvertibility and the break up of the former Soviet Union. These problems were compounded by war which virtually stopped trade between Slovenia and most of the other former republics of Yugoslavia. The traded goods sectors and transportation also tended to be low-skill-intensive, exacerbating the shift in relative labour demand away from those less educated.

Forces associated with disequilibrium and uncertainty created by the transition. Additional short-term shifts in relative labour demand toward more educated workers are due to the process of transition itself. Disequilibrium and uncertainty create a greater need for entrepreneurial skills that would have been less in demand under the socialist system. Schultz (1975) argued forcefully that stationary states do not require entrepreneurial skill. Economic systems characterised by constancy 'place no premium for the human ability to deal with secular economic change.' The socialist education system, geared towards producing skills needed by 'steady state' enterprises, would not have been geared toward producing entrepreneurial skills that were unnecessary under the old system. Because entrepreneurial skills would be in short supply relative to their enhanced usefulness in transition, these skills should be rewarded with higher relative employment and wages. If entrepreneurial ability is complementary to education and skills in general, then the relative wages and employment of the most educated groups should rise in the newly emerging market economies relative to pre-transition returns when entrepreneurial skills were not in such demand. Schultz stressed that the presumed gains for entrepreneurial ability during periods of change are relative gains, meaning that it is unnecessary that entrepreneurs be better off than they were before the disequilibrium for the gains to be realised. 'For people to have gains from their resource allocations does not imply that they are necessarily better off than they were prior to the disequilibrium, but it does imply that their economic position has been improved relative to what it would be if they had stayed in equilibrium' (Schultz 1975, p. 834).

Other forces associated with the transition. There may also be other forces at work that influence labour market outcomes. For example, early retirement programmes affected the supply of experienced labour in Poland and Slovenia, among others. In Slovenia, returns to retirement were particularly attractive since pensions were fully indexed to inflation, whereas wages were not. As a consequence, retirements exploded in the early transition when the economy experienced bouts of hyperinflation. By making experienced workers artificially scarce, pension policies tended to push up wages for workers of a pensionable age.

To summarise: several factors may have caused the premium associated with skilled labour

[3] At the beginning of the transition, manufacturing, agriculture, and construction were those sectors with the share of low skilled labour (those with a primary school education or less) of about 50 percent.

(education and, to a lesser degree, experience) to rise during the transition. Corrections of previous distortions, and particularly changes in the composition of final demand and the existence of disequilibrium, all point to shifts in relative demand for skilled workers. Returns to experience, to the extent experience reflects the accumulation of skills, may also increase but in a market environment one can hypothesise an inverse U-shape of returns (that is, a reduction of returns for a certain year before retirement). There may also be a temporary increase of returns to education caused by the heavy withdrawals from the labour market seen in the early 1990s to escape the pension reform, to the extent that this process was more intense for lower-paid workers whose retirement was relatively more attractive. Women might have been disadvantaged due to the dismantling of egalitarian policies which allowed them to fare relatively well under socialism – but the favourable relative demands for female-intensive sectors may have countered these forces.

4. Data Sources

The empirical analysis rests on three unusually rich administrative databases covering all of Slovenian workforce participants and all business subjects. Common identifiers allow us to combine records from the different bases. Below we briefly describe the databases.

1. *Work history database* (maintained by the Statistical Office of Slovenia). This database was established by a census of workers in 1987 and initially included information on all formal sector jobs in progress as of 31 December 1986. Information collected about the individuals involved in these jobs included age, educational attainment, gender, years of labour market experience counted towards eligibility for the state-sponsored pension plan, and years with the current employer. The dataset also included information on the type of appointment held (fixed-term versus permanent) and on certain other aspects of the terms of employment. The database has been updated to include information on job terminations and job commencements, as well as some information on changes to the terms of employment. All information used to update the base was derived from forms employers were required to file in connection with the maintenance of social insurance records (the so-called M1, M2, and M3 forms). They contain information on the starting and ending date of an employment spell, the type of appointment, occupation, and employer's identification code, and personal characteristics (gender, age, education). The dataset covers the 1992-2001 period.
2. *Workers' earnings database* (maintained by the Pension and Disability Fund). The database contains information on earnings associated with each employment spell of workers employed in the formal sector. For each year (or part of an employment spell within a year) the information collected includes, among others, the amount of earnings, the number of hours worked in regular time and overtime, and the starting and ending dates of the earnings period. The dataset covers the 1992-2001 period.
3. *Accounting data on enterprises* (maintained by the Agency for Payments). Data consist of yearly profit and loss statements and balance sheets for all businesses incorporated in Slovenia (data for 1997-98 were available).
4. *Business registry of firms* (maintained by the Statistical Office of Slovenia). The registry records, among other items, the following information about each firm: the starting date (and, if it exists, the ending date), organisational type, ownership type, whether the firm has domestic or foreign owners, and what is the size of the firm. The dataset covers the 1992-2001 period.

5. Results of the Empirical Analysis

Below we describe our analysis of wages for the 1992-2001 period. We first analyse the determinants of wages via the earnings function approach, and then investigate the evolution of wage inequality. The regression analysis for the 1992-2001 period does not reveal any dramatic changes in the structure of wages, in contrast to the large changes seen in the wage structure for the 1987-91 period reported by Orazem and Vodopivec (1995). Similarly, the analysis below suggests that, after the strong rise in wage inequality at the onset of the transition to a market economy, wage inequality stopped increasing in the second half of the 1990s.

Results of the earnings function estimation

To analyse how the earnings structure in Slovenia changed during 1992-98, we apply the standard Mincerian earnings function approach to the Slovenian data described above. The dependent variable is W_t, the natural logarithm of the average monthly wage over a portion of the employment spell which takes place in a certain year. The vector

of independent variables, X_t, includes several sets of dummy variables, indicating (a) gender, (b) level of formal education; (c) years of tenure (that is, employment with the same firm); (d) work experience (a cumulative period of employment, which may be spent with different employers); (e) type of appointment (permanent, temporary or internship position); (f) number of shifts in the work place; and (g) a set of monthly dummy variables indicating the months of the year in which the individual worked.[4]

The wage function in year t can be written as:

$$(1) \qquad W_{it} = X_{it}ß_{it} + e_{it}$$

where e_{it} is an error term. Changes in the earnings structure over time are measured by changes in the coefficient, $ß_{it}$. The joint restriction, that over two periods t and t', $ß_{it} = ß_{it'}$ can be tested to establish whether changes in the earnings structure are statistically significant.

Below we discuss the results of the estimated earnings functions for 1992-98. Of interest are both the effects of the abovementioned independent variables, as well as their changes over the period under investigation.[5]

Male-female wage gap. Controlling for skill and job characteristics, during 1992-2001 Slovenian women earned 9 to10 percent less than otherwise identical men. The dramatic fall of the wage gap reported by Orazem and Vodopivec (1995) for the very first years of transition stopped and was very slightly reversed in 1992-2000 so that in 2001 the gap amounted to 10 percent (see Table 1, Panel A). The narrowing of the wage gap at the onset of transition was produced, above all, predominantly by women's industries being hit less hard than predominantly male industries and, viewed from that aspect, the slight reversal of the trend comes as no surprise. That the gap did not widen more substantially in the late 1990s and that it is very low by international standards is certainly a positive development.

Education. The coefficients for the education dummy variables in the earnings function are remarkably stable throughout the 1990s. In fact, relative to the least educated group (those who did not finish primary school), the two most educated groups slightly increased their advantage, whereas the two groups at the bottom (those who finished primary school and have a vocational education) slightly lost their advantage (see Table 1, Panel B).[6] Converted to yearly rates, returns to education in 2001 amounted to 1.7 percent with those with a primary school education, 3.4 percent for those with a vocational education, 8.3 percent for those with a high school education, 14.7 percent for those with a two-year college degree and an astoundingly high 19.6 percent for those with a four-year college degree.[7]

Returns to work experience. In the 1990s there were no dramatic changes in returns to experience and tenure (Table 1, Panel C). The premiums showed a slight tendency of shrinking throughout the 1990s, with workers having low work service increasing their premiums and those with a long service decreasing theirs. Still, in 2001 each year of work experience brought a roughly one percentage point increase in wages. For example, there was a 9 percent premium for experience from 6 to 10 years, a 27 percent premium for experience from 26 to 30 years, and a 31 percent premium for experience of 30 to 35 years. This pattern differs from international experience (see below) and is consistent with the regulations described above of collective agreements which call for at least a one percent increase in the basic wage for two years of work experience. The identified pattern of wages thus suggests the heavy influence of the institutional set-up on wages.

Returns to job characteristics and type of ownership. The results given in Table 1 (panel D) show that in 2001 workers with fixed-term appointments (also interns under probation) were earning 12 percent less than otherwise identical workers, and interns with a permanent appointment were paid 5 percent less. Moreover,

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[4] Earnings reported to the Pension and Disability Fund were obtained from employment spells of different lengths and in earned in different months of the year. To control for wage inflation over the reported spell, monthly dummy variables are used. This problem was more acute in the early 1990s.

[5] Orazem and Vodopivec (1995) provided a similar investigation of the 1987-1991 period.

[6] This contrasts sharply with the pre-transition results. Bevc (1993) reported that during 1976 and 1986 private returns to education in Slovenia increased dramatically for workers with a primary school education (from 13.6 to 18.5 percent) and only slightly for those with a tertiary education (from 4.3 to 5 percent), and that they decreased for those with a high school education (from 6.9 to 5.2 percent).

[7] The computations assume that these groups spent 11,12,14, and 16 years to obtain their education, respectively, and that the base category, those with an unfinished primary school, spent 5 years at school. The coefficients β_i, reported in Table 1, are converted to returns as $100*(\exp(\beta_i)-1)$.

while interns improved their position in comparison to the early 1990s, fixed-term workers received slightly worse relative pay. Interesting differences in pay are also associated with the type of shift work (Table 1, Panel E). While in general the differences seen in pay among workers with different shifts were reduced in the 1990s, in 2001 workers employed in three-shift establishments earned 18 percent more than those in one-shift establishments; block-time work and work in more than three-shift establishments brought about a 10 to11 percent premium. Interestingly, returns to type of ownership do not reveal any strong differences. In particular, in some years workers in private firms were paid a 8 to10 percent premium over workers in state-owned enterprises, but in some other years they were paid worse. The evidence thus suggests that wages do not differ greatly across firms of different ownership types.

Firm/sector determinants of pay. Our data for 1997 and 1998 also allow us to investigate how different types of firms, and the business results of firms, affect a worker's pay. The results offer several interesting insights. First, both industry and geographical variables matter (see Table 2). For example, in comparison to manufacturing, utilities, trade and transportation and communications pay higher wages to otherwise identical individuals. Moreover, employers in some major cities (including the capital of Ljubljana and particularly in Nova Gorica, a city on the Italian border) pay higher wages than employers in rural areas. Second, in comparison to private employers, firms in state and social ownership pay higher wages, with other things being equal. Particularly surprising is the premium in state enterprises, which in 1998 amounted to 19 percent. Third, wages in large enterprises are also associated with extra pay – in 1998, the wage in an enterprise with over 1000 workers exceeded by 34 percent the wage of otherwise identical worker in a firm with less than 5 workers.

Some other firm characteristics were also associated with wage gains or losses. Interestingly, in 1998 those firms whose revenues from sales abroad exceeded domestic revenues paid, on average, 6 percent lower wages than domestically-oriented firms. Moreover, the pay in profitable firms was, other things being equal, 9 to11 percent higher than in loss-making firms. Finally, the wages of workers who worked for foreign owners were 6 to 10 percent higher than those of otherwise identical workers employed by domestic owners.

International comparison. How do the above results on the determinants of the wage structure compare to those of other economies? First, as alluded to above the female wage gap in Slovenia seen in the 1990s is deemed very low by international standards. For example, in the late 1990s the gap was 29 percent in Bulgaria, 24 percent in Hungary, 25 percent in Macedonia, and 31 percent in Poland (Rutkowski, 2001). Second, virtually all studies of transition economies find that returns to education have increased and that higher increases are recorded by more educated groups (Rutkowski, 2001, Orazem and Vodopivec, 1997). Third, our results on the returns to experience, however, are in contrast with those of most other studies. Both by the pattern (the fact that the premium continues to *increase* for workers with over 30 years of experience), as well as by its size, the established pattern of the experience premium in Slovenia deviates from that observed in most other transition economies (see Rutkowski, 2001). Some other findings (for example, that larger firms pay higher wages) also conform to the international experience.

Wage inequality. Orazem and Vodopivec (1995) reported that during 1987-91 the dismantling of government controls produced a strong rise in wage inequality: wage variation increases between and within skill groups, within groups with identical industry and human capital characteristics, and across firms within an industry. Our results show that later in the 1990s wage inequality only modestly increased: the Gini coefficient increased from 28.9 in 1992 to 30.0 at the end of 1994, it fell to 29.1 following introduction of the minimum wage in 1995, and rose again to 30.6 in 2001. Interestingly, the coefficient of the determination of the earnings function steadily increased during 1992-2001, suggesting that the reward for observable skills became more equal.

To obtain further insights into the effects of the minimum wage, we analyse the distribution of wages for 1992, 1995 and 1998 (Figure 1). To correct for wage inflation, the 1995 and 1998 wages were deflated by the ratio of median wages in 1995 and 1998, respectively, to the median wages in 1992 (note that this forces the median of the three distributions to be equal, making it easier to visualise changes in the wage distribution). While the three distributions are not strikingly different, three features are however noteworthy. First, the mode of the 1998 distribution is the highest, followed by the mode of the 1995 distribution. Second, both later distributions are less skewed to the left. These two observations suggest that differences in pay narrowed later in the 1990s. Third, there seems to be a bunching of the 1998 distribution at SIT 19,000 (noting that these are 1992 prices), an indication that the minimum wage regulations introduced in 1995 are binding.

Quite intriguing results are also offered by inspecting the gap between the richest and poorest. Figure 2 shows the percentage change in real wages from 1992 to 1995, and again from 1995 to 1998, for various points of the wage distribution. Both periods brought about a rise in real wages but not at the same rate for different points in the wage distribution. While the largest gains in the first period are concentrated in the middle and very top of the wage distribution, the largest gains in the second period belong to the lower tail (similar are the combined gains of the two periods – the upper and lower tails both gained). The forces behind these changes need further investigation, but it is conceivable that introduction of the 1995 minimum wage helped to improve the relative position of those in the lowest percentiles.

How can one square the results about the rising returns to education established above with the relatively stable wage distribution? One possible explanation lies in the radical changes to the composition of the Slovenian workforce: during the 1990s, the workforce became dramatically older. While in 1990 32.1 percent of the workforce was younger than 30, by 2001 the comparable figure was only 24.9. At the same time, the number of students enrolled in tertiary education increased dramatically, from 34,000 in 1990 to 88,000 in 2001. The reduced share of young, low paid workers must have contributed to the greater wage equality. Presumably also working in the same direction is the fact that first-time job entrants in the late 1990s were more educated than those in the early 1990s. Further, the minimum wage introduced in 1995 may have helped to reduce wage inequality.

6. Concluding Remarks

The key findings of the study may be summarised as follows. During the 1990s, the returns to education and work experience further increased, continuing their trend seen from the early transition. Controlling for skill and job characteristics, during 1992-2001 Slovenian women earned 9 to10 percent less than men, which constitutes a very low wage gap level by international standards. Wage inequality grew strongly in 1990-91, but the latter 1990s – a period when real wages rose for all points in the wage distribution – arrested this trend due to the disproportionate wage gains of workers in the lower tail of the wage distribution; however, those at the very top of the wage distribution also gained in relative terms. The gains of workers at the very bottom of the distribution were realised particularly in the 1995-98 period, which can be partly attributed to the 1995 imposition of the minimum wage (in 1998, for example, there is a notable bunching effect at the very bottom of the wage distribution). Various firm characteristics also mattered, ranging from the type of ownership (surprisingly, wages in state firms exceeded wages in other firms, other things being equal, as did wages in foreign-owned firms), to the profitability and size of a firm.

Some developments in the evolution of wages are certainly positive. A clear example is the fact that the gender wage gap has stabilised at an internationally low level. Another positive development is the stabilisation of wage inequality, coinciding with imposition of the minimum wage. It remains to be seen, however, whether the minimum wage – which, as shown in the paper, has a binding effect – has also reduced the employment prospects of some workers (consistent with the drastically reduced shares of young workers in employment). Among worrying signs, one has to mention the distorted work experience structure of wages clearly produced by the stipulations of collective bargaining agreements requiring an automatic increase of the basic wage in line with seniority. Because this requirement contradicts the trends of an individual's productivity, it may prevent the (re)employment of older workers, an outcome particularly likely because of the rise in the pensionable age brought by the recent pension reform. The premium in pay attached to jobs in state-owned enterprises is also puzzling.

This study has also identified several areas that call for further research. One is the effects of the 1995 introduction of the minimum wage, which seems to have strong effects on the wage formation at the bottom of the wage distribution – and may also have produced negative employment effects. Another area worth further investigation is the possible negative effects of the wage structure as imposed by the collective bargaining process on labour mobility. Third, the effects of the mandated automatic increase of the basic wage with seniority also need greater scrutiny. Fourth, the factors underlying the premium in pay attached to jobs in state-owned firms need to be explained – they may be connected to their monopoly market position.

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Key words: *wage structure, earning function, minimum wages*

Ključne besede: *struktura plač, plačna funkcija, minimalna plača*

Table 1: Earnings function estimation, Slovenia, 1992-2001

	1992		1995		1998		1999		2000		2001	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
A. Gender												
Female	-0.089	-76.3	-0.091	-76.2	-0.094	-87.6	-0.097	-89.1	-0.102	-86.2	-0.101	-82.1
B. Education (compared to unfinished elementary education)												
Elementary	0.093	45.9	0.083	36.5	0.070	30.8	0.066	28.0	0.069	26.8	0.066	24.9
Vocational	0.243	127.3	0.224	104.2	0.226	104.5	0.222	98.1	0.221	89.3	0.215	84.1
High school	0.514	254.0	0.520	231.4	0.519	232.2	0.516	221.2	0.525	205.5	0.514	194.9
University (2y)	0.854	309.2	0.888	304.9	0.886	319.4	0.887	308.7	0.906	287.7	0.908	277.8
University (4y)	1.118	403.6	1.186	407.8	1.185	432.4	1.179	419.4	1.238	405.2	1.213	385.4
Education missing	-0.031	-2.7	-0.001	-0.1	0.157	12.6			0.227	13.4	0.061	2.6
C. Work experience (compared to less than 6 years of experience)												
6-10 years of experience	0.064	27.7	0.062	26.1	0.084	39.1	0.085	38.7	0.092	38.4	0.089	35.5
11-15 years of experience	0.138	58.9	0.122	51.3	0.135	62.5	0.138	62.8	0.159	66.0	0.163	64.4
16-20 years of experience	0.209	89.1	0.181	74.1	0.169	77.0	0.172	77.8	0.187	77.7	0.187	73.9
21-25 years of experience	0.271	114.4	0.242	98.4	0.218	97.9	0.215	95.1	0.223	90.5	0.214	82.7
26-30 years of experience	0.313	125.8	0.293	115.4	0.259	113.3	0.251	108.9	0.258	103.0	0.242	92.5
31-35 years of experience	0.322	116.6	0.335	119.0	0.307	120.8	0.296	116.9	0.297	110.1	0.273	98.1
More than 35 years of experience	0.298	89.5	0.361	105.4	0.330	101.1	0.321	99.1	0.325	94.9	0.306	90.6
Work experience missing							0.165	11.8				
D. Type of appointment (compared to permanent appointment)												
Fixed-term appointment	-0.104	-37.0	-0.113	-62.7	-0.116	-83.8	-0.122	-90.0	-0.121	-83.1	-0.118	-81.1
Intern - permanent appointment	-0.129	-13.6	-0.115	-11.5	-0.073	-9.0	-0.058	-7.0	-0.058	-6.6	-0.052	-5.2
Intern - fixed-term appointment	-0.313	-72.1	-0.199	-54.0	-0.132	-44.8	-0.121	-41.6	-0.118	-38.4	-0.112	-35.8
Type of appointment missing	-0.060	-0.3	-0.071	-0.5	0.032	0.2	-0.173	-0.8	0.003	0.0	-0.417	-1.2

Table 1: Earnings function estimation, Slovenia, 1992-2001 (continued)

	1992		1995		1998		1999		2000		2001	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
E. Type of shift work (compared to one-shift work)												
Two-shift work	0.039	26.9	0.044	29.7	0.028	20.4	0.013	9.0	0.005	3.5	-0.009	-5.7
Three-shift work	0.196	76.4	0.253	95.6	0.206	86.0	0.193	78.2	0.186	72.9	0.175	68.0
More than three shifts	0.123	24.1	0.091	15.8	0.105	21.0	0.109	21.8	0.107	21.0	0.112	19.8
Block-time work	0.240	61.6	0.133	31.5	0.141	34.1	0.131	30.6	0.072	15.5	0.100	20.3
Shift missing	0.040	0.2	0.222	1.6	0.027	0.2	0.192	0.9	0.006	0.0	0.407	1.1
F. Type of ownership (compared to state ownership)												
Social	0.157	12.5	0.067	5.4	-0.072	-6.0	0.076	6.2	0.086	6.9	-0.029	-2.3
Private	0.168	16.1	-0.006	-0.6	-0.088	-9.9	0.084	9.6	0.080	9.1	-0.024	-2.8
Cooperative	0.146	6.1	0.090	4.0	-0.013	-0.6	0.137	6.6	0.092	4.4	-0.067	-3.2
Mixed	0.263	18.0	0.040	2.7	-0.096	-7.5	0.084	6.5	0.093	7.3	0.014	1.1
Type of ownership missing	0.218	21.0	0.014	1.4	-0.090	-10.2	0.094	10.7	0.102	11.7	0.010	1.2
Number of observations	559431		529294		501815		500418		429485		401168	
R^2	0.38		0.40		0.47		0.47		0.50		0.50	

Table 2: Earnings function estimation, 1997 and 1998 (including firm and sector variables)

Variable	1997		1998	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**
A. Size of Firm (compared to firms with 1-5 workers)				
6-20 workers	0.170	10.4	0.168	6.7
21-50 workers	0.204	11.7	0.225	9.4
51-100 workers	0.167	10.4	0.199	8.9
101-500 workers	0.221	16.4	0.220	10.9
501-1000 workers	0.259	15.7	0.294	12.9
More than 1000 workers	0.344	22.6	0.336	15.2
B. Industry (compared to firms in manufacturing industry)				
Agriculture	0.034	1.4	0.027	1.0
Utilities	0.129	5.5	0.072	2.9
Construction	-0.047	-3.1	-0.063	-3.6
Trade	0.054	5.0	0.011	0.8
Hotels and Restaurants	0.085	3.5	0.075	2.9
Transportation and Communications	0.096	6.5	0.074	4.0
Government, Health, Education and FIRE	-0.018	-0.8	-0.066	-2.9
Other	-0.028	-2.1	0.033	1.9
C. Commune (compared to rural communes)				
Celje	-0.036	-1.8	0.009	0.4
Koper	0.019	0.9	0.031	1.3
Kranj	0.042	2.1	0.088	4.5
Ljubljan	0.085	9.5	0.123	11.4
Maribor	-0.028	-2.1	-0.007	-0.4
Murska Sobota	-0.108	-5.1	-0.094	-4.5
Nova Gorica	0.164	7.4	0.268	10.3
Novo Mesto	0.005	0.2	-0.009	-0.3
Commune missing	0.343	22.0	n.a.	
D. Ownership (compared to private ownership)				
Foreign owned (fully or partially)	0.061	4.8	0.105	7.5
Foreign missing	n.a.		-0.073	-1.2
F. Exporting firms				
Firms in which foreign revenue exceeds domestic revenue	-0.039	-4.3	-0.062	-6.0
G. Profitable firms (compared to loss-making firms)				
Profitable	0.111	13.3	0.092	9.6
Profitability missing	n.a.		n.a.	
Number of observations	16086		11154	
R^2	0.56		0.58	

Notes: Estimates of the parameters for gender, education, work experience, tenure, and type of shift variables are reported in Table 1 and are thus omitted in this table.

Table 3: Employment by age structure, Slovenia, 1990-99 (beginning of the year)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Age under 20	3.0	2.2	2.3	1.8	2.0	2.2	1.8	1.5	1.5	1.4	1.4	1.2
Age 20 to 30	29.1	28.5	27.1	26.1	25.2	25.3	24.8	24.8	24.8	24.6	24.1	23.7
Age 30 to 40	32.5	33.7	35.1	35.7	34.9	34.1	33.8	33.7	33.7	33.5	33.1	32.6
Age 40 to 50	23.2	25.1	26.1	27.4	28.2	28.5	29.7	30.1	30.2	30.3	30.5	30.5
Age 50 plus	12.2	10.5	7.6	7.2	7.8	8.1	8.4	7.9	7.8	8.3	8.8	9.7
Memorandum item:												
Number of students (in thousand)	33.6	38.2	39.3	42.1	43.2	46.0	53.5	64.7	74.6	77.6	82.8	88.1

Source: Statistical office of Slovenia.

Figure 1: Real wage distribution, 1992, 1995 and 1998

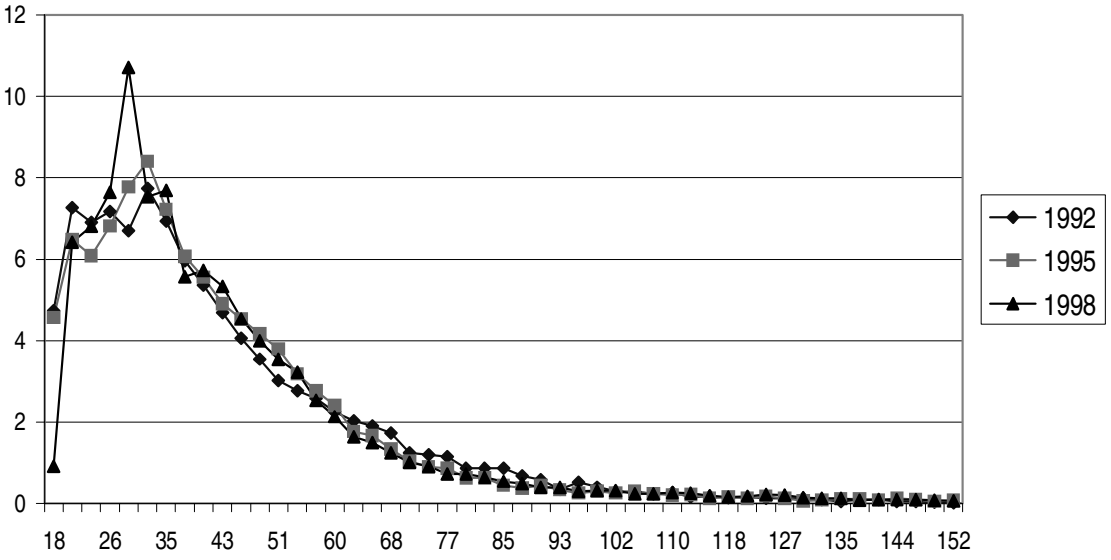

Figure 2: Percentage change in real wage, 1992-95, and 1995-98