WPS 1342

POLICY RESEARCH WORKING PAPER · 1342

Winners and Losers in Transition

Returns to Education, Experience, and Gender in Slovenia

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Returns to human capital —
education and experience —
rose dramatically in the
transition. Women gained
relative to men in both wages
and employment.

Summary findings

Orazem and Vodopivec identify winners and losers in Slovenia's economic transition by tracing changes in returns to education, experience, and gender and changes in wage inequality from 1987 to 1991. They find that:

- Relative wages and employment rose for the most educated and fell for the least educated, in all industries.

- Relative wages and employment rose with years of work experience until pensionable age.

- At pensionable age, relative wages increased very rapidly and relative employment was greatly reduced. Using pension policies to encourage early retirement drastically reduced the supply of very experienced workers. Either the policy caused firms to bid up wages for workers of pensionable age to keep them from retiring, or it caused a selection process in which only the highest-paid workers remained in the workforce. Regardless, the pension policy has proved to be costly, and early retirements did not make room for the youngest workers but for those just under pensionable age.

- Women gained relative to men in both wages and employment primarily because they occupy education and industry groups less adversely affected by the transition, not because of economywide reductions in discrimination against women.

- Increasing returns to education and experience contributed to wage inequality, but the variance in wages also increased for individuals with identical skills. Big changes in relative wages should signal future reallocation of labor toward more productive, higher-paying sectors.

- Setting minimum wages, fixing ranges of pay, and indexing wages to inflation did not prevent increases in wage variation from occurring. Wage minimums did not appear to have an effect, presumably because inflation reduced real minimum wages so quickly that most workers were paid above the minimums.

In Slovenia, policy changes are reflected in labor market outcomes. Disabling the tax-transfer policy from relatively profitable to relatively unprofitable firms and eliminating worker referendums on wage scales removed mechanisms that tended to compress wage variation. Greater demand for skilled workers also reflected both the economywide need to cope with uncertainty and such industry-specific factors as reduced labor demand, especially in less skill-intensive industries.

The results in Slovenia contrast sharply with those in eastern Germany. Eastern German workers have had decreasing returns to education and experience. But it is not clear how relevant the eastern German experience is to other transitional economies because of western Germany's efforts to alleviate problems. More similar to Orazem and Vodopivec's findings are the results of Flanagan (1993) on the Czech Republic, which show increasing returns to education but decreasing returns to experience.

In some respects, Slovenia is atypical because it is richer and more western in orientation than other transitional economies. But those economies could learn from the experience in Slovenia because Slovenia also had social ownership, full employment coupled with substantial hidden unemployment, and an egalitarian wage structure. And Slovenia has introduced labor market reform and experienced social dislocations similar to those in other transitional European economies.

Produced by the Policy Research Dissemination Center

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Drawing upon the writings of Marx, socialist governments sought to suppress the labor market. Labor supply mechanisms were constrained by making work a sacred duty of all members of the socialist society. Those who did not want to work were sentenced to compulsory jobs. Occupational and educational choices were centrally rationed, and geographic migration was restricted by rationing housing and restricting the sale of property. On the labor demand side, jobs were provided for virtually everyone, and firing was effectively forbidden. Hiring and promotions were driven by ideological criteria. To ensure egalitarian income distribution, and perhaps to disable incentives for individuals to switch jobs or localities, economy-wide wage rates were assigned for all classes of jobs. Commodity prices were also issued centrally with an emphasis on stability over time. Consumer, producer and worker expectations were formed in a world of stable prices, stable wages, stable labor demand and stable labor supply.

If there ever were a stationary state, it was the state economy. It follows that the collapse of the socialist economies caused a disequilibrium of epic proportion. Transition economies faced a complete disruption of the economic system driving price and wage determination, production and consumption decisions, and expectation formation. To varying degrees since then, the socialist economies have been dismantling the mechanisms which held the labor market in check. Workers have been assigned the responsibility for finding work and the right to make occupational and geographical choices. Wages and prices were allowed to adjust to market forces. Rewards were allowed to follow successes and failures were allowed to occur.

T. W. Schultz (1975) argued forcefully that a stationary state does not require entrepreneurial skill. Economic systems characterized by constancy, "place no premium for the human ability to deal with secular economic change."[1] Systems in flux require this ability to perceive disequilibrium and to reallocate resources accordingly. The gains from such reallocations are observable in wages and

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[1]Schultz (1975), p. 832.

profits.[2] If, as Schultz posited, entrepreneurial ability is complementary with education and work experience, then relative returns to education should rise in the newly emerging market economies relative to pretransition returns when entrepreneurial skills were not as needed.

There are many other ways in which the structure of earnings might change as a result of transition to a market economy. Competitive forces might be expected to remove arbitrary wage-setting mechanisms which tend to discriminate against women or minorities. On the other hand, centrally planned economies were characterized by high relative wages and female labor force participation rates compared to western economic. If women did relatively well under socialism, one might presume that women would lose in transition. Egalitarian, centrally directed wage setting would tend to reduce inequality. Removal of these egalitarian policies would be expected to increase wage inequality. Their removal might also reduce relative earnings for minority groups and women to the extent that a common wage formula might prevent discrimination from occurring.

This study examines the winners and losers in Slovenia's transition by tracing out changes in returns to education, experience, and gender and changes in wage inequality from 1987 to 1991. The main finding is that returns to human capital rise dramatically during transition. Rising returns to education and experience contribute to rising wage inequality, but the variance of wages increases for individuals with identical skills as well. Women gain relative to men, primarily because women occupy sectors less adversely affected by the transition. Efforts to use pension policies to encourage retirements are shown to have drastically reduced labor supply of experienced workers of pensionable age, contributing to large relative wage increases for workers of pensionable age and work experience.

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[2]Schultz (1975), p. 834. Schultz stressed that presumed gains to entrepreneurial ability during periods of change are relative gains, meaning that it is not necessary that entrepreneurs be better off than they were before the disequilibrium for the gains to be realized. "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 imprved relative to what it would be if they had stayed in disequilibrium."

The Slovenian results are in sharp contrast to those in East Germany (Krueger and Pischke, 1992; Bird, Schwartze and Wagner, 1992). East German workers have had decreasing returns to education and experience. However, it is not clear if the East German labor market has lessons for other transitional economies because of West Germany's efforts to lessen the adverse effects of transition.[3] Using grouped data, Flanagan (1993) found that returns to education rose in the Czech republic during transition, but that returns to potential experience fell.

Setting East Germany aside as a unique case, the Slovenian data base offers the first chance to examine the effects of transition on labor market returns based on individual data. Although there are respects in which Slovenia has been atypical (being among the richer and more western-oriented of transitional economies), lessons learned from the Slovenian experience should be applicable elsewhere. The pretransition Slovenian labor market shared key features with those in other formerly-socialist economies, most notably, social ownership, full employment coupled with substantial hidden unemployment, and an egalitarian wage structure. Second, Slovenia has introduced labor market reforms and has experienced dislocations that are similar to those of other European transitional economies.

The study first reviews the labor market institutions which were in place before and during transition. The data is described in section 2. Empirical outcomes for wages and employment are reported in sections 3 and 4. The study concludes with policy implications derived from the analysis.

1. INSTITUTIONAL BACKGROUND

To put in perspective changes in wages and other labor market outcomes, it is necessary first to review the features of the previous self-management system. Subsequent labor market reforms can

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[3]Perhaps the best indicator of the uniqueness of the East German transition is that real wages rose dramatically for East German workers while they have fallen in every other formerly socialist economy.

be viewed as relaxing constraints on labor market outcomes which were imposed under the earlier system. The effectiveness of the reforms can be judged by the extent to which labor market outcomes change in directions consistent with the relaxation of these constraints.

Labor Market Under Self-Management

From the early 1950s until the 1988/89 reforms, Yugoslavia maintained a unique social and economic system known as worker self-management.[4] The chief characteristics of the system were social ownership of productive assets and worker participation in firm management. Social ownership of productive assets meant that the government could interfere directly in firm decisionmaking. The most important areas of government interference were in determining distribution of firm earnings, restricting sale of firm assets, and preventing employees from recovering their investments in the firm upon termination of employment. On paper, worker self-management gave workers a mandate to participate in many aspects of firm decisionmaking. In practice, worker participation was concentrated in determining relative pay within the firm.

The absence of explicit property rights under social ownership, as well as the commitment to self-management, dictated a specific wage setting mechanism. Both government and workers had clearly delineated roles in the wage setting process. In the absence of an advocate for capital, the government set the firm's wage bill. The government's objective was to even out differences in pay among firms. Special regulations termed "social agreements" laid out a detailed methodology for determining each firm's "socially warranted" wage bill.

In the late 1980s, the methodology involved computation of a business success index for each firm. The index depended positively on firm income per worker and per unit of capital stock. The indices were then adjusted by a special correction factor. The adjusted indices dampened the

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[4]Until achieving independence in October 1991, Slovenia was one of the six constituent republics of Yugoslavia.

measured business success for above-average firms and raised measured success for below-average firms. The socially warranted wage bill was then computed based on the adjusted firm success indices. Other things being equal, wages in a firm with an unadjusted success index 60 percent above average would be only 25 percent above average, while wages in a firm with an unadjusted success index 40 percent below average would be only 19 percent below average (Vodopivec, 1993).

Further leveling of wages across firms was achieved through a massive firm income redistribution policy implemented by discretionary taxation and subsidization of enterprises. Paying wages strictly according to the socially warranted wage bill meant that proportionally more income was retained by above-average firms than below-average firms. Government control of the distribution of firm income created numerous channels by which income could be shifted from above-average to below-average firms. For example, below-average firms whose socially warranted wage bills exhausted their earnings were exempted from taxes and qualified for subsidies (chief among them, concessionary financing). These subsidies were financed by discretionary taxes on firms with above-average business success. The magnitude of these discretionary redistributive flows was staggering, exceeding by several times formal taxes and formal subsidies.[5]

The financing of redistributive flows among firms, together with the methodology for setting the firms wage bill that had a built-in indexation, proved to be destabilizing. On top of social agreements on firms income distribution, in the 1970s and 1980s Yugoslav government had to repeatedly impose additional limits on wage increases. For example, during the period of investigation, an incomes policy law was in effect in 1988, mandating wage bills not to exceed 140 percent of the wage bills in the previous years.

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[5]For a definition of redistributive flows among firms and their quantification for Slovenian firms in 1986, see Vodopivec (1993).

Once the government set the wage bill, the workers' role was to set individual wages within the firm. The wage scale was determined by a referendum of employees.[6] Theoretically, pay depended also on supervisors' assessments of work quality and fulfillment of work norms, but in reality the wage scale was decisive. In comparison to capitalist firms, Yugoslav firms had extremely compressed wage scales. For example, in one establishment with several thousand workers, the pay of the highest paid manager was 4.54 times that of the lowest paid laborer. To put that range in perspective, the pay range of entry-level positions in U.S. state governments is of similar magnitude to the pay range across all experience groups in the self-managed Yugoslav firm, and U.S. state governments have relatively compressed pay at the upper range of skills.[7] In the same Yugoslav firm, a worker with 20 years of job tenure earned just 6.2 percent more than a worker with no job tenure. In contrast, Topel (1991) found that a U.S. worker with 20 years of job tenure was paid almost 34 percent more than a novice worker.

As in other socialist economies, Yugoslav workers had strong job security. In fact, job security in Yugoslavia was constitutionally guaranteed. Except for extremely rare cases of bankruptcy, workers could be fired only for breaching work discipline or refusing job reassignment. Even such dismissals were hindered by a judicial system that clearly sided with workers. Moreover, to prevent unemployment, government pressed firms to hire. Unlike the rest of Yugoslavia where hiring was mandated by law, only informal hiring pressure was applied to Slovenian firms. Similar to other socialist economies and in contrast to the rest of Yugoslavia, unemployment was negligible in Slovenia until the late 1980s.

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[6]The theoretical foundation for such a scale was sought in Marx's concept of "degree of complexity of labor" (number of units of simple labor that is required for a unit of complex labor), the concept that firms' internal documents elaborated in detail by providing numerous evaluation criteria.

[7]The data on the Yugoslav firm is taken from Vodopivec (1992). Data on pay ranges in U.S. state governments are from Orazem, Mattila and Weikum (1993), Table 3.

Comparison with Other Socialist Economies. Although Slovenia's wage controls differed from those in other socialist economies, they produced very similar wage distributions. As in Slovenia, other socialist economies leveled wages across firms and maintained job and wage security through interfirm redistribution, manipulating prices, taxes, and subsidies, and concessionary finance.[8] In contrast to Slovenia, however, determination of relative wages in other economies was centrally imposed through the so-called tariff system. Jobs were classified into different skill grades (the "skill-exertion matrices") to which economywide wage rates were centrally assigned. Because central planners imposed egalitarian pay structure, both preferences of planners in other socialist economies and democratic determination of wages in Slovenia contributed to the same outcome -- egalitarianism. Indeed, a comparison of earnings distributions for economies in Central Europe shows that Slovenia's net earnings distribution in 1989 did not deviate much from those in other planned economies. In 1989, just before the transition started, Slovenia's earnings distribution was more egalitarian than Hungary's, but less egalitarian than Czechoslovakia's or Poland's (Table 1).

Labor Market Reforms During the Transition

While Slovenia was still a constituent republic, Yugoslavia made a decisive step toward the creation of market economy in late 1988. The Law on Enterprises transferred decisionmaking rights from workers to equity owners, thus formally ending the era of self-management.[9] Important changes occurred both in wage and employment policies, as well as labor market programs. Many measures adopted in Slovenia are strikingly similar to measures that have been adopted in other former socialist countries undergoing transition to a market economy.

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[8]Leveling effects of redistribution have been found, for example, for Hungary (Kornai and Matits, 1987), and for Poland (Schaffer, 1990).

[9]Implementation of privatization finally was passed in November 1992 after a two-year delay. See Pleskovic and Sachs (1994) for a discussion of privatization legislation.

Wage Setting. The old wage setting mechanism was replaced by a system with three

components: the Labor Code, collective bargaining, and incomes policy. The Yugoslav Labor Code

was instituted in October 1989 and amended by the Slovenian Assembly in February 1991. The

Labor Code removed administrative constraints and collective decisionmaking from wage

determination, leaving wage determination as a managerial responsibility.[10] This disabled the

governmental mechanism which served to equalize pay across establishments and the worker

referendum mechanism which served to equalize pay within establishments. Managerial discretion to

set pay was not absolute, however. The Code established a minimum wage, to be adjusted at least

biannually to reflect changes in living costs. The law also introduced collective bargaining, a

genuinely new component of wage setting. The first general collective agreement for Slovenia was

ratified in August 1990. It classified workers into nine categories and prescribed the minimum basic

wage for each category. The basic wage for the highest category was three times that of the lowest

category. However, firms in bad financial standing had the right to reduce the minimum basic wage

levels by up to 20 percent. The Code also liberalized returns to job tenure. The suggested wage

increased at one-half percentage points per year of job tenure. Thus, the suggested return to twenty

years of job tenure rose from 6.2 to ten percent, still well below the average return to job tenure in

Western economies, but much higher than returns under socialism.

The wage-setting system continued incomes policies from the previous system. These policies

were imposed twice since 1990. The 1990/91 incomes policy law required paying a portion of the

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[10]To rid themselves of worker councils, some social enterprises have transferred their assets and workers, and thus all of their operations, to a newly created subsidiary that is considered a private company and thus need not have a worker council. In these cases, the parent enterprise is transformed into a purely financial institution (see Korze 1991).

wage bill in internal shares of the enterprise. The 1991 law tied the growth of the wage bill to the

growth of the costs of living. The law called for wages to grow less than the rate of inflation if

prices rose faster than five percent per month. It also limited managerial salary to be no greater than

fifteen times the minimum wage.[11]

Wage policies which set minimum pay, index wages to inflation, and fix the allowable range

of pay within firms would tend to compress wages. However, it is doubtful that pay compression

would be as severe as under the worker self-management system. Indeed, it is not clear if these

policies were effective at all. In inflationary environments, even biannual adjustments to minimum

wages to accommodate past inflation would quickly drop in real value, so it may be that few workers

were paid mandated minimums. Monthly inflation exceeded five percent about one-half of the months

during the period, so indexation only partially compensated for changes in cost-of-living. The

stipulated pay ranges were actually larger than pay ranges that existed under worker self-management,

so even if they were effective they would not constrain pay variation. In addition, if the stipulated

pay ranges actually constrained managerial ability to raise pay, management could raise total

compensation through perquisites. Heuristic evidence suggests that nonpecuniary compensation has

been used to top off pay beyond the range limitations.

Employment Policies and Practices. In October 1989, legislation gave employers the right

to lay off workers. However, there were still significant constraints on firing which limited its use by

firms. The firm was required to provide 24 months prior notice of a layoff, place the worker in

another firm, retrain the worker with pay, or purchase pension credits to allow the worker to retire

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[11]When the Incomes Policy Law expired in February 1992, there was fierce opposition to its extension. Trade unions, its main opponents, argued that the existence of collective bargaining made separate legal restrictions on the wage bill not only unnecessary, but counterproductive -- because they conflicted with collective agreements. Instead of new incomes policy law, less stringent incomes policies introduced as collective bargaining agreements were in place after 1992.

early. In February 1991, advance notification was shortened to six months, but the cost of a layoff

was still high.[12]

Before April 1992, men qualified for old-age pension at 60 years of age or 40 years of work

experience, and women at 55 years of age or 35 years of work experience. Pensions were set at 85

percent of the pension base. The base was the average of the ten highest annual inflation-adjusted

incomes in the pensioner's career. To reduce the inflow into unemployment, the government in 1990

began to promote early retirements by reimbursing enterprises for a fraction of the costs associated

with the purchase of retirement credits for early retirees. Early retirement at reduced pension levels

was made available to men with 55 years of age and 35 years of work experience, and to women with

50 years of age and 30 years of work experience. As a consequence of both the increase of the flow

into retirement and falling employment and production, the burden of pensions has escalated

enormously. The share of public pension expenditures in GDP skyrocketed from 9.3 percent in 1989

to 11.1 in 1991 to 13.9 percent in 1993. Following the surge in retirements, the 1992 law instituted

a gradual increase in pensionable age to 63 for men and 58 for women by 1997.

Labor Market Reforms in Other Transitional Economies. As a key component of the

current reforms, other transitional economies have also overhauled their labor market legislation.

Similar to Slovenia, they enacted redundancy legislation, thus ending the era of virtually complete job

security; allowed for independence of enterprises in hiring and wage decisions; and introduced

unemployment insurance and active labor market programs, to cope with the growing number of

unemployed.

In the area of wage setting, the reforms in other economies are quite similar to those in

Slovenia. Above all, as in Slovenia, the authority to set wages has been transferred to managers. All

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[12]Detailed discussion of these and other Slovenian employment, unemployment compensation, and redundancy policies is contained in Vodopivec and Hribar-Milic (1993).

other Eastern European countries have also introduced incomes policies. These policies -- usually variants of tax-based incomes policies -- have typically been in place for short durations and later renegotiated, often in somewhat different form. Collective bargaining has also emerged, with similar confrontation among unions for worker representation, as in Slovenia. Moreover, minimum wage scales for different categories of labor, such as those in Slovenia, have been agreed upon in Bulgaria, Poland, and Romania.

In many respects, other economies have chosen less generous and less protective policies than Slovenia. One example is job security. Czech and Polish workers are given advance notice of up to three months, and Romanian workers one month -- compared to Slovenia's six months.[13] Similarly, Slovenian workers are entitled to severance pay of one month's wage for each two years of job tenure, while in most Central and Eastern European economies severance pay amounts to up to two month's pay. The maximum duration of this unemployment benefit in all other transitional economies is 12 months (only six in the Czech republic and former Soviet Union economies), compared to the maximum duration of 24 months in Slovenia.

The pension replacement rate in Slovenia has also been the largest among transitional economies. In 1992, average pension amounted to 76 percent of average wage, compared to 64 percent in Poland and 50 percent in Bulgaria and Hungary. Slovenia's public expenditures on pensions as a percent of GDP have been among the highest in transitional economies. Only Poland at 14.7 percent of GDP has a higher pension burden. Government sponsored early retirement programs, similar to Slovenia's, have been introduced in Poland, Romania, and, to a lesser degree, in Hungary.

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[13]Information on other economies is taken from the following sources: Burda (1993); Scarpetta, Boeri and Reutersward (1993); Earle and Oprescu (1993); and World Bank PRDTE's data bank on transitional economies.

To assess how these myriad changes affected the Slovenia labor market, it is necessary to have data from periods predating the reforms as well as data from periods after the reforms were in place.

2. DATA SOURCES

Our main data base is taken from earnings records of the Slovenian Pension and Invalid Fund (SPIF), collected for pension benefit calculation. Three additional data sources are used: the work history of employees covered by the social security system, data on unemployment spells of registered unemployed, and the register of enterprises. The data provide a cross-section of employees for each year from 1987 through 1991.

SPIF collects data on earnings for all workers who are paying contributions to the Fund. Similar to other transitional economies, old-age insurance is mandatory so virtually all workers are covered. In our analysis, however, we focus only on wages paid in social enterprises, thus excluding employers who are able to "adjust" reported earnings of their employees. The main two groups that are excluded from the data set are self-employed and workers in private enterprises. Self-employed may opt either to underreport their earnings so as to reduce their old-age contribution, or overreport their earnings so as to increase the pension level. Similar opportunities to adjust reported income may exist in private enterprises. Moreover, in our data set only jobs for which contributions to social security are paid are included. For multiple jobholders, moonlighting or secondary jobs rarely pay into the social security fund, and are thus excluded. For such multiple jobholders, our measure of the wage is the wage in the primary job alone.

Observations on work spells were drawn from a random sample of employees representing about five percent of the social sector. The social sector covered 92.6 percent of nonagricultural employment in 1987 and 89.8 percent in 1991. Of the .028 decline in the social sector share, .016 is

attributable to lost employment in the social sector and .012 to increased employment in the private

sector. Useable observations on workspells ranged from 30,474 in 1987 to 21,198 in 1991. The

decline in useable observations is due primarily to the 20 percent decline in social sector employment

from 1987 through 1991. A lag in SPIF resolution of irregularities in data provided by firms

contributed to a smaller useable sample in 1991. As the measurement errors are apparently random,

the 1991 useable sample should still be representative. Details on sample selection and data base

construction are included in an Appendix.

The earnings data include information on earnings, regular and overtime hours, and the

starting and ending date of the employment spell within the year. Hourly wage is computed as

earnings divided by hours. For workers who switch employers during the year, hourly wage is

computed separately for each employment spell.

3. EMPIRICAL FORMULATION AND RESULTS OF WAGE EQUATIONS

To summarize how the earnings structure in Slovenia changed during transition, we apply the

standard earnings function approach pioneered by Mincer (1974) to the Slovenia data described

above. The dependent variable is W_t: the natural logarithm of average hourly earnings over a spell.

The vector of independent variables, X_t, includes a set of dummy variables indicating different levels

of formal education, years of employment, a dummy variable designating nonSlovene ethnicity,

dummy variables indicating if the individual is in a temporary or internship position, a set of dummy

variables for industry of employment, and a set of monthly dummy variables indicating the months in

which the individual worked.

Given that wages are computed over the employment spell, monthly dummy variables are

used to control for changes in consumer prices over the spell. Because of inflation, nominal wages

and prices in the first half of the year differed significantly from nominal wages and prices in the last

half of the year. This problem was particularly acute during the hyperinflation of the last quarter of 1989. The use of monthly dummies controls for within year inflation, allowing the coefficients of the earnings function to be interpreted in real terms.

. The wage equations will be used to explore four issues related to the effects of economic transition on the labor market. The first of these is the effect of transition on returns to education. The second is the effect on returns to job experience. The third is how earnings inequality changed in general, and how inequality changed controlling for levels of human capital. The final issue is whether wage differentials between men and women narrowed or increased as a result of the economic transition. As we will argue in more detail below, the observed changes in wage structure for Slovenia are quite similar to those observed in market-oriented economies over the past twenty years. In addition, as in the western economies, the main causes for observed changes appear to be associated with shifts in labor demand. The difference between Slovenia and the western economies is that the changes in wage structure occurred much more rapidly in Slovenia and that they seem to be related to Slovenia's transition to a market economy.

The wage functions for men and women (designated by subscripts M and F respectively) in year t can be written as:

(1) $\quad W_{Mt} = X_{Mt}\beta_{Mt} + e_{Mt}$

$\quad W_{Ft} = X_{Ft}\beta_{Ft} + e_{Ft},$

where e_{it} is an error term. Changes in the earnings structure over time are measured by changes in the coefficients, β_{it}. The joint restriction, that over two periods t and t', $\beta_{it} = \beta_{it'}$ can be tested to establish whether changes in the earnings structure are statistically significant. Such tests can also be performed for subsets of the coefficients which are of particular interest, namely those on the education and experience variables. Reports of these coefficients and the associated tests of structural change are reported in Table 2.

The regressions reveal dramatic changes in the structure of earnings. The overall explanatory power of the regression falls as wage setting became less standardized across firms and industries. Individual coefficients changed dramatically, the general pattern revealing a sharp increase in returns to human capital. There were no significant changes in returns to ethnicity or term of employment. Nevertheless, the null hypothesis that the eleven reported coefficients were unchanged from 1987 to 1991 was easily rejected in both the male and female wage equations. In contrast to the U.S. and western Europe where the interindustry pattern of relative wages has been nearly constant over time, there were sharp changes in the coefficients on industry dummy variables.[14] These changes were identical in sign and similar in magnitude across the male and female equations. Holding human capital measures fixed, relative wages rose in agriculture, services, health and government, but fell in construction and education.

Returns to Education. The coefficients on the education dummy variables tell a very consistent story. Average returns to years of education rose dramatically following transition relative to earnings of the least educated group. The changes in relative returns to education are virtually identical for men and women. Those with four years of university education gained the most in relative earnings, followed by those with two years of university training. The educated group that gained the least relative to the least educated over this period were holders of vocational degrees. This finding is consistent with Flanagan's (1993) argument that vocational training was overemphasized in the controlled economies of central and eastern Europe. It is important to emphasize that the relative gains reported herein are not absolute gains. As shown below, the increase in relative returns to schooling occur because the most educated faced the lowest proportional decline in real wages.

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[14]See Katz and Krueger (1989) and Krueger and Summers (1988) for international evidence of the existence of long term inter-industry wage differentials in Western economies.

Figure 1 charts the relative wages of full-time, year round workers by educational group, using those with less than an elementary degree as the base[15]. Each ratio is normalized to be one in 1987 so that changes in the height of the ratio are interpretable as percentage changes in relative earnings for the group. The figure shows that relative earnings for the most educated were rising slightly in 1988, but then changed dramatically after the transition began in 1989. Those with four year university degrees gained 27 percent relative to those with less than an elementary education. Equally remarkable is that the proportional changes in relative earnings in Slovenia over this period are larger than the dramatic increases in relative returns to college graduates in the United States observed over the same period.[16]

Returns to Experience. Consistent with the results on education, returns to the most experienced rise relative to those with the least experience. As with returns to education, returns to experience change in similar ways for men and women. The linear term becomes less positive and the quadratic term becomes less negative, meaning that marginal returns to a year of experience fall for the least experienced but rise for the most experienced. In fact, the wage-experience profile for women turns convex in 1991. This outcome is not just a fiction of the quadratic approximation. In Figure 2, the coefficients on a series of dummy variables representing progressive four-year experience increments pooled across men and women reveals the same pattern. Relative to 1987, the wage-experience profile is flatter over the first eight years, but is steeper thereafter. There is a

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[15]Part-year workers were paid very different nominal wages depending upon the timing of their employment within the year. Use of the sample of year-round workers removes the artificial increase in wage variation caused by inflation.

[16] Using CPS data for the U.S., over the 1984–1991 period, relative annual earnings for those with 16 years of education rose 25 percent relative to elementary school graduates. In fact, real salaries for U.S. college graduates were declining over the period, but salaries for the elementary school graduates were declining even more. More detailed analysis of changes in inequality of earnings across skill groups in the U.S. are in Juhn, Murphy, and Pierce (1993) and Katz and Murphy (1992). Levy and Murnane (1993) provide an extensive review of the topic.

dramatic increase in returns to experience beginning at 28 years. This sharp increase in returns may reflect the general increase in relative returns to human capital discussed thus far, but additional reasons related to pension policy may also have an effect. These reasons will be discussed in more detail below.

Inequality. To the extent that controlled economies were successful in suppressing inequality, relaxation of central government controls would be expected to increase the dispersion of income in the economy. This expected dispersion occurred in Slovenia. Figure 3 contains a mapping of the distribution of wages for year-round full-time workers in 1987 and 1991. To correct for the large changes in currency value, the 1991 wages were deflated by the ratio of median wages in 1991 to median wage in 1987. This has the effect of forcing the median of the two distributions to be equal, making it easier to visualize changes in the distribution of wages. It is clear that the variance of wages has increased. The distribution is much less peaked in 1991 than in 1987, and the distribution has become further skewed to the left. Moreover, there is a larger number of workers at the upper tail of the distribution as well. Given our earlier results on experience and education, one would presume that the upper tail is disproportionately populated by those with greater skills.

Not only has the distribution become more unequal, but the gap between the richest and poorest has increased. Figure 4 shows the percentage change in real wages from 1987 to 1991 by percentile in the wage distribution. All percentage changes are negative, indicating that real wages declined at all points in the wage distribution. However, the largest percentage reductions are for those at the bottom of the wage distribution. As percentile position in the wage distribution increases, the percentage wage reduction decreases monotonically. By 1991, wages at the tenth percentile were 56 percent of the wage earned by those at the tenth percentile in 1987. In contrast, those at the median in 1991 earned 64 percent of the wage earned by the median workers in 1987, while those at

the ninetieth percentile earned 70 percent of the wage earned by those at the ninetieth percentile in 1987. The upper tail gained relatively because they lost less relative to 1987.

An issue that has been studied extensively in the United States and in western Europe is rising inequality within narrowly defined skill groups as well as between these groups. Coefficients of variation for education groups, experience groups, and males and females are reported in Table 3. These statistics are computed over a sample of full-time, year-round workers. The results show increases in the variance of earnings for the lowest and highest educated groups and for the highest experience groups. Measures of rising inequality were nearly identical for men and women. However, there was no evidence of rising inequality for middle or vocational school graduates or for those with less than 20 years of job experience.

Within individual industries, wages have become more variable across firms and across skills. An analysis of variance in wages within six individual industries of the sort employed by Groshen (1991) revealed that the proportion of within-industry wage variation attributable to differences in mean wages across firms rose from 22 percent in 1987 to 38 percent in 1991.[17] The variance attributable to differences in mean wages across education groups rose from 22 to 29 percent. On the other hand, the proportion of wage variation explained by within-establishment factors fell from 23 percent to 15 percent. The implication is that firm and skill-level factors have become more important in determining pay, but that internal labor markets within firms are becoming less important.

An overall measure of inequality which holds constant all variables in the earnings function is the standard error of the regression. The standard error for the male earnings function is designated by σ_M, and that for the female earnings function is designated by σ_F. By construction, the residuals of

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[17]The six industries are nonmetallic products, metallic products, machinery, furniture, paper, and textiles. The reported percentages of wage variation explained by firm- and occupation-specific effects are weighted averages of the effects found for individual industries.

the earnings function are uncorrelated with observed differences in human capital, industry of occupation, ethnicity, and price level, meaning that σ_M and σ_F measure wage inequality for workers who are identical in observed characteristics. The results show that for both men and women, residual wage inequality increased dramatically following the 1989 transition.

Male-Female Earnings Differentials. Compared to women in Western economies, women in socialist countries had high labor force participation rates and high relative wages. Slovenia was no exception. In 1987, the female labor force participation rate was .75, compared to .54 in Austria, .55 in West Germany and .68 in the United States. Women in Slovenia were paid 88 percent of what men were paid, a much higher ratio than in Austria (.73), West Germany (.69) or the U.S. (.68). Given that women did so well under socialism, it may seem natural to presume that women could only do worse under a market system. This presumption will be examined in this section.

Table 4 reports estimates of the differences in coefficients between the male and female wage equations for each year from 1987 to 1991. Positive differences imply that the coefficient in the female equation is greater than the coefficient in the male equation. Results indicate that women had higher marginal returns to education and steeper returns to experience than did men. After the transition, the male and female earnings structures became much more similar. The only exception is that women's wage experience profiles became steeper. The F-statistic of the null hypothesis that the male and female earnings functions had identical coefficients fell monotonically from 11.3 in 1987 to 4.2 in 1991. The F-statistic on the null hypothesis that the eleven human capital, ethnicity and term of employment coefficients were the same fell monotonically from 8.2 to 3.2. The implication is that transition led to lower differences in the pricing of male and female characteristics, an outcome consistent with theories of how increased labor market mobility and market competition would affect wages.

Following the methodology developed by Juhn, Murphy and Pierce (1993), the effects of economic transition on earnings differences between males and females can be explored in more detail. Given that male and female earnings functions and their error variances changed in similar ways, we can arbitrarily select the male earnings structure to represent the returns to skill in the economy. We can then compare how female earnings changed relative to male earnings. The male-female earnings differentials can be decomposed as follows: First, the male earnings function (1) can be rewritten as

$$(2) \qquad W_{Mt} = X_{Mt}\beta_{Mt} + \Theta_{Mt}\sigma_{Mt},$$

where σ_{Mt} is the standard deviation of the residual of the male earnings function in year t, and $\Theta_{Mt} = e_{Mt}/\sigma_{Mt}$ is the standardized residual of the regression. By construction, Θ_{Mt} has mean zero and variance 1.

Taking the difference in wages between men and women in year t, one can obtain:

$$(3) \quad d_t = (X_{Mt} - X_{Ft})\beta_{Mt} + (\Theta_{Mt} - \Theta_{Ft})\sigma_{Mt},$$

where $\Theta_{Ft} = (W_{Ft} - X_{Ft}\beta_{Mt})/\sigma_{Mt}$. The numerator is the difference between the wage paid to a woman and the wage she would be paid if she were rewarded for her characteristics at the same rate as a man. This difference is interpretable as a measure of wage discrimination. If $\beta_{Mt} = \beta_{Ft}$, the difference will have a mean of zero. More typically, this value is negative, which implies that women are paid less than men with the same characteristics. Deflating this difference by the male standardized residual yields the number of male residual standard deviations that the average woman is paid below zero, the value of Θ_{Mt} for the average man.

The earnings differential for another year, t', would be

$$(4) \quad d_{t'} = (X_{Mt'} - X_{Ft'})\beta_{Mt'} + (\Theta_{Mt'} - \Theta_{Ft'})\sigma_{Mt'}$$

so that the change in the wage differential over time becomes

$$(5) \qquad d_{t'} - d_t = [(X_{Mt'} - X_{Mt}) - (X_{Ft'} - X_{Ft})]\beta_{Mt'} + (X_{Mt} - X_{Ft})(\beta_{Mt'} - \beta_{Mt})$$

$$+ [(\Theta_{M_t'} - \Theta_{F_t'}) - (\Theta_{M_t} - \Theta_{F_t})]\sigma_{M_t'} + (\Theta_{M_t} - \Theta_{F_t})(\sigma_{M_t'} - \sigma_{M_t})$$

This is the Blau and Kahn decomposition. The first term captures how the male-female earnings differential changed in response to changes in the male-female gap in characteristics. The second term measures how changes in the returns to these characteristics affected the wage gap. The third term represents how the change in women's relative position in the male residual earnings distribution affected the pay gap.[18] The fourth term shows how increases in the standard deviation of the residual earnings distribution affects the male-female wage gap. Blau and Kahn label these four effects "Observed X's", "Observed Prices", "Gap", and "Unobserved Prices", respectively.

This decomposition was computed for three years, 1989 versus 1987, 1991 versus 1989, and 1991 versus 1987. The 1987 and 1991 regressions are reported in Table 2 and the 1989 results are available from the authors on request. In addition, summary results for all five years are reported.

Summary statistics for the five years of data are reported in Table 5. As noted earlier, the female-male wage ratio of .88 in Slovenia was very high compared to ratios ranging from .61 to .77 for western economies at about the same time.[19] Nevertheless, the log wage gap fell 23 percent from 1987 to 1991, from .13 to .10. This implies that the Slovenian female-male wage ratio rose from .88 in 1987 to .90 in 1991. In 1987, median female earnings were at the 35th percentile of the male wage distribution, but at the 40th percentile in 1991. In contrast, the median female wage in the United States is at the 31st percentile of the male wage distribution.[20]

Examining residual inequality after controlling for human capital, ethnicity, part-time status, and industry of employment lowers the relative position of women in the male residual earnings

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[18]Note that at sample means, this equals $(\Theta_R - \Theta_{R'})\sigma_{M_t'}$ since $\Theta_{M_t'} = \Theta_{M_t} = 0$ at male sample means.

[19]Blau and Kahn, 1992.

[20]Blau and Kahn, 1994.

distribution. While women were at the 40th percentile in the observed earnings distribution, they were only at the 30th to 33rd percentile of the residual earnings distribution.[21]

In western economies, male advantages in work experience, job tenure, and proportion with college training serve to explain some of the pay difference between men and women. In Slovenia, the opposite holds. Women do worse in the residual distribution than in the observed distribution. The main reason appears to be that women had superior education. Women were less likely than men to have less than an elementary education or a vocational degree, the two educational categories that performed worst throughout the transition. On the other hand women were more likely to hold middle school or university degrees, the educational categories that did best in the transition.

Nevertheless, both the observed and the residual wage data indicate that women rose from four to five percentage points in the male wage distribution over the five year period spanning the Slovenian transition. In contrast, Blau and Kahn(1994) reported a 5.5 percentage point gain for U.S. women over a twelve year period from 1975 through 1987.

At the bottom of Table 5, the changes in male-female wage differentials are decomposed into the four components. Negative numbers indicate factors that are increasing women's pay relative to men's pay. Over the five year period, the first three terms serve to reduce wage differentials between men and women, while the fourth term which captures the effect of increasing inequality in the residual wage distribution raises the gender wage gap. Almost all of the changes in the wage gap occur after 1989. Although there were nontrivial values for the last three terms in the 1987-1989 period, they canceled each other out. For the full period, the greatest impact occurred through the gap effect with women gaining by moving up the male residual earnings distribution. The next largest effect was from increasing inequality in the residual wage distribution. Because women were

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[21]Blau and Kahn's estimates for the sample of western economies show female percentile status in male residual earnings distributions varying from .16 in West Germany to .31 in Australia.

in the lower tail of the distribution, they lost relative to men from the increase in inequality. Much smaller relative gains to women came from narrowing differences in labor market characteristics and from changes in returns to characteristics that favored women relative to men.

In terms of more traditional wage decompositions, the first two terms sum to explained differences while the last two sum to unexplained differences in wages between men and women. Based on that decomposition, eighty-seven percent of the improvement in women's earnings relative to men is attributable to changes in observed characteristics and observed returns to those characteristics. There is evidence of a decline in wage discrimination in the 1989-1991 period, but the increase in the unexplained component from 1987 to 1989 is of nearly equal magnitude.

4. CHANGES IN EMPLOYMENT

The large changes in returns to education, experience, and gender as well as the increase in inequality within and between human capital groups may be due to changes in labor demand or labor supply. Numerous policy changes could have altered firms' incentives to hire workers or workers' incentives to enter or remain in the labor force. In the spirit of what Levy and Murnane (1993) called the Economics 1 test, we can trace out changes in relative employment in relation to changes in relative wages.[22] Rising wages and employment imply demand-side factors dominate, while rising wages with falling employment imply supply-side factors prevail. There are reasons to suspect demand-side factors predominate. Major disruptions in industrial production accompanied the transition. The movement away from cross-subsidization of less profitable firms by more profitable firms and large disruptions in trade caused by the disintegration of markets elsewhere in former Yugoslavia caused large industry-specific shocks to labor demand. If these labor demand shocks are

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[22]Levy and Murnane, p. 1342. See Katz and Murphy (1992) for a multivariate application of the Economy 1 test.

driving the changes in returns to skill, it may be because low skilled labor was disproportionately employed in the sectors most adversely affected by the transition. However, if the Schultz hypothesis holds, then transition raises the value of educated labor, causing a shift in relative demand toward skilled labor in every sector.

Employment by Education Group. Table 6 reports absolute and relative changes in employment by industry over a five year period spanning the transition. Employment changes vary from no change in Finance, Insurance and Real Estate (FIRE) to a 31 percent employment reduction in Construction. Despite the tremendous range of changes in overall employment, demand reductions are always largest for the lowest education group. Overall, employment for those with less than an elementary degree fell 38 percent over the five year period. Over the same period, employment for university graduates rose 3 percent. The number in brackets represents the employment change in the education group relative to the overall change in employment. Employment for the least educated group fell 23 percentage points more than the fall in employment overall. Employment for elementary school graduates fell 4 percentage points relative to the norm. Meanwhile, employment for university educated workers rose 18 percentage points. The pattern of rising relative employment for the more educated is consistent with the pattern of rising relative wages for the more educated, strongly pointing to demand-side factors as dominating the explanations for changing returns to education.

Employment changes relative to industry norms are very consistent across industries. Those with less than an elementary education faced disproportionate percentage reductions in employment in every industry. Those with elementary degrees lost in relative employment in nine of eleven industries. In contrast, those with high school educations lost in relative employment only in the education sector, while university graduates gained in relative employment in every industry. Thus, some of the increase in returns to human capital is due to economy-wide shifts in relative labor

demand toward more educated workers. This supports Schultz's hypothesis that education is particularly valuable in disequilibrium.

Nevertheless, low-skilled labor faced additional problems because of industry-specific shocks. The industries with the largest employment reductions (manufacturing, agriculture, construction, transportation, and services) were also those with the most low-skill intensive production in 1987. Industry-specific and aggregate demand shocks combined to raise relative returns to educated labor.

It seems clear that demand-side factors are driving up relative wages for educated labor, but it may not be clear if this is in response to disequilibrium which existed before transition or after transition. In other words, did low relative wages for skilled labor under socialism cause insufficient supply of skilled workers? If so, removing constraints on wage variation alone are responsible for rising returns to skill. However, there is little evidence that firms were constrained in their abilities to hire skilled labor. Relative costs of obtaining college degrees were also low in socialist countries. Universities were free, students were paid stipends, and in some countries, even families of university students received compensation. In addition, central assignment of occupational choices helped assure that needed skills were acquired. Therefore, rising relative wages and employment for educated workers in Slovenia appears to be due to shifts in relative labor demand associated with transition and not just a market correction for preexisting disequilibrium.

Employment by Experience Group. The story for employment by experience group is more complex. The top of Table 7 reports 1987 and 1992 employment shares for various gender and experience groups as well as relative employment changes over the five year period. Consistent with rising relative wages for more experienced workers, employment shares rise through twenty-nine years of experience for males and through twenty-four years of experience for females. Then, relative employment declines precipitously for the experience groups who received the highest returns to experience. For males, employment for those with 30-34 years of experience fell to 72 percent of

the 1987 level, while employment for those with 35 or more years of experience fell to 33 percent of the 1987 level. For women, the employment reductions began five years earlier at 25-29 years of experience. Because these relative employment reductions were accompanied by wage increases for these highest experience groups, supply-side factors must be driving the increasing returns to experience at the highest levels of experience.

The timing of employment reductions in the male and female experience profiles coincides with the experience criteria by which men and women qualify for the pension program. Before April 1992, women qualified for pension at 30 years of experience and 50 years of age, roughly the time when the sharp increase in wages is observed. Men qualify for pension at age 55 and 35 years of job experience, roughly the time when the rate of wage increase accelerates. It is likely that the sharp increase in returns to experience at older ages is related to the pension program.

The reductions in employment for workers in these experience classes are largely driven by retirements. At the bottom of Table 7, the proportion of those employed at the beginning of the year who retire during the year are listed for various years and experience groups. There is no substantial change in these retirement rates before 1989. However, retirement rates explode upward for those employed on January 1, 1990. The sharp increase begins five years earlier in the experience profile for women than men, coinciding with the five year difference in minimum experience requirements for the pension. The increases begin five years before the experience criteria take effect, reflecting efforts to encourage early retirements. The proportion of women with 30-34 years of experience who retire rises from .164 in 1989 to .425 in 1990 and then .355 in 1991. Retirements are larger than total employment reductions for women with over 25 years of experience. The story for men is the same, but with a five year lag. Retirements are larger than total employment reductions for males with over 30 years of experience.

The upward explosion in retirements over this period is not an illusion. Pensions as a percentage of Gross Domestic Product rose from 9.3 percent in 1989 to 11.0 percent in 1991; and to 13.9 percent in 1993. Perhaps the surge in retirements was due to a prevailing societal belief that, because unemployment would inevitably accompany the transition, older workers should retire to make room for young workers. However, it is quite likely that these retirements are driven more by increasing value of the pension relative to remaining employed than by social obligations. Pensions were indexed to inflation, while wages were less rigidly tied to price changes. With declining real wages for all groups, pensions would have risen relative to wages. However, the hyperinflation at the end of 1989 undoubtedly accelerated the increase in value of indexed pensions relative to unindexed wages.

The increase in relative value of pensions would have been highest for the low-skilled. Those groups faced the largest proportional decreases in real wages. At the same time, pension levels were tied to labor market earnings which had been artificially high for the least skilled under pretransition policies which mitigated earnings differences between skills. As a result, as shown in Table 8, retirements were disproportionately concentrated among the least skilled. The least skilled also had the highest propensity to retire before transition, but the difference in retirement rates between the most and least educated increased in 1990, especially for women.

It seems clear that the pension policy has contributed to the observed increase in returns to experience for those of pensionable age. There are two possible ways that increased retirements cause the relative wage increase. The first is that the pension policy induced a large exodus of highly experienced workers, so that they became scarce relative to demand. Firms bid up wages for workers qualifying for pensions to keep them from retiring. Another possibility is suggested by the observation that retirements increased the most among the least skilled. Those who decided not to retire in this period had higher observed skills, and may also have had higher unobserved human

capital. The observed increase in returns to experience for pensionable workers may not be that those remaining employed are receiving large wage increases, but rather that only high wage experienced workers are remaining employed.

Distinguishing between the relative scarcity versus heterogeneity in skill hypotheses will require more detailed study of the retirement decision and individual wage growth. However, the observed wages for experienced workers are a measure of lost productivity from retirees of similar skills. The lost output from the pension policy would be higher if the relative scarcity hypothesis holds because the observed wages of employed workers would be unbiased measures of what retirees would earn if they were still employed. Nevertheless, even if only the least productive workers retired, the observed wage/experience profile represents an upper-bound measure of lost production for the marginal retiree. Both interpretations suggest that lost productivity from increased retirements were substantial.

While the pension policy was successful in encouraging retirements, it did not increase jobs for the young. Employment shares for the least-experienced fell, while employment shares for those just under pensionable age rose. Presumably those near pensionable age are close substitutes in production with those who retired, while the least-experienced are not close substitutes. In fact, if inexperienced and experienced workers are complements in production, policies which led to reduced employment of the most-experienced workers also led to reduced employment for young workers.

Employment by Gender. Women gained in relative pay and relative employment. Returning to Table 6, it seems clear that the relative gains in women's employment are due to their relative concentration in sectors which were less adversely affected by the transition. Men were concentrated in manufacturing, agriculture, construction, transportation/communication, and services, all of which lost employment more than average. Women were concentrated in sectors which did better. Within industries, women were not more likely to retain employment than men. In fact, male

employment shares rose in seven of the eleven sectors, although most changes were small. These results suggest that the gains made by women are due to industry-specific demand side factors which adversely affected predominantly male industries.

5. WAGE AND EMPLOYMENT CHANGES AND LABOR MARKET POLICY

The disruption of what had been a very stable economic system created large shifts in labor demand across industries, skills, experience groups, and geographic areas in the formerly socialist economies. These large shifts occurred over a very short period of time. The fortunate were those occupying sectors of the earlier system which faced smaller disruptions in labor demand. Workers in those sectors received a relative quasi-rent from the positions they occupied. The unfortunate in sectors which shrank or collapsed faced a relative loss. Identifying the relative winners and losers during transition will aid in the shift of labor toward its most productive uses, those sectors in which relative quasi-rents have risen.

The stylized facts regarding changes in wages and employment during the Slovenian transition to a more market-oriented economy can be summarized very briefly, despite the lengthy, detailed investigation reported above. The facts are:

► Relative wages and employment rose for the most educated and fell for the least educated. The apparent shift in relative labor demand toward the most educated occurs in all industries.

► Relative wages and employment rise with years of work experience until pensionable age. These results are consistent with shifts in relative labor demand for more experienced workers.

► At pensionable age, relative wages increase very rapidly and relative employment plummets. The effect is consistent with a labor supply shock for pensionable age workers.

► Women gain relative to men in both wages and employment. Relative returns to women's characteristics became more similar to male returns to those characteristics. Women's gains are attributable to women disproportionately occupying education and industry groups which were treated more favorably by the transition, not to economy-wide reductions in discrimination against women.

► Wage inequality increases. Wage variation increases between skill groups, within skill groups, within groups with identical industry and human capital characteristics, and across firms within an industry. These large changes in relative wages should signal future reallocation of labor toward more productive, higher paying sectors.

The litmus test for labor market policy impacts is whether the policy changes are consistent with these labor market outcomes. In Slovenia, the policy story seems clear. Disabling the tax/transfer policy from relatively profitable to relatively unprofitable firms and eliminating worker referenda on wage scales removed mechanisms which served to compress wage variation. As a result, returns to human capital rose rapidly, both for education and experience. Additionally, relative labor demand was growing for the more skilled, due both to economy-wide factors such as the need for more human capital to cope with uncertainty, and to industry-specific factors which lowered demand particularly for low-skill intensive industries.

Policies which actively encouraged retirements were tremendously effective in lowering employment for women over 50 and men over 55. Such policies were more successful at reducing employment than legalization of layoffs, since (in the period studied) costs assessed to firms for layoffs were severe. The policy was so effective that it may have caused firms to bid up wages for pensionable aged workers to prevent them from retiring. Alternatively, it may have caused a selection process by which only the highest paid pensionable age workers remained in the labor force. In either case, the outcomes suggest that the pension policy has proven very costly for Slovenia, both

in terms of the drain on GDP needed to meet pension obligations and from the lost production from retirees. At the same time, the retirements did not 'make room' for young workers. Employment shares for the least-experienced fell, while employment shares rose for those who were the closest substitutes to the retirees: those just under pensionable age.

Incomes policies which set minimum wages, fixed ranges of pay, and indexed wages to inflation did not prevent increases in wage variation from occurring. Wage minimums did not appear to have an effect, presumably because inflation reduced real minimum wages so quickly that most workers were paid above the minimums. In fact, wage distributions showed no signs of massing at the lower tail, indicating no evidence of effective minimum wages.[23] Since 1991, inflation has been more or less controlled, so these incomes policies may have become more effective in recent years.

There are two caveats that should be acknowledged. First, the analysis above does not incorporate benefits, but only wages. To the extent that many benefits, health insurance, pensions, and unemployment insurance, are universal, they would tend to reduce the variance in compensation, relative to the variance in wages. Fixed benefits would not effect the marginal returns to schooling, experience, and gender which underlie the other analysis however. Nor is it clear that inclusion of benefits would reduce measured inequality. Deregulation of compensation may have allowed firms to increase the variety and amount of perquisites offered to employees, particularly to those at the upper-bound of allowable wages.

The second caveat is that we cannot incorporate private sector wages into our analysis. However it is unlikely that the conclusions reported herein are driven by movements of workers into the private sector. As discussed in the data section, changes in social and private sector shares on nonagricultural employment between 1987 and 1991 were small. Furthermore, these changes were dominated by lost employment from the social sector, not by voluntary exits into the private sector.

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[23]These wage distributions are available from the authors on request.

Nevertheless, the private sector has continued to grow in relative importance, and it will be important for future research to incorporate information on wage changes in that sector.

BIBLIOGRAPHY

Abraham, Katharine, and Milan Vodopivec (1993). "Slovenia: A Study of Labor Market Transitions." World Bank, October 1993, processed.

Bird, Edward J., Johannes Schwarze and Gert G. Wagner (1992). The Changing Value of Human Capital in Eastern Europe: Lessons from the GDR. German Institute of Economic Research, Berlin.

Blau, Francine D. and Lawrence M. Kahn (1992). "The Gender Earnings Gap: Learning from International Comparisons." American Economic Review 82 (May, 1992):533-538.

_____(1994) "Rising Wage Inequality and the U.S. Gender Gap." University of Illinois. mimeo.

Burda, Michael, "Labour Markets in Eastern Europe." Economic Policy. April 1993.

Earle, John E. and Oprescu, Gheorghe (1993). "Employment and Wage Determination, Unemployment, and Labor Policies in Romania." Paper presented at the World Bank Conference on 'Unemployment, Restructuring and the Labor Market in East Europe and Russia.' Washington, October 1993.

Flanagan, Robert J. (1993) "Were Communists Good Human Capitalists? The Case of the Czech Republic." Stanford University, mimeo.

Groshen, Erica L. "Sources of Intra-Industry Wage Dispersion: How Much Do Employers Matter." Quarterly Journal of Economics 106 (August, 1991):869-884.

Juhn, Chihui, Kevin M. Murphy, and Brooks Pierce. "Wage Inequality and the Rise in Returns to Skill." Journal of Political Economy 101(June, 1993):410-442.

Katz, Lawrence and Kevin M. Murphy. "Changes in Relative Wages, 1963-1987:Supply and Demand Factors." Quarterly Journal of Economics 107 (February, 1992):35-78.

Kornai, Janos and Agnes Matits (1987). "The Softness of Budgetary Constraints: An Analysis of

Enterprise Data," Eastern European Economics 25 (1987): 1-34

Korze, Uros (1991). Decentralized Privatization Strategy – Slovenia. In Privatization in Central and

Eastern Europe, Ljubljana: International Center for Public Enterprises.

Krueger, Alan B. and Jorn-Steffen Pischke. (1992) "A Comparative Analysis of East and West

German Labor Markets: Before and After Unification." Princeton University. mimeo.

Krueger, Alan B. and Lawrence H. Summers. (1987) "Reflections on the Inter-Industry Wage

Structure." in K. Lang and J. Leonard (eds.) Unemployment and the Structure of Labor

Markets. New York: Basil Blackwell.

Levy, Frank, and Richard J. Murnane. "U.S. Earnings Levels and Earnings Inequality: A Review of

Recent Trends and Proposed Explanations." Journal of Economic Literature 30 (September,

1992):1333-1381.

Orazem, Peter F., J. Peter Mattila, and Sherry K. Weikum. "Comparable Worth and Factor Point

Pay Analysis in State Government." Industrial Relations 31 (Winter, 1992): 195-215.

Pleskovic, Boris and Jeffrey Sachs (1994). "Political Independence and Economic Reform in

Slovenia." In Olivier Blanchard, Kenneth Froot and Jeffrey Sachs, eds, Transition in Eastern

Europe - Volume 1: Country Studies, Chicago: NBER and the University of Chicago Press,

pp. 191-220.

Scarpetta, Stefano, Tito Boeri, and Anders Reutersward. "Unemployment Benefit Systems and Active

Labour Market Policies in Central and Eastern Europe: An Overview." OECD-CCET.

October 1993.

Schaffer, Mark E. (1990) "How Polish Enterprises are Subsidized," School of European Studies,

University of Sussex, processed.

Schultz, Theodore W., "The Value of the Ability to Deal with Disequilibria." Journal of Economic Literature 13 (September, 1975):827-846.

Topel, Robert. "Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority." Journal of Political Economy 99, (February 1991):145-176.

Vodopivec, Milan (1992). "The Effects of Democratic Determination of Wages: Theory and Evidence from Self-Managed Firms", World Bank, PR Working Paper No. 971.

_____(1993). "Determination of Earnings in Yugoslav Firms: Can It Be Squared with Labor Management?". Economic Development and Cultural Change, Vol. 41, No.3, pp. 623-632.

_____and Samo Hribar-Milic (1993). The Slovenian Labor Market in Transition: Issues and Lessons Learned. World Bank, PR Working Paper No. 1162.

Data Appendix

This Appendix reviews the procedures used to merge and clean data from the four sources, the Slovenian Pension and Invalid Fund (SPIF), the data on registered unemployed provided by the Employment Office of Slovenia, and the data on wage history of individuals and the register of enterprises compiled by the Statistical Office of Slovenia. The initial sample was drawn from the wage history data, and the other data was merged using common individual and enterprise identification codes.

A random sample of just under five percent of workers employed in the social sector on December 31, 1986 was selected. The initial sample was supplemented by a five percent random sample of entrants and reentrants during the period 1987 to 1991. Reentrants were eligible for selection only if they were excluded from earlier selections to avoid double counting. Over the five year period, 46,102 individuals entered the sample at least one year.

The data set on work history allows us to trace individuals' employment spells from 1987 to mid-1992, and thus enables us to determine the years for which SPIF should have earnings records. For workers who do not change employers during the year, one earnings record is reported to SPIF; for workers who switch employers during the year, there are as many records reported as there are employers. The number of these spells, together with statistics on records actually provided, are reported in Table A1. The number of records used in analysis ranges from 76 percent of eligible employment spells in 1988 to 60 percent of such spells in 1991.

The most common reason for the omission of an eligible spell was the failure of SPIF to supply earnings records of individuals included in the sample. SPIF has not insisted that records provided by employers use identification numbers common to other government agencies, so some include only the idiosyncratic SPIF identification codes. Such records could not be merged with employment spells of individuals included in our sample. There is no reason to suspect that individuals in the nonmatched set differ systematically from those in the matched set.

Up to four percent of the supplied earnings records turned out to be multiple records on the same employment spell. Such multiple records were collapsed into a single record. On occasion, employers made corrections on an individual's record, and both the original record and the subsequent correction are kept on the individual's file. However, the SPIF did not record which was the correct record. Based of the SPIF's instructions for filing corrections, we were able to collapse multiple records into one as follows: In the case of exact duplicate records, one to three percent of the annual total, only one record was retained. If the duplicate earnings deviated less than 10 percent, 0.1 to 0.3 percent of the total, one record was retained. Records of the "leveiing" type (0.5 to 0.8 percent), in which earnings on one record were less than 25 percent of the earnings of the other, earnings were summed up. The hyperinflation during 1989 created particularly severe problems of multiple records. The falling currency value caused inflated earnings amounts which exceeded the number of digits reserved for earnings on SPIF's preprinted filing forms. To compensate, earnings were reported on several lines. Since these records typically had several lines with all nines in the earnings columns and then a last record with a smaller amount, it was usually apparent that the earnings amounts should be summed to get the full amount. Nonetheless, the need to make more corrections in 1989 than in other years may mean that computed wages in 1989 are less precise.

Further attenuation of records was caused by incomplete merging of the cleaned earnings data with data on human capital characteristics and the employer from the work history data set, and with industry of employer from the enterprise data set. In addition, some individuals included in the sample exited from the social sector into self-employment or private sector employment and were thus excluded.

The decreased sample size in 1991 is due to a lag in data collection by SPIF. When we received the data in October 1993, SPIF was still collecting data for 1991 and had just started to collect data for 1992. Firms are supposed to submit earnings data for one year to SPIF by May of the following year. In practice, employers submit them with significant delays. Further delays occur if data fail logical control, in which case employers must submit corrections.

For the social sector employment spells included in our analysis, data are of good quality. SPIF has a monitoring system with its own site inspectors to validate accuracy. Moreover, employers have to report their payroll to the Social Accounting Service (a government agency that performs accounting auditing) and thus a cross-check of reported information is possible.

Table A.l
Potential and Actual Earnings Records by Processing Stage

	1987	1988	1989	1990	1991
Eligible employment spells	47,350	46,703	46,635	44,746	40,895
SPIF supplied records	42,247	41,078	70,802	37,306	30,560
After collapsing multiple records to one record	40,688	40,053	38,402	36,579	29,873
After merging with work history and employer data	35,184	35,352	32,785	31,110	24,518

Table 1
Comparison of Earnings Distribution, 1989
(Gini Coefficient)

	Gini Coefficient
Slovenia	22.0
Czechoslovakia	19.9
Hungary (1988)	25.6
Poland	19.7

Note: Data refer to net earnings in the state sector.

Source: Branko Milanovic, "Income Distribution in Eastern Europe during the Transition" (World Bank, Washington, D.C., 1991, research proposal); *Statistical Yearbook of Slovenia* (Ljubljana: Statistical Office of the Republic of Slovenia, 1990).

Table 2

Slovenia Wage Equations by Sex, 1987 and 1991
(t-statistics in parentheses)

Variable	Male Wage Equation			Female Wage Equation		
	1987	1991	Change	1987	1991	Change
Education						
Elementary	.044	.107	.063	.079	.112	.033
	(5.28)	(6.17)	(3.64)	(10.10)	(6.16)	(1.87)
Vocational	.163	.201	.038	.164	.183	.018
	(23.5)	(13.8)	(2.58)	(19.9)	(9.60)	(0.98)
Middle School	.319	.406	.087	.370	.465	.095
	(40.0)	(24.6)	(5.22)	(44.9)	(24.9)	(5.16)
University (2 years)	.520	.677	.156	.569	.685	.116
	(43.3)	(27.7)	(6.28)	(50.9)	(28.5)	(4.80)
University (4 years)	.715	.943	.228	.768	.940	.171
	(61.8)	(41.5)	(9.75)	(59.3)	(35.2)	(6.26)
Experience	.019	.018	-.001	.019	.011	-.008
	(22.2)	(10.2)	(.57)	(19.6)	(5.14)	(3.60)
Experience ^{2}/100	-.027	-.019	.007	-.019	.012	.032
	(11.3)	(3.35)	(1.35)	(6.55)	(1.57)	(4.31)
Non Slovene	.023	.003	-.020	-.004	-.019	-.014
	(3.41)	(.24)	(1.43)	(0.55)	(1.17)	(0.89)
Fixed Term	-.038	-.003	.008	.007	-.017	-.023
	(1.48)	(1.13)	(.20)	(0.37)	(6.69)	(0.74)
Intern-Permanent	-.035	-.178	-.144	-.057	-.057	-.000
	(.40)	(2.09)	(1.10)	(0.66)	(0.69)	(0.00)
Intern-Fixed Term	-.149	-.197	-.047	-.111	-.208	-.096
	(-3.93)	(6.05)	(.85)	(2.58)	(5.88)	(1.46)
Month Dummies	inc.	inc.		inc.	inc.	
Industry Dummies	inc.	inc.		inc.	inc.	
N	15,884	10,822		14,590	10,376	
R^2	.428	.342		.461	.313	
$F(11,n)^a$	11.6			8.74		

Note:

[a]Test of the null hypothesis that the human capital, ethnicity and term of employment coefficients are equal in 1987 and 1991. n represents the degrees of freedom in the unconstrained equation.

Table 3
Coefficients of Variation of Real Wage by Subgroup, 1987-1991

Subgroup	Year		
Education	1987	1989	1991
Less Than Elementary	.36	.44	.43
Elementary	.51	.49	.57
Vocational	.48	.47	.38
Middle School	.43	.47	.42
University (2)	.37	.39	.47
University (4)	.28	.40	.45
Experience			
0-3 Years	.61	.53	.57
11-20 Years	.52	.56	.52
>20 Years	.42	.48	.56
Gender			
Male	.49	.57	.55
Female	.49	.50	.56
Residual Standard Deviation			
σ_m	.30	.40	.49
σ_f	.29	.47	.51

Table 4
Differences in Returns to Characteristics Between Males
and Females in Slovenia, 1987-1991

$$\beta_{Ft}-\beta_{Mt}$$

Variable	1987	1988	1989	1990	1991
Education					
Elementary	.035	.013	.007	.020	.005
	(3.09)	(1.16)	(0.41)	(1.02)	(0.19)
Vocational	.001	-.014	-.005	-.012	-.018
	(0.11)	(1.39)	(0.30)	(0.63)	(0.77)
Middle School	.051	.032	.026	.018	.059
	(4.43)	(2.89)	(1.44)	(0.94)	(2.36)
University (2 years)	.048	.015	.019	.024	.008
	(2.93)	(0.96)	(0.73)	(0.87)	(0.23)
University (4 years)	.054	.057	.055	.006	-.004
	(3.08)	(3.49)	(2.05)	(0.21)	(0.10)
Experience	-.000	-.001	.006	-.006	-.007
	(0.06)	(0.85)	(3.22)	(2.81)	(2.44)
Experience ^{2}/100	.007	.011	-.004	.031	.032
	(1.98)	(3.01)	(0.61)	(4.54)	(3.27)
Non Slovene	-.028	-.011	.003	.007	-.022
	(2.71)	(1.16)	(0.19)	(0.43)	(1.05)
Fixed Term	.045	.057	.045	.117	.013
	(1.43)	(2.22)	(1.33)	(3.88)	(0.37)
Intern-Permanent	-.022	-.014	-.026	.141	.121
	(0.18)	(0.18)	(0.26)	(1.41)	(1.02)
Intern-Fixed Term	.038	-.055	-.006	-.016	-.011
	(0.66)	(1.23)	(0.13)	(0.38)	(0.23)
F(11,n)[a]	8.2	8.8	7.6	6.0	3.2
F(21, n)[b]	11.3	9.7	9.4	7.8	4.2

t-statistics in parentheses
[a]Test of the joint hypothesis that the 11 coefficients are equal across the male and female wage equations.
[b]Test of the joint hypothesis that the 11 coefficients and the ten industry dummy variables are equal across the male and female wage equations.

Table 5

A. Change in Female/Male Log Wage Differentials and Relative Wage Distributions

Year	Observed		Standardized Residual Controlling for Human Capital		Standardized Residual Controlling For All Variables	
	Difference[a]	Position[b]	Difference[c]	Position[b]	Difference[c]	Position[b]
1987	-.13	35	-.45	28	-.50	26
1988	-.12	36	-.47	30	-.54	27
1989	-.13	31	-.38	31	-.45	28
1990	-.11	39	-.26	33	-.34	28
1991	-.10	40	-.25	33	-.30	30

B. Decomposition of Change in Female/Male Log Wage Differential[d]

	1987-1989	1989-1991	1987-1991
Observed Change	-.002	-.028	-.030
1. Observed X's	-.005	-.014	-.012
2. Observed Prices	-.024	016	-.014
3. Gap	-.022	-.073	-.100
4. Unobserved Prices	.049	.043	.097
Gender Specific (1+3)	-.026	-.087	-.113
Wage Structure (2+4)	.025	.059	.083
Explained (1+2)	-.029	.002	-.026
Unexplained (3+4)	.027	-.030	-.003

[a] Estimated as average $\ln(W_f)$ minus average $\ln(W_m)$.
[b] Percentile position of median female in the male earnings distribution.
[c] Average value of Θ_{R_t} as defined below equation (3) in the text.
[d] Based on fully specified wage equation including industry dummy variables.

Table 6
Change in Employment by Education and Industry, January 1, 1987 to January 1, 1992

Industry	Education Level								
	Less Than Elementary	Elementary	Vocational	Middle School	University	Total	Low Skill Share[a]	Male Share[b]	Industry Share[c]
Manufacturing	.62[d] [-.16][e]	.79 [-.01]	.85 [.07]	.87 [.09]	.90 [.12]	.78	.50	.56	.44
Agriculture/ Forestry	.59 [-.21]	.80 [.00]	.95 [.15]	.89 [.09]	.81 [.01]	.80	.45	.66	.03
Construction	.60 [-.09]	.71 [.02]	.70 [.01]	.77 [.08]	.81 [.12]	.69	.45	.89	.07
Transportation/ Communication	.65 [-.18]	.77 [-.06]	.85 [.02]	1.01 [.18]	.91 [.08]	.83	.38	.81	.05
Trade	.64 [-.30]	.88 [-.06]	.90 [-.04]	1.08 [.14]	1.18 [.24]	.94	.21	.38	.08
Services	.64 [-.14]	.76 [-.02]	.76 [-.02]	.93 [.15]	1.15 [.37]	.78	.36	.64	.07
F.I.R.E.	.63 [-.37]	.94 [-.06]	1.11 [.11]	1.00 [.00]	1.11 [.11]	1.00	.23	.46	.05
Education	.67 [-.28]	.89 [-.06]	.91 [-.04]	.86 [-.09]	1.09 [.12]	.95	.17	.34	.06
Health	.71 [-.26]	.95 [-.02]	.93 [-.04]	1.03 [.06]	1.06 [.09]	.97	.27	.17	.06
Government	.50 [-.42]	.77 [-.15]	.98 [.06]	.92 [.00]	1.00 [.08]	.92	.16	.36	.03
Industry Missing	.52 [-.73]	1.10 [-.15]	1.52 [.27]	1.59 [.34]	1.51 [.26]	1.25	.36	.63	.03
Total	.62 [-.23]	.81 [-.04]	.88 [.03]	.95 [.10]	1.03 [.18]	.85 1.0	.39	.54	1.0
Share of education group in total employment, 1987	.19	.20	.29	.21	.11				

[a] Employment share for those with an elementary education or less, 1987.
[b] Male Employment share total in 1987.
[c] Industry share of employment in 1987.
[d] Ratio of 1991 employment relative to 1987 employment in the industry/education group cell.
[e] Difference between percent change of employment in industry-education cell and percent change in industry employment.

Table 7
Change in Relative Employment by Experience Group and Gender
January 1, 1987 to January 1, 1992

Experience Group	Male			Female		
	1987 Share[a]	1992 Share[a]	Ratio[b]	1987 Share[a]	1992 Share[a]	Ratio[b]
0-9 years	.330	.318	.80	.359	.330	.78
10-19 years	.329	.345	.87	.358	.387	.92
20-24 years	.127	.135	.88	.118	.148	1.07
25-29 years	.100	.120	1.00	.105	.096	.78
30-34 years	.076	.066	.72	.053	.036	.58
35+ years	.038	.015	.33	.007	.003	.31
Total	1.00	1.00	.83	1.00	1.00	.86

Proportion of Employed Who Retire Within the Year, By Gender and Experience Group
January 1, 1987 to January 1, 1992

Experience Group		1987	1989	1990	1991
20-24	Male	.007	.009	.012	.011
	Female	.019	.020	.029	.014
25-29	Male	.021	.025	.029	.031
	Female	.033	.048	.092	.087
30-34	Male	.071	.082	.148	.158
	Female	.127	.164	.425	.355
35+	Male	.250	.267	.579	.403
	Female	.513	.522	.788	.400
Total	Male	.019	.021	.038	.027
	Female	.018	.023	.049	.033

[a] Group Employment as a proportion of the total
[b] Ratio of 1992 employment to 1987 employment

Table 8

**Proportion of Employed Who Retire Within the Year,
by Education Level and Gender, 1987 to 1991**

Proportion of Males Retiring

	Less Than Elementary	Elementary	Vocational	High School	University	Total
1987	.034	.016	.014	.019	.009	.019
1989	.038	.020	.015	.018	.016	.021
1990	.059	.027	.034	.040	.028	.038
1991	.055	.019	.020	.025	.024	.027

Proportion of Females Retiring

	Less Than Elementary	Elementary	Vocational	High School	University	Total
1987	.045	.019	.012	.010	.008	.018
1989	.063	.024	.013	.012	.011	.023
1990	.123	.051	.038	.029	.025	.049
1991	.080	.039	.036	.030	.025	.034

Figure 1: Index of Relative Wages by Education, 1987-1991

Index

(all series normalized to one hundred in 1987)
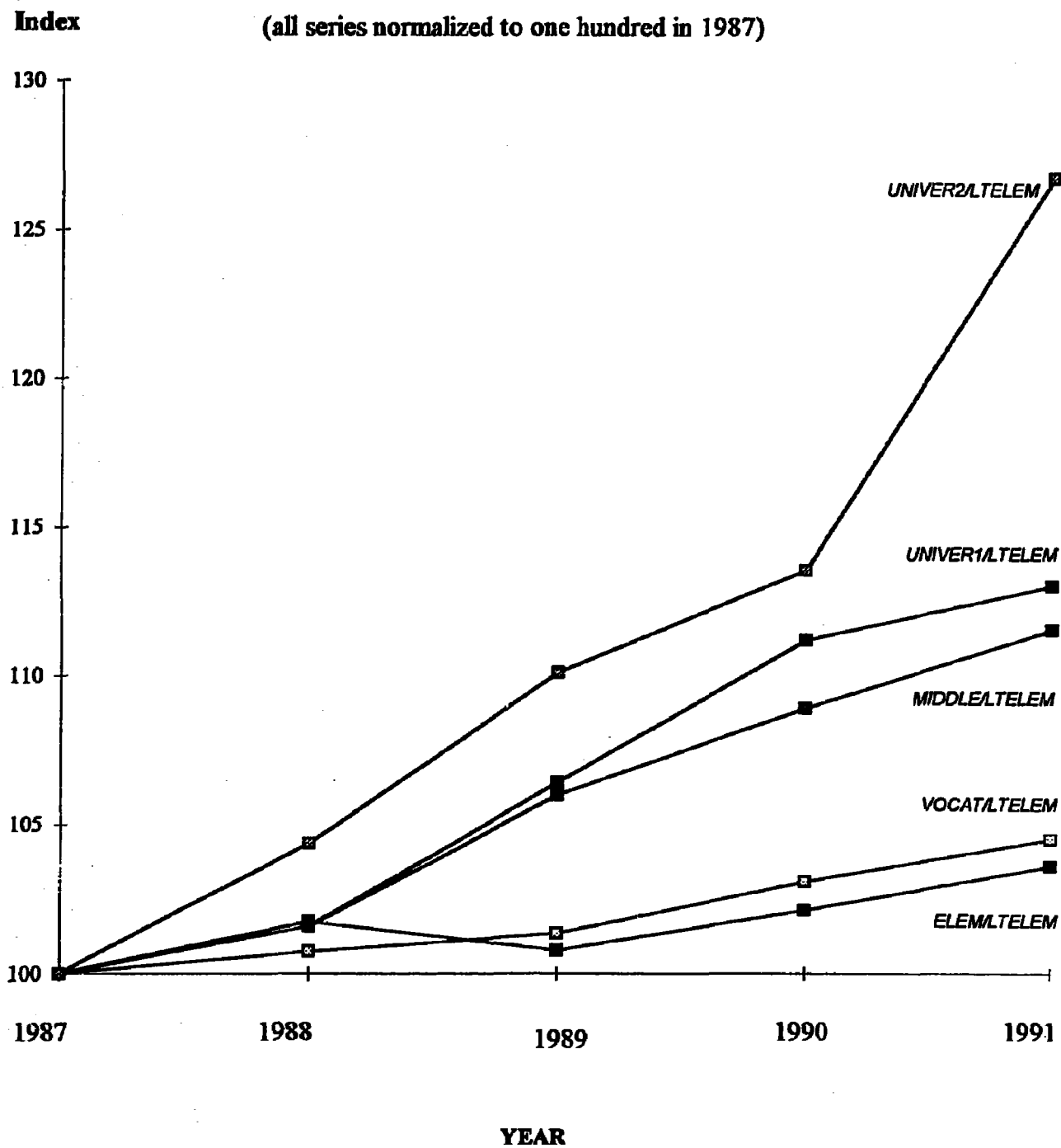
YEAR

LTELEM=Less than elementary   VOCAT=Vocational   UNIVER2=2 Years of University
ELEM-Elementary   Middle=Middle School   UNIVER4=4 Years of University

Figure 2: Returns to Experience by Experience Group, 1987 and 1991

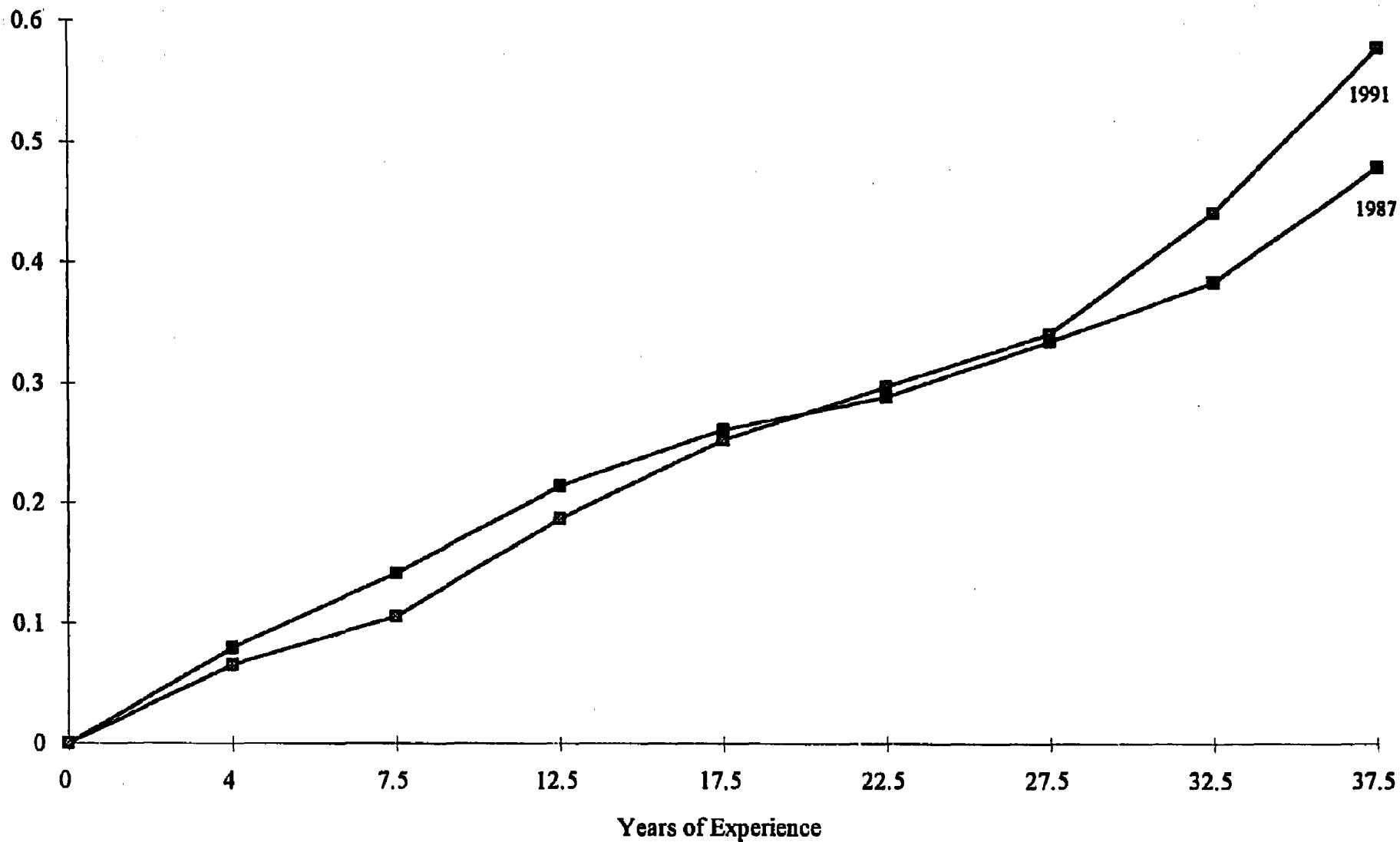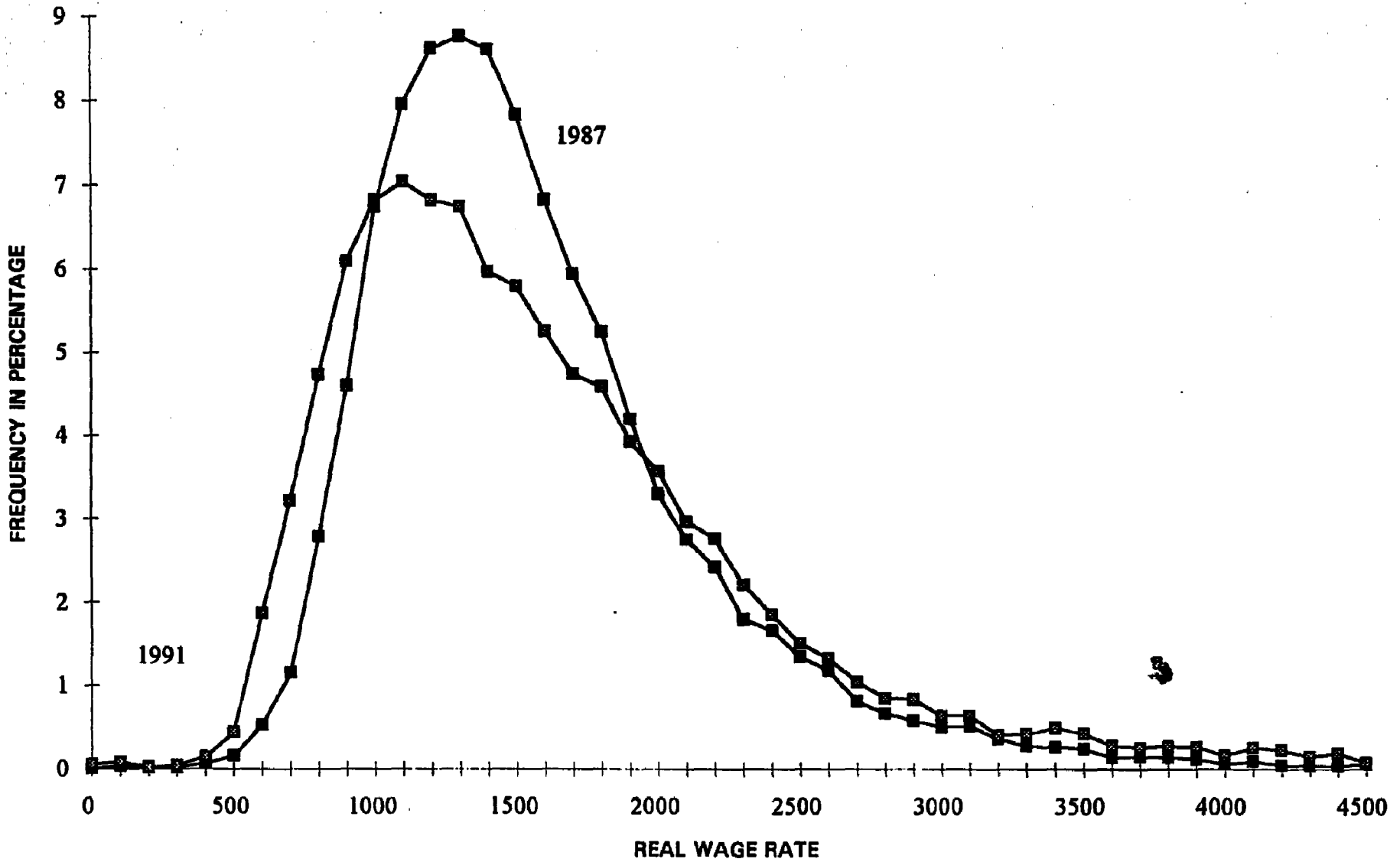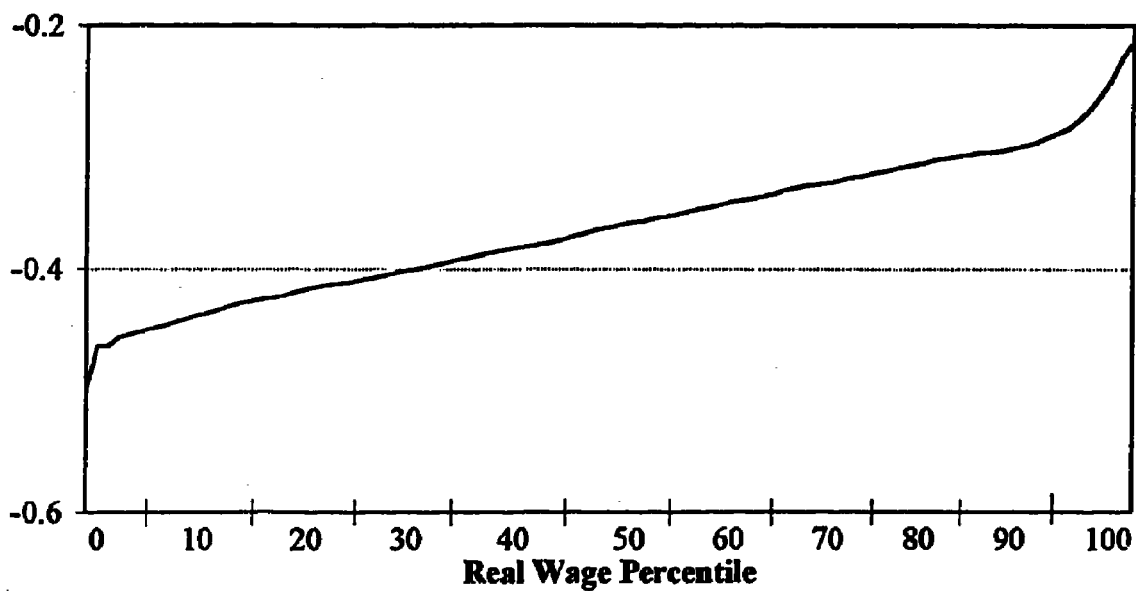(Holding fixed education, ethnicity, sex, and intern status)

Figure 3: Real Wage Distribution, 1987 and 1991, Holding Median Wages at Their 1987 Level

**Figure 4: Percentage Change in Real Wage
from 1987 to 1991, by Percentile**

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