PRELIMINARY – DO NOT CITE

UNEMPLOYMENT DURING THE TRANSITION TO A MARKET ECONOMY: EVIDENCE FROM MICRO DATA ON CZECH AND SLOVAK WOMEN*

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1. Introduction

When functional, the Soviet-type centrally planned system was characterized by full employment of labor (zero open unemployment) and centrally set wages, prices and output targets for state-owned enterprises. Income distribution was maintained at relatively egalitarian levels by requiring all able bodied individuals to work and allocating to enterprises funds to provide the needed jobs. Financial flows were centralized and subordinated to the fulfillment of the physical plan. Foreign trade was also centralized through state trading firms and all the Soviet bloc economies were integrated into a common trading area, the Council for Mutual Economic Assistance (CMEA), or COMECON.

In the 1950s, the Central and East European (CEE) countries grew rapidly and the system was basically maintained. (Although some countries, such as Czechoslovakia, implemented the system more rigorously than others, e.g., Poland.1) Starting in the 1960s, many CEE countries experienced serious slowdowns in economic growth and, as a result of popular pressure, began to initiate economic reforms of the system. Full employment at centrally set (and low) wages was maintained but in many countries the requirement to work (e.g., for housewives) was not fully enforced. Rather than merely soliciting information and imposing targets, central planners increasingly engaged in bargaining with enterprise managers about plan targets, employment levels and financial allocations. By the fall of the Berlin wall and the revolutions of 1989, the system was rapidly disintegrating in countries such as Poland and Hungary, but remained fairly intact in East Germany and Czechoslovakia.

In 1990-91, most CEE economies started the transition to a market economy. The majority of them first focused on maintaining or re-establishing macroeconomic stability, while liberalizing prices and dismantling the centrally planned system. As a means of macroeconomic

stabilization, wages or wage bills of medium and large firms remained controlled by the government in most CEE countries for several years. At the same time, the new democratically elected governments designed and gradually implemented plans for commercializing and privatizing state-owned enterprises which often lead to unemployment.

During the first 3 to 4 years, all these economies experienced a major decline in output and employment accompanied by outbursts of high inflation. Real wages also fell dramatically as the countries devalued their currencies, freed most prices and imposed wage (bill) controls. As seen from Table 1, the most salient development has been clearly in the area of unemployment. Except for the Czech Republic, all CEE countries experienced rapidly rising and persistently high (double-digit) unemployment rates, accompanied by long spells of unemployment. By contrast, in the Czech Republic, the unemployment rate has remained between 3 and 4 percent and unemployment spells have been short. An important issue for policy makers is why unemployment spells have been so much shorter in the Czech republic, since differences in the outflow from unemployment, rather than in the inflow to unemployment, seem to be driving the differences in unemployment rates across the CEEs.2 In this study, we analyze the differences in unemployment durations for women across republics to shed light on this important issue by investigating the determinants of the difference in expected unemployment duration of Czech and Slovak women using weekly data that we collected on unemployment spells during the 1991-1993 period. Thus this paper is a compliment to our earlier work on investigating the causes of the differences in unemployment durations of men in the Czech and Slovak republics.3

Since women constitute a substantial fraction of the labor force, it is necessary to analyze their experience in order to understand the differences between the Czech Republic and the other CEEs. However, the are several other reasons to focus on women specifically. First, as

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1 Poland for instance maintained private agriculture as well as some small private industry and services.
2 See Table 1.
3 For studies investigating unemployment duration in other CEE countries, see Abraham and Vodopivec (1995),

mentioned earlier, the communist preoccupation with mobilizing the entire potential labor force meant that the CEE economies had the highest women's labor force participation rates (LFPRs) in the world. The unemployment experience of women in the transition economies may hence be in part different from that of men and women in the established market economies because women in the transition economies may be adjusting their LFPRs from the previously artificially high levels. Most observers expected that with the transition to markets, women would decrease their participation dramatically. In fact, between 1989 and 1994 there was a 9.6 percent decrease in women in the Czech labor force, 7.7 percent in Slovakia, 20 percent in Hungary and 4.4 percent in Poland. However, the rate of decline of women in the labor force was only slightly larger than that of men in the Czech Republic (6.4 percent), Slovakia (5.2 percent) and Hungary (16 percent). In Poland the rate of decline in the male labor force was actually higher than that of women's (7.8 percent). (Paukert, 1995, pp. 2-3.) Moreover, although the decline in the participation rates of women was substantial during this period, women's LFPRs in these four countries in 1994 – ranging from 66 percent (in Poland) to 79 percent (in the Czech Republic) -- were still far above the U.S. rate of 59 percent in 1994 (Ehrenbrg and Smith, 1996).

Secondly, some observers expected that women's unemployment rates would be higher than those of men, believing that there would be a gender bias in firing and hiring. It appears, however, that there is no consistent relative difference in women's and men's unemployment rates across the countries, although there is a systematic difference within each country over time. For example, as seen in Table 2, women's unemployment rate has been much higher than that of men's in the Czech Republic and in Poland from 1992 to 1994. On the other hand, men's and women's unemployment rates have remained roughly similar over the transition period in Slovakia. Finally, in Hungary, women's unemployment rates have been lower than those of men. Of course, we know from the discrimination literature that it is important to control for

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Bellmann et. al. (1995), Gora (1993), Jones and kato (1993) and Mickelwright and Nagy (1994).

differences in endowments (e.g. education) when comparing men and women. A second contribution of this paper is to use an Oaxaca type decomposition to investigate the difference in unemployment durations between men and women in each republic.

A third reason it is important to focus on women is that the first studies of returns on human capital in Central Europe suggest that women enjoyed higher rates of return on education than men while under Communism. They have also found that the return to education has been increasing since the start of the transition and that the increase has been greater for men than women (see Flanagan, 1994 and Chase, 1997). There are hence interesting gender-specific developments in the education-related wage differentials that may have important implications for labor force participation and unemployment durations of women.

A fourth reason to focus on women is that in other areas, e.g. labor supply, married women have exhibited substantially higher responsiveness to economic incentives than men or single women. The responsiveness of single and married women is important since the CEE governments face a difficult trade-off in choosing the level of unemployment compensation. On the one hand they want to provide an adequate social safety net to insure political stability. On the other hand they want to minimize the disincentives of unemployment compensation to speed the transition to a market economy and to reduce pressure on the government budget. Thus a third contribution of this paper is to measure the reponsiveness of single and married women to changes in the unemployment system. We investigate the effect of marginal changes in the UCS from estimates on a sample of recipients. We estimate the effect of infra-marginal changes in the UCS by comparing the experience of UCS recipients and non-recipients.

The paper proceeds as follows. In Section 2 we briefly describe the salient features of the unemployment compensation scheme. In Section 3 we discuss our data and present our methodology. We discuss our estimates of the hazard functions in Section 4. In Section 5 we compare the experience of recipients of unemployment compensation in each republic to

estimate the effect of infra-marginal changes in the unemployment compensation system. In Section 6 we investigate differences in the unemployment durations of women across republics, as well as those between men and women within each republic.

2. Characteristics of the Unemployment Compensation System

Czechoslovakia introduced an unemployment compensation system (UCS) in January 1990. By the time of our study (last quarter of 1991 to the middle of 1993), the system was working fairly smoothly. The systems in each republic basically followed the same guidelines. We limit ourselves to a brief description of the three main features--eligibility, entitlement and benefits--and refer the reader to Ham, Svejnar and Terrell (1998) for those interested in more detail.

Eligibility was quite broad as recently graduating students and anyone who worked for at least twelve months in the preceding three years was eligible in 1991-93 for unemployment benefits (unless the person was fired for cause or quit jobs repeatedly). Until January 1992, individuals out of the labor force were also eligible if they cared for a young child or a sick/disabled relative, or if they were in the military or imprisoned, for twelve months in the previous three years. This is an important change in policy for this study since it reduced the eligibility of many women.

Entitlement: In 1991, all eligible unemployed were entitled to twelve months of benefits. On January 1, 1992, entitlement was reduced to six months. Since there was no "grandfather clause," those who became unemployed after July 1, 1991 received only six months of benefits. All individuals in our sample fell into this category.

Benefits: For those who worked before entering unemployment, the level of benefits was set in 1991 at 60% of the person's previous wage for the first six months of unemployment. However, individuals who were laid off because of major organizational changes had benefits set

at 65% of their previous wage. For both groups, the replacement rate fell to 50% in the second six months of the entitlement period. On January 1, 1992, the replacement rates became 60% for all workers during the first three months and 50% during the second three months of their unemployment spell. Those who had never worked before and graduating students received benefits equal to 60% of the minimum wage in the first half of the entitlement period and 50% in the second half.

Whereas in 1991, there was no upper limit on benefit levels, there was a minimum level set at 1,200 Kcs (60% of the minimum wage4). In 1992, a maximum level equal to 150% of the minimum wage (180% for those in training) was imposed, and the minimum was replaced by the "minimum living standard" (MLS) which is equivalent to the household poverty line in the U.S. In fact, the unemployed person was eligible for social assistance (welfare) in addition to his/her unemployment benefit if the sum of his/her unemployment benefit and the income of other household members were less than the household MLS.

Once benefits expired, a person was eligible for social assistance if his/her household income was below the MLS. In practice, a single person collected benefits but the amount depended on whether he/she lived at home. A married person only collected benefits if the combined income of other household members was below the household MLS.5
A significant number of individuals who were ineligible for unemployment benefits registered as unemployed. Some registered in order to obtain the assistance of the district labor office in finding a job. Registration was also a prerequisite for receiving welfare. As noted above, those who did not have the necessary work experience in the previous three years (or its equivalent before January 1992) were ineligible for benefits, as were those who were fired for cause or quit repeatedly. Further, if a graduating student started a job and lost it before acquiring twelve months of experience, he/she was not eligible for benefits.

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4 One dollar was equal to 26-30 Kcs (Czechoslovak Crowns) in the 1991-93 period.

There is a great deal of similarity in the features of the Central and East European UCS's since they were patterned after the models of the west European countries. Hence the econometric specification in this paper may be useful to those studying the unemployment compensation system in other CEE countries as well.

3. Data Description and Econometric Model

We collected weekly data on a stratified random sample of men and women who registered at the district labor office as unemployed between October 1, 1991 and March 31, 1992. We followed these individuals from the onset of their unemployment spell to the end of their unemployment spell or the end of July 1993, whichever came first.

The sample was selected as follows: First, we randomly selected 20 districts in each of the two republics. We then randomly selected 150 individuals in each district who registered at the unemployment office during the last quarter of 1991 or the first quarter of 1992.6 We eliminated observations for women who suffered a prolonged illness, were ineligible for unemployment compensation, or had missing values or took part in training.7 This left us with a sample of 851 women who were receiving unemployment benefits and 418 non-recipients in the Czech Republic. In Slovakia we had a sample of 902 women receiving benefits and 218 non-recipients. For more detail on the sample characteristics, see appendix Table A1.

To analyze unemployment spells, we use a duration model rather than a regression model because factors such as demand conditions and unemployment benefits change over an individual's unemployment spell and this nonstationarity can not be captured in a regression

5 See Terrell and Munich (1995) for a detailed description of the MLS.
6 There were 78 districts in the Czech Republic and 38 districts in the Slovak Republic at the time of this study.
7 We do not include these individuals as their unemployment spell can be lengthened by the training period and their behavior is likely to be different from other recipients. We cannot analyze them separately because we only have a small number in our sample.

framework.8 Since we have weekly data on the duration of unemployment spells we denote the hazard function (the probability of leaving unemployment) in week r of the spell as

$$\lambda(r \mid \theta) = (1 + \exp(-y(r \mid \theta)))^{-1} \tag{1}$$

where

$$y(r \mid \theta) = \alpha_0 B(r) + \alpha_1 W + g(E(r)) + Z(r)\ \gamma + h(r) + \theta. \tag{2}$$

We estimate the model by maximum likelihood. The conditional contribution conditional on θ, the unobserved heterogeneity component, for someone who is still unemployed after r weeks is given by the survivor function

$$S(r \mid \theta) = \prod_{v=1}^{r} (1 - \lambda(v \mid \theta)). \tag{3}$$

The conditional contribution of someone who completes and unemployment spell of t weeks is given by (4)

$$f(t \mid \theta) = \lambda(t \mid \theta)\, S(t-1 \mid \theta).$$

Let $\phi(\theta)$ represent the density function for the unobserved heterogeneity. The unconditional contribution to the likelihood for the spell that ends in week t is given by

$$L(t) = \int \lambda(t \mid \theta)\, S(t-1 \mid \theta)\, \phi(\theta)\, d\theta. \tag{5}$$

The contribution of a censored spell is calculated in an analogous manner. We assume that θ is drawn from a discrete distribution with 2 support points. Thus we use a simplified version of the Heckman and Singer (1984b) approach.

In (2) the first three terms are: B(r), which equals unemployment benefits in week r; W is the individual's previous weekly wage; and g(·) is a function of remaining entitlement E(r) in week r. Demographic variables and demand conditions are captured in Z(r). We parameterize g(·) as a linear

8 Good references on duration models are Flinn and Heckman (1982), Hecman and singer (1984a), Kiefer (1988) and Lancaster (1990). See Devine and Kiefer (1991) for a comprehensive survey of previous empirical studies.

function of (i) remaining weeks of entitlement, (ii) a dummy for the last week of entitlement before benefits have been exhausted and (iii) an exhaustion dummy equal to 1 for all weeks after entitlement has been exhausted.

Following Ham, Svejnar and Terrell (1998), we use five sources of variation in benefit levels which is independent of wages to identify the benefits' coefficients. First, benefits drop from 60% to 50% of the previous wage at thirteen weeks of duration.9 Second, a maximum benefit level was imposed in 1992. Third, a number of individuals had their benefits raised to the minimum level of benefits. Fourth, unemployment benefits are not indexed and hence we discount benefits by the CPI to capture the erosion of the real value of benefits over time. On the other hand, we assume that the appropriate proxy for the mean of the worker's wage offer distribution is his real wage at the time he began his spell. Prices and nominal wages rose by approximately 30 per cent from the last quarter of 1991 to the second quarter of 1993, the period covered by our data (Dyba and Svejnar, 1995). Fifth, the replacement ratio was 0.65 for those laid off because of a major plant closing prior to January 1992.

To estimate the impact of remaining entitlement on the hazard rate, we need variation in remaining entitlement that is independent of other determinants of the hazard function, particularly current duration. However, remaining entitlement is a simple linear function of initial entitlement and current duration for women who register for benefits at the district labor office immediately after becoming unemployed, and initial entitlement is constant across individuals. To avoid this identification problem, we again follow Ham, Svejnar and Terrell (1988) and exploit the fact that a significant number of individuals who wait to register for unemployment

9 Benefits also change when unemployment benefits are exhausted after 26 weeks of covered unemployment. As noted above, a single female qualifies for welfare, although her benefits depend on whether she lives at home. Whether a married woman qualifies, and the amount she receives, depends on her spouse's income. We cannot

benefits after becoming unemployed. For such individuals, remaining entitlement is not a simple linear function of current duration and initial entitlement.10 The conditional contribution of period after registration to the likelihood function for an individual who registers late is

$$(6) \qquad L(t \mid \theta) = \lambda(t+T \mid \theta) \prod_{v=1}^{t-1} (1 - \lambda(T+v \mid \theta)). \quad 11$$

As noted above, Z(r) contains variables measuring demographic characteristics and demand conditions in week r.12 Except for age, the demographic variables are in dummy variable form. The only variables requiring explanation are the 'recent graduate' and the education variables. The recent graduate variable is coded 1 if an individual is a graduate within the last year from a university or high school. We use three dummy variables for educational achievement: i) graduate of a vocational high school, ii) graduate of an academic high school, and iii) those with some post high school (university) education. (The control group consists of those with only a junior high school education, the basic education required by law.)13

We experimented with three variables to account for differences in demand conditions across districts and two republics and a variable to proxy differences in market structure. The first two - quarterly data on district unemployment and vacancy rates by educational group -- varies quarterly over the duration of a spell and across individuals. The third variable is the real value of per capita industrial production in the district in a given year.14 It takes on different values across calendar years and across districts. Finally, we used the ratio of employment in

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impute welfare benefits for either single or married women and thus we cannot exploit this variation.

10 One reason that individuals register late for benefits is that individuals usually exhaust severance pay before collecting benefits. Other individuals simply wait to collect benefits; this phenomenon is similar to the less than full take-up of unemployment benefits in the United States (Anderson and Meyer 1997).

11 Using those who register late does potentially complicate the econometric framework – See HST (1988).

12 All variables in (20) are individual specific but we have omitted the individual subscript for expositional ease.

13 We would like to control for number and age of children. We may have some usable information on children in our data, and will report on this in future drafts.

agriculture to employment in industry (manufacturing) to proxy differences in market structure across republics.

The final term in (2), h(r), captures the effect of duration dependence on the hazard. Since both remaining entitlement and benefits are a function of duration, it is important to allow for flexible duration dependence and unobserved heterogeneity (θ). However, recent Monte-Carlo evidence (Baker and Melino 1977) suggests that it is important to be relatively conservative in choosing the number of parameters describing the duration dependence and the heterogeneity distribution. Thus we will use a polynomial in log duration to measure duration dependence. We choose the degree of the polynomial using the Schwartz criterion (see, e.g. Judge et al., 1980), assuming that the degree of the polynomial is less than or equal to five.

As noted above, we also estimate the model for non-recipients. For these individuals benefits and entitlement are not defined and we do not have data on wages. Thus we estimate a smaller version of the hazard function omitting these variables. We also do not allow for unobserved heterogeneity when estimating this model for two reasons. One, the bias from ignoring heterogeneity is likely to be smaller when the explanatory variables do not depend on duration. Second, we have only a limited amount of data for these individuals and Ham, Svejanr and Terrell (1988) found that the likelihood functions for non-recipients could be poorly behaved when they analyzed male non-recipients with similar sized samples.

Finally, estimates of the hazard functions can be difficult for both researchers and policy makers to interpret. To provide results analogous to those produced by regression analysis, we use our parameter estimates to estimate the effect of a change in a variable on the

14 The industrial production variable is available only at an annual frequency. It is a price-weighted composite of total per-capita industrial production in the district in 1991 prices.

expected duration of unemployment. Since we have data on only a relatively short time period after the beginning of the transition, we use a truncated expected duration

WE SHOULD DEFINE THIS AS 'ED(BETA, X)='

$$(6) \qquad [\sum_{t=1}^{K} t\ f(t) + (1 - Pr(t < 4yrs)) * 4yrs\ ],\ where\ K = 4\ years - 1\ week\ .$$

where both f(t) and the Pr(t < 4 yrs) depend on the parameter estimates BETA and the values of the explanatory variables X. We can numerically differentiate (or the equivalent for dummy variables) this expression with respect to the individual explanatory variables.15

4. Estimates of the Hazard Functions for Recipients in the Czech and Slovak Republics

4.1 Effects of the Uunemployment Compensation System

The parameter estimates of the hazard function for Czech recipients are contained in column 1 of Table 3, while the respective expected duration experiments are contained in column 1 of Table 4. The corresponding coefficients for Slovak recipients are in column 4 of Table 3 and expected duration experiments in column 3 of Table 4. Since models with heterogeneity are better behaved numerically when there are not a lot of insignificant coefficients, we used the following strategy to chose a more parsimonious model. We examined the no-heterogeneity results (see Appendix Table A1) and constrained the coefficients to be the same for married and single women where this seemed appropriate given the parameter estimates and standard errors. Since there is also substantial multicollinearity in the demand variables, we included the 'most' significant variables in our equations. We then allowed for unobserved heterogeneity in estimation.

The benefits coefficient is constrained to be equal for married and single women . It has the expected sign and implies an elasticity of 0.21, although it is not statistically significant from zero. The wage coefficient is statistically significant for married women, and implies and elasticity of -0.71. The entitlement coefficient for married women is also statistically significant, and implies an elasticity of 0.45. The coefficient for entitlement for single women is significant at the 10% level (or at the 5% level if one assumes a one sided test), and implies an elasticity of 0.37. There is a statistically significant spike in the last week of entitlement for married women, while this variable is insignificant for single women. Finally the exhaust dummy (constrained to be equal for single and married women) is significantly negative. The results imply that married women in the CR are as responsive to the changes in the UCS as men in the CR (See Ham, Svejnar and Terrell 1998, Table 2), while single women appear somewhat less responsive.

For Slovak women there appears to be no significant effect of benefits or wages. Further, the entitlement effect is statistically significant and similar in magnitude for married and single women. On the other hand, while both married and single women have a statistically significant spike in the last week of benefits, the spike is substantially larger for married women. Finally the exhaustion dummy is insignificant for both married and single women. The implied entitlement elasticities are 0.18 and 0.29 respectively for married and single women. Thus there does not appear to be a substantial difference in the responsiveness of married and single women in the SR to the UCS, and as in the case of men, the elasticities are smaller in the SR than in the CR.

4.2 Demographic and Demand Variables

15 We calculate the expected durations at the mean of the explanatory variables.

Focusing on the results for the recipients in Tables 3 and 4, we find first that age is not a significant explanatory variable in either republic. On the other hand, that the educational dummies are significantly different from zero, and those with only elementary education (the control group) have much longer unemployment spells (relative to base duration). Romany's (gypsies) have much longer spells of unemployment in both republics. Whereas handicapped women have significantly longer spells than non-handicapped in the CR, the coefficient is not significant for recipient women in the SR, although the expected duration effects are relatively large in both republics. Women living in Prague leave unemployment more rapidly than women living in other parts of the CR while women living in Bratislava tend to have longer spells. (This result for the capital cities was also found for the men in our 1998 paper and we believe it reflects the location of these cities – Bratislava is very close to Vienna and Prague is in the center of the Czech Republic --and potential "grey market" behavior.) The marital dummy is significant in the CR but not in the SR. Note that when we use the smaller model in columns (2) and (5) to get an overall marital effect, married women leave unemployment significantly more slowly than single women in each republic, and that the results in Table 4 suggest that these effects are substantial. The demand and market structure variables have there expected sign, although the vacancy rate is not statistically significant in the CR.

For non-recipients, most of the same demographic patterns hold, except that: a) none of the education coefficients is (individually) significantly different from zero in the CR whereas they are very important in the SR; b) the coefficient for married women in is significant in the SR but not in the CR and it indicates that non-recipient married women in the SR have on average spells that last 36 weeks longer than non-recipient single women. The demand variables continue to have the expected sign and are quite statistically significant among non-recipients.

5. Estimating Infra-Marginal Changes in Unemployment Compensation

The fact that we have data on both recipients and non-recipients raises an interesting (if hypothetical) question: how would the unemployment duration of a recipient change if she was deemed ineligible for unemployment insurance? One could try to analyze this using the estimates for recipients discussed above by setting benefits and entitlement equal to zero, but this involves an extrapolation well beyond the experience of anyone in the recipient group. However, given data on non-recipients, we can ask what the expected duration for recipients would look like if their behavior was governed by the (estimated) hazard function for non-recipients, and compare this quantity to their expected duration using the (estimated) recipient hazard function. 16

Since the variables relating to unemployment compensation are not available for the non-recipients, we use a smaller set of explanatory (demographic and demand) variables X^*_{nr} to estimate the hazard rate for the non-recipients. Denote the same smaller set of variables for recipients as X^*_r and the corresponding parameter estimates for non-recipients and recipients as β^*_{nr} and β^*_r, respectively. Formally, we calculate

$$\text{Diff 1} = \text{ED}(\beta^*_{nr}, X^*_r) - \text{ED}(\beta^*_r, X^*_r), \tag{7}$$

where $ED(\beta, X)$ denotes the expected duration of unemployment at the mean values of the Xs. (In order to streamline notation, in what follows we simply use X to denote mean values in the expected duration calculations.) We call this "moving someone from being a recipient of unemployment insurance to being a non-recipient."

$$\text{Diff 2} = \text{ED}(\beta^*_r, X^*_{nr}) - \text{ED}(\beta^*_{nr}, X^*_{nr}). \tag{8}$$

16 We are not controlling for unobserved differences between recipients and non-recipients. To do so we would need a variable that does not affect duration but affects recipient status (Ham and LaLonde 1996).

Table 5 contains the relevant parameter estimates. For the CR, we estimate that moving someone to the non-recipient category from the recipient category would lower her unemployment spell by 11.9 weeks or by slightly more than 50 per cent (see row 5). On the other hand, moving someone from the non-recipient category to the recipient category would raise the length of her unemployment spell by 11.6 weeks (row 6), or would more than double the length of the spell.

The results for the SR are much less dramatic, at least in percentage terms. Here, we estimate that moving someone from the recipient category to the non-recipient category lowers a woman's spell by 18.6 weeks or by approximately one-third. Further, moving an individual from the non-recipient category to the recipient category in the SR only increases duration by 7.7 weeks or by less than 10 per cent.

6. Analyzing Differences in Unemployment Duration Between the Republics

6.1 Differences Across Republics for Recipients and Non-Recipients

The difference in expected duration of unemployment between the republics (s = Slovak and c = Czech) is given by:

$$ED_s - ED_c = ED(\beta_s, X_s) - ED(\beta_c, X_c). \tag{9}$$

Using the approach of Ham, Svejnar and Terrell (1998), we can calculate a (nonlinear) Oaxaca type decomposition to calculate the portion of this difference arising from differences in parameter estimates and the portion arising from differences in the explanatory variables (e.g., demographics and demand conditions). Further, we can decompose the contribution arising from differences in the explanatory variables into a portion due to differences in demand variables and

a portion due to differences in the other explanatory variables, primarily demographic variables.

Column 1 of Table 6 contains our results for recipients. We estimate that recipients stay unemployed approximately 46 weeks longer in the SR than in the CR, and that essentially all of this difference is coming from differences in coefficients. Surprisingly, only about 6 per cent of this difference arises from differences in our measures of demand variables, which suggests the need to investigate in future work other measures of demand than the ones considered here.

Column 2 of Table 6 contains our results for non-recipients. Note that the difference in expected duration between non-recipients in the SR and CR, approximately 82 weeks, is almost double that between recipients in the two republics. Now differences in the coefficients account for slightly over half of this difference, while differences in the explanatory variables account for the remainder. Now differences in demand conditions account for slightly over one-third of the difference in expected duration. The portion due to differences in the explanatory variables arises entirely from differences in demographics. Thus our results for non-recipients are much closer to our results for men than our results for recipients.

6.2 Differences Between Male and Female Recipients

Not available this draft.

7. Conclusions and Future Work

Not available this draft.

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Table 1:
Macroeconomic Statistics for Selected Central and East European Countries

	Inflation Rate (CPI)	GDP Growth	Unemployment Rate	Inflow Rate[f]	Outflow Rate[g]
Bulgaria					
1990	70 [a]	-9.1	1.5	--	--
1991	339	-11.7	11.5	--	7.0
1992	79	-7.3	15.6	1.7	9.2
1993	64	-2.4	16.4	1.4	6.8
1994	122	1.8	12.8	1.5	10.2
1995	33	2.1	10.5	1.5	11.6
1996	123 [b]	-9.0	12.5	1.7	11.3
Czech Republic					
1990	10 [c]	-1.2	0.8	--	--
1991	52	-11.5	4.1	0.9	17.1
1992	13	-3.3	2.6	0.9	26.6
1993	18	0.6	3.5	0.7	22.0
1994	10	2.7	3.2	0.6	21.3
1995	8	5.9	2.9	0.6	21.3
1996	9	4.2	3.3	0.6	19.3
Hungary					
1990	29 [d]	-3.5	1.9	--	--
1991	32	-11.9	7.5	--	--
1992	22	-3.1	12.3	0.9	6.6
1993	21	-0.6	12.1	1.3	7.7
1994	21	2.9	10.4	1.1	9.1
1995	28	1.5	10.4	1.0	7.9
1996	24	1.0	10.5	1.3	9.4
Poland					
1990	585 [e]	-11.6	6.1 [h]	--	--
1991	60	-7.0	11.8 [h]	--	--
1992	44	2.6	13.6 [h]	0.9	4.3
1993	38	3.8	15.7 [h]	1.1	4.8
1994	29	5.2	16.0 [h]	1.2	6.2
1995	22	7.0	14.9 [h]	1.3	8.0
1996	20	5.5	13.6 [h]	1.2	8.2
Slovak Republic					
1990	10 [a]	-2.5	1.5	--	--
1991	58	-14.6	11.8	1.3	4.8
1992	9	-6.5	10.3	1.1	10.2
1993	25	-3.7	14.4	1.5	7.8
1994	12	4.9	14.8	1.3	7.4
1995	7	6.8	13.1	1.4	9.5
1996	6	7.0	12.8	1.4	10.0

SOURCE: Columns 1 and 2: EBRD *Transition Report 1997* (London: EBRD), e xcept where noted below:

a. Retail trade price. Economist Intelligence Unit, *Bulgaria Country Report*, 1st Quarter, 1992, p. 5.

b. Economist Intelligence Unit, *Bulgaria Country Report*, 4th Quarter 1997, p. 9. Percent change in average consumer prices.

c. Economist Intelligence Unit, *Czechoslovakia Country Report*, 1st Quarter, 1992, p. 3.

d. Economist Intelligence Unit, *Hungary Country Report*, 1st Quarter, 1992, p. 3.

e. Economist Intelligence Unit, *Poland Country Report*, 1st Quarter, 1992, p. 3.

SOURCE: Columns 3-5: OECD-CCET Labour Market Data Base .

f. Average annual rates of the number flowing into unemployment divided by the number employed and multiplied by 100.

g. Average annual rates of the number flowing out of unemployment divided by the number unemployed, multiplied by 100.

h. Source is EBRD's *Transition Report1997* and *Transition Report Update, April 1997.*

Table 2:
Unemployment Rates by Gender, 1992-1996

	1992	1993	1994	1995	1996
Czech Republic					
Men	--	3.3	3.3	3.2	2.9
Women	--	4.7	4.4	4.4	4.2
Hungary					
Men	11.0	13.5	12.1	11.6	10.9
Women	8.7	10.4	9.4	8.7	8.8
Poland					
Men	12.2	12.7	13.1	12.1	11.0
Women	14.9	15.6	16.0	14.7	13.9
Slovak Republic					
Men	--	12.5	13.3	12.6	10.0
Women	--	13.1	14.1	13.8	12.5

Source: National Labor Force Survey Statistics

TABLE 3

ESTIMATED COEFFICIENTS FROM HAZARD MODEL FOR CR AND SR WOMEN
2-POINT HETEROGENIETY for Recipient full-model
NO HETEROGENIETY for Recipient small-model and for Non-Recipients

	Recip.	Recip. (small model)	Non-Recip.	Recip.	Recip. (small model)	Non-Recip.
Weekly Benefits	-12.196 (10.391)	-----	-----	-0.055 (9.047)	-----	-----
Weekly Wage	-----	-----	-----	1.468 (3.746)	-----	-----
Weekly Wage * Married	17.138 (6.652)	-----	-----	-----	-----	-----
Weekly Wage * Single	0.306 (6.862)	-----	-----	-----	-----	-----
Weeks of Remaining Entitlement * Married	-0.382 (0.143)	-----	-----	-0.511 (0.161)	-----	-----
Weeks of Remaining Entitlement * Single	-0.292 (0.168)	-----	-----	-0.658 (0.183)	-----	-----
Last Week of Entitlement * Married	0.703 (0.288)	-----	-----	0.967 (0.316)	-----	-----
Last Week of Entitlement * Single	0.598 (0.519)	-----	-----	0.282 (0.527)	-----	-----
Benefits Exhausted	-0.620 (0.317)	-----	-----	-----	-----	-----
Benefits Exhausted * Married	-----	-----	-----	0.080 (0.340)	-----	-----
Benefits Exhausted * Single	-----	-----	-----	0.433 (0.367)	-----	-----
Age * 10**-1	0.050 (0.054)	0.033 (0.043)	-0.057 (0.064)	0.056 (0.084)	0.071 (0.051)	0.031 (0.147)
High School, No Exam	0.321 (0.140)	0.190 (0.110)	0.137 (0.169)	0.780 (0.227)	0.383 (0.145)	1.398 (0.291)
High School, with Exam	0.357 (0.149)	0.205 (0.114)	-0.043 (0.173)	0.870 (0.224)	0.473 (0.130)	1.329 (0.329)

TABLE 3

Post High School	0.437 (0.363)	0.265 (0.261)	0.466 (0.423)	0.967 (0.368)	0.212 (0.239)	1.814 (0.594)
Romany	-1.416 (0.485)	-1.264 (0.457)	-1.713 (0.399)	-2.994 (0.779)	-2.114 (0.713)	-1.332 (0.429)
Handicapped	-0.471 (0.207)	-0.354 (0.173)	-0.558 (0.219)	-0.513 (0.369)	-0.302 (0.223)	-0.077 (0.414)
Married	-1.054 (0.328)	-0.307 (0.087)	0.051 (0.126)	-0.283 (0.324)	-0.321 (0.101)	-0.536 (0.287)
Recent Graduate	0.581 (0.382)	0.188 (0.130)	-0.076 (0.217)	-0.197 (0.334)	-0.422 (0.157)	-0.634 (0.537)
Lives in Prague/Bratislava	0.792 (0.204)	0.664 (0.150)	1.224 (0.250)	-1.129 (0.367)	-0.642 (0.221)	-0.095 (0.635)
District Unemployment Rate / Ed. Group	-----	-----	-----	-----	-0.013 (0.018)	-0.097 (0.043)
District Vacancy Rate / Education Group	0.090 (0.075)	0.113 (0.066)	0.278 (0.135)	0.194 (0.106)	0.142 (0.071)	-----
Industrial Production in District*10**-6	1.716 (1.308)	0.887 (1.162)	7.418 (1.598)	-----	1.253 (0.731)	3.008 (1.824)
Agricultural / Industrial Production	-----	-0.086 (0.199)	1.273 (0.331)	-0.320 (0.173)	-----	-----
Log Duration	-0.080 (0.066)	0.458 (0.186)	-0.270 (0.047)	0.001 (0.102)	0.444 (0.216)	-0.541 (0.082)
Log Duration Squared	-----	-0.102 (0.034)	-----	-----	-0.091 (0.036)	-----
Log Likelihood	-2835.8	-2858.2	-1218.0	-2844.0	-2862.8	-452.5

Table 4
Expected Duration Experiments for CR and SR Women

	Czech Republic			Slovakia		
	Recipients	Recipients (small model)	Non-Recipients	Recipients	Recipients (small model)	Non-Recipients
Base Expected Duration (weeks)	23.328	21.627	10.464	71.859	61.517	92.635
Base Expected Duration - Single	19.96	-----	-----	62.13	-----	-----
Base Expected Duration - Married	25.216	-----	-----	76.88	-----	-----
Benefits Raised by 10%	0.483	-----	-----	0.002	-----	-----
Entitlement Raised by 1 Week	0.359	-----	-----	0.594	-----	-----
Entitlement Raised 1 Week - Single Woman	0.281	-----	-----	0.698	-----	-----
Entitlement Raised 1 Week - Married	0.400	-----	-----	0.530	-----	-----
Wage Raised by 10% - Single Woman	-0.022	-----	----	-0.292	-----	-----
Wage Raised by 10% - Married Woman	-1.775	-----	-----		-----	-----
Age 25 Years vs. 35 Years	0.996	0.728	-0.664	2.149	3.866	2.118
Age 45 Years vs. 35 Years	-0.955	-0.702	0.715	-2.147	-3.725	-2.121
Age 55 Years vs. 35 Years	-1.871	-1.378	1.484	-4.287	-7.298	-4.244
High School No Exam vs. Junior High	-8.477	-6.557	-4.353	-33.669	-26.159	-88.281
High School With Exam vs. Junior High	-7.566	-4.698	0.777	-33.956	-27.620	-84.588
Post High School vs. Junior High	-9.797	-7.041	-5.918	-38.175	-14.497	-106.536
Recent School Graduate vs. Non-Recent	-9.649	-3.788	0.947	7.583	24.262	40.644
Romany vs. Non-Romany	45.851	51.200	56.537	95.910	111.586	81.277
Handicapped vs. Non-Handicapped	11.075	9.181	9.143	19.494	17.241	5.211
Prague (Bratislava) vs. Other	-12.285	-11.102	-9.014	40.694	38.016	6.395
Married vs. Single	5.256	6.357	-0.609	14.750	16.816	35.858
Unemployment Rate Increased by 10%	-----	-----	-----	-----	0.651	5.613
Vacancy Rate Increased by 10%	-0.132	-0.181	-0.257	-0.237	-0.242	-----
Industrial Production Increased by 10%	-0.267	-0.151	-0.630	-----	-0.668	-1.620

Agricultural/Industrial Ratio Raised 10%	-----	0.065	-0.521	0.690	-----	-----

Table 5:
An alternative Measure of the Impact of UCS on Women's Unemployment Spells: Recipients vs. Non-Recipients
(Using the smaller model)

	Czech Republic	Slovak Republic
Expected Durations of:		
1. Recipient β's and X's	21.6	61.5
2. Non-Recipient β's and X's	10.5	92.6
3. Recipient β's, Non-Recipient X's	22.1	100.3
4. Non-Recipient β's, Recipient X's	9.7	42.9
Differences in Expected Durations:		
5. Recipient to Non-Recipient (Row 4 – Row 1)	-11.9	-18.6
6. Non-Recipient to Recipient (Row 3 – Row 2)	11.6	7.7

Table 6:
Decomposing the Difference in Expected Duration of Women's Spells Between the Czech and Slovak Republics

	Recipients	Non-Recipients
$ED_s - ED_c$ (weeks)	46.2	82.2
Differences due to:		
Coefficients	47.4	46.2
Explanatory Variables	-1.2	36.0
Differences from Explanatory Variables due to:		
Demographics	-1.8	22.4
Demand Conditions	3.0	13.6

Table A1
Coefficients for the Full Model - No Heterogeneity

	Czech Republic			Slovakia		
	Recipients	Non-Recipients		Recipients	Non-Recipients	Recip. (small model)	Non-Recip.
Weekly Benefits * Married	-6.791 (10.031)	-----	-----	-2.919 (8.251)	-----	-----
Weekly Benefits * Single	-6.174 (11.472)	-----	-----	2.320 (14.058)	-----	-----
Weekly Wage * Married	12.471 (5.046)	-----	-----	1.194 (2.896)	-----	-----
Weekly Wage * Single	-0.833 (5.515)	-----	-----	0.245 (5.355)	-----	-----
Weeks of Remaining Entitlement * Married	-0.241 (0.095)	-----	-----	-0.163 (0.120)	-----	-----
Weeks of Remaining Entitlement * Single	-0.117 (0.126)	-----	-----	-0.325 (0.161)	-----	-----
Last Week of Entitlement * Married	0.661 (0.285)	-----	-----	0.771 (0.297)	-----	-----
Last Week of Entitlement * Single	0.476 (0.508)	-----	-----	0.032 (0.494)	-----	-----
Benefits Exhausted * Married	-0.719 (0.296)	-----	-----	-0.682 (0.272)	-----	-----
Benefits Exhausted * Single	-0.829 (0.394)	-----	-----	-0.379 (0.409)	-----	-----
Age * 10**-1	0.036 (0.043)	0.034 (0.043)	-0.063 (0.064)	0.066 (0.053)	0.067 (0.052)	0.014 (0.148)
High School, No Exam	0.257 (0.116)	0.214 (0.115)	0.195 (0.177)	0.352 (0.150)	0.337 (0.149)	1.550 (0.364)
High School, with Exam	0.235 (0.116)	0.201 (0.114)	-0.064 (0.174)	4.648 (1.329)	0.446 (0.132)	1.356 (0.336)
Post High School	0.227	0.258	0.424	0.257	0.196	1.826

Table A1
Coefficients for the Full Model - No Heterogeneity

	Czech Republic		Slovakia		Recip.	
	Recipients	Non-Recipients	Recipients	Non-Recipients	(small model)	Non-Recip.
	(0.268)	(0.261)	(0.423)	(0.242)	(0.239)	(0.597)
Romany	-1.213	-1.253	-1.785	-2.096	-2.120	-1.275
	(0.459)	(0.458)	(0.403)	(0.714)	(0.713)	(0.440)
Handicapped	-0.416	-0.357	-0.565	-0.302	-0.330	-0.020
	(0.173)	(0.173)	(0.220)	(0.225)	(0.224)	(0.420)
Married	-0.767	-0.310	0.050	-0.305	-0.315	-0.490
	(0.329)	(0.088)	(0.126)	(0.430)	(0.101)	(0.292)
Recent Graduate	0.344	0.183	-0.113	-0.421	-0.419	-0.634
	(0.292)	(0.130)	(0.219)	(0.319)	(0.157)	(0.539)
Lives in Prague/Bratislava	0.666	0.626	1.150	-0.699	-0.661	0.211
	(0.168)	(0.161)	(0.259)	(0.223)	(0.222)	(0.757)
District Unemployment Rate / Ed. Group	-0.019	-0.027	-0.075	-0.007	-0.008	-0.103
	(0.042)	(0.041)	(0.064)	(0.018)	(0.018)	(0.047)
District Vacancy Rate / Education Group	0.074	0.098	0.214	0.157	0.146	-0.380
	(0.070)	(0.070)	(0.148)	(0.070)	(0.070)	(0.513)
Industrial Production in District*10**-6	1.637	1.108	8.528	0.669	0.651	3.134
	(1.219)	(1.212)	(1.864)	(0.862)	(0.848)	(2.339)
Agricultural / Industrial Production	-0.052	-0.058	1.412	-0.192	-0.196	-0.108
	(0.204)	(0.204)	(0.355)	(0.135)	(0.134)	(0.310)
Log Duration	-0.115	0.454	-0.285	-0.074	0.442	-0.526
	(0.059)	(0.186)	(0.049)	(0.075)	(0.216)	(0.084)
Log Duration Squared	-----	-0.102	-----	-----	-0.091	-----
		(0.034)			(0.036)	
Log Likelihood	-2837.4	-2858.0	-1217.3	-2847.9	-2861.7	-452.1