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**Are Redundant Workers Stigmatized in Transition Labor  
Markets? Long-Term Unemployment in Central Europe.**

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# ARE REDUNDANT WORKERS STIGMATIZED IN TRANSITION LABOR MARKETS? LONG-TERM UNEMPLOYMENT IN CENTRAL EUROPE

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## *Abstract*

*This study examines whether redundant workers are stigmatized in transition labor markets, and if so, the severity of the effects. Stigmatization is assumed to obtain whenever likelihoods of long-term unemployment are systematically elevated, among otherwise equivalent individuals, due to involuntary job-loss. Such effects are considered during early transition in the Czech Republic, Slovak Republic and Poland, and within a modeling framework whereby current search duration (likelihood of long-term unemployment) and benefit receipt are jointly-determined. Although econometric estimates of long-term unemployment indicate significant stigmatization within the Polish labor market, the adverse effects of redundancy on job-search extend no longer than two years.*

## 1. INTRODUCTION

The economic transformation in Central Europe offers a “massive natural experiment” where truly exogenous shocks have created unusual research opportunities [Filer (1996)]. In this regard, the introduction of market-based prices, reduction of state subsidies, and redirection of trade to western economies triggered major changes in sectoral performance, and in turn, significant labor shedding. Such involuntary job-loss contributed significantly to the rise in unemployment in all Central European countries starting in 1991, the outset of meaningful reforms. This trend resulted in an increased share of redundant, or displaced, workers among registered job-seekers, and was bolstered by the phenomenon of mass layoffs.<sup>1</sup> For instance, in Poland almost one-fourth of the unemployed as of December 1991 were persons dismissed via group layoffs, up from 2 percent in January 1990 [OECD(1992)].

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<sup>1</sup> For studies of unemployment and recent policy initiatives in the countries under consideration, see Gora (1997), Gora, Lehmann, Socha, and Sztanderska (1996), Nesporova and Uldrichova (1997), Ochotnický (1997), OECD (1992), Terrell and Munich (1996), and Terrell, Lubyova and Strapec (1996).

Redundant workers are thought to experience significant hardship within transition labor markets, in comparison to both voluntary quits and new entrants, due to their unanticipated entry into job-search.<sup>2</sup> In addition to reduced self-esteem and motivation among these workers (that diminish search effort), search duration may be prolonged within Central European countries to the extent that potential employers utilize involuntary job-loss as a negative screen [OECD (1990,1993)]. Thus, redundant workers are at increased risk of joining the ranks of the long-term unemployed, and as such are often targeted for public assistance in the areas of retraining and job-search.

Interesting questions in this regard are whether redundant workers are, in fact, stigmatized in transition labor markets; and if so, how severe or lasting are these effects? Regarding the latter, Ellwood (1982) considers persistent effects as *scars*, whereas transitory adjustments which dissipate over time are termed *blemishes*.<sup>3</sup>

Although Herzog (2000) examines the incidence of involuntary job-loss in Central European countries, little if anything is known regarding the labor market outcomes of redundant workers, and consequently the degree, if any, to which such individuals are *stigmatized* during job-search. With this in mind, the study examines job-search early in the transition period in the Czech Republic, Slovak Republic, and Poland within a modeling framework whereby (current) search duration (likelihood of long-term unemployment) and benefit receipt are jointly determined. Among the *pool* of unemployed with prior work experience, stigmatization is assumed to obtain whenever likelihoods of long-term unemployment are systematically elevated, among otherwise equivalent individuals, due to involuntary job-loss. In addition, whether such stigmatization effects are short or long-lived (*blemishes* or *scars* above) is determined by repeating the analysis under alternative definitions of long-term

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<sup>2</sup> For excellent reviews of parallel U.S. literature on *displaced* workers, see Fallick (1996), Hamermesh (1989), and Kletzer (1998).

<sup>3</sup> In a study of displaced workers in the United States, Ruhm (1991) finds that permanent layoffs result in substantial, but temporary, unemployment *blemishes*, but far more enduring earnings *scars*.

unemployment, and consequently for longer and longer search durations. Thus, the study considers both the *existence* and *persistence* of transition-induced labor market outcomes, and specifically those impacts stemming from involuntary job terminations.

The following section describes the labor force microdata utilized within the study, as well as demonstrates how mean likelihoods of long-term unemployment within Central European countries vary based upon the nature, of type, of prior employment separation: involuntary or voluntary. Joint models of long-term unemployment and benefit receipt are subsequently developed in Section 3. Econometric estimates of long-term unemployment are also considered, as are differential labor market outcomes between redundancies and voluntary quits. Such outcomes are further considered in Section 4, and provide the basis for a discussion of the *existence* and *persistence* of adverse effects. Finally, conclusions from the study are summarized in Section 5.

## 2. UNEMPLOYMENT DATA

Information on the unemployed can be derived from labor force microdata recently made available by the Luxembourg Employment Study (LES). LES provides this information in a harmonized and standardized format, and for a consistent set of variables across countries [see Forster, Helliesen and Kolberg (1996)]. Based upon a number of considerations, to include the desire to work with a set of Central European transition economies exhibiting both low and high rates of unemployment, the labor force surveys (years) of the Czech Republic (1994), Slovak Republic (1995) and Poland (1994) were selected for analysis.<sup>4</sup>

Observations drawn from this microdata were confined to individuals of age 18 to 64 who: (1) were unemployed at the survey date, and (2) had previously worked.

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<sup>4</sup> Although the labor force surveys of Hungary (1993) and Slovenia (1994) were also available at LES, they were not utilized in the present study due to the inability to distinguish involuntary from voluntary separations in the first instance, and region of residence in the latter.

For each observation, the distinction as to whether the last job was terminated at the discretion of the employer or the employee was based upon responses to the question “main reason for leaving last job”. Individuals who stated that they were “dismissed or made redundant” (a single response) were assigned to involuntary separations; all others were assumed to be voluntary.<sup>5</sup> Other information extracted from the microdata include personal (family) characteristics, prior industry and occupation, region of residence, search duration (as of the survey date), and current benefit receipt. Under LES conventions, the latter implies registration at a public employment office and includes both cash benefits and assistance (training).

Within the labor force with prior work experience (the above plus current employed), unemployment rates in the survey years, listed on the first line of Table 1, ranged from 3.3 percent in the Czech Republic to 11.7 percent in Poland.<sup>6</sup> Of greater interest to the study, however, is information for the unemployed and long-term unemployed, the latter representing individuals who have searched for reemployment for 12 months or more as of the survey date. In this regard, note the large proportion of the unemployed in Table 1 who entered job-search involuntarily, a number that swells to 64 percent within Poland. More importantly, such proportions are magnified within the ranks of the long-term unemployed, and for each country considered. Thus, involuntary job-loss and redundancy apparently increase search duration, at least when observed vis-a-vis the current unemployed. Note also in Table 1 that redundant workers among the unemployed are more likely to receive benefits in each country than are voluntary quits. This, of course, raises the issue of causation (and simultaneity), and in turn provides an important question to consider in the study. In this regard, does involuntary job-loss extend search duration directly, or is search

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<sup>5</sup> Although it would be advantageous to consider redundancies and dismissals separately (for instance to apply the shirking model to the latter), the coding of the question “main reason for leaving last job” does not distinguish between the two.

<sup>6</sup> Comparable overall unemployment rates in the same years were 3.8, 13.6 and 13.9 percent in the Czech Republic, Slovak Republic and Poland, respectively.

**TABLE 1**

**Mean Unemployment Statistics for  
The Czech Republic, Slovak Republic and Poland  
(Labor Force with Work Experience)<sup>a</sup>**

| Statistic:                               | Country:              |                        |               |
|--|-----------------------|------------------------|---------------|
|  | Czech Republic (1994) | Slovak Republic (1995) | Poland (1994) |
| Unemployment Rate (%)                    | 3.3                   | 10.9                   | 11.7          |
| <b>Unemployed:</b>                       |                       |                        |               |
| Type of Job-Loss (%)                     |                       |                        |               |
| Voluntary                                | 45.7                  | 53.5                   | 36.2          |
| Involuntary <sup>b</sup>                 | 54.3                  | 46.5                   | 63.8          |
| Receiving Benefits (%) <sup>c</sup>      |                       |                        |               |
| Voluntary                                | 38.3                  | 51.9                   | 27.1          |
| Involuntary <sup>b</sup>                 | 41.1                  | 66.8                   | 46.7          |
| <b>Long-Term Unemployed:<sup>d</sup></b> |                       |                        |               |
| Type of Job-Loss (%)                     |                       |                        |               |
| Voluntary                                | 41.7                  | 47.1                   | 29.0          |
| Involuntary <sup>b</sup>                 | 58.3                  | 52.9                   | 71.0          |

<sup>a</sup>Derived from each country's labor force survey microdata and pertain to 1994 (1995 for the Slovak Republic). All individuals were required to be of age 18-64 at the time of their respective surveys, and to be currently employed or unemployed, the latter with prior work experience.

<sup>b</sup>Includes both dismissals and redundancies.

<sup>c</sup>Registered at a public employment office and receives benefits and/or assistance.

<sup>d</sup>Individuals currently unemployed who have been searching for a job for 12 months or more.

extended among such individuals due to greater eligibility for unemployment benefits, the receipt of which extends duration?<sup>7</sup> Such probable interrelationships among involuntary job-loss, unemployment benefits, and search duration (long-term unemployment) are considered below in Section 3.

In what follows, it will be useful to examine various search durations, and thus various definitions of long-term unemployment, among the sample of current unemployed. To facilitate this, we employ the notation  $P(S \geq t)$  to represent the probability that an individual unemployed as of the survey date has searched for reemployment for “t” months or more. In this respect, conventional estimates of long-term unemployment pertain to  $P(S \geq 12)$ . In addition, hardships experienced within the labor market are assumed to increase with  $P(S \geq t)$ , an effect increasing in severity with “t”.

Based upon responses in the LES microdata regarding “duration of search for job”, mean (percentage) values of  $P(S \geq 3)$ ,  $P(S \geq 6)$ ,  $P(S \geq 12)$ , and  $P(S \geq 24)$  are provided in Table 2 for each country and type of job-loss. Estimates of  $P(S \geq 36)$  for Poland are also shown. For the Slovak Republic and Poland, mean values of  $P(S \geq t)$  are consistently, and significantly, greater for involuntary as opposed to voluntary job-loss, an exception being  $P(S \geq 36)$  for Poland. For example, among the unemployed in the Slovak Republic with prior work experience, 62.3 percent of those terminated involuntarily have been searching for reemployment for a year or more, a number that drops to 48.2 percent for voluntary quits. On the other hand, note the apparent invariance of  $P(S \geq t)$  by type of job-loss in the Czech Republic, perhaps an artifact of that country’s tight labor market (see Table 1). Thus, based upon mean values of

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<sup>7</sup> For a survey of linkage between unemployment compensation and search duration, see Atkinson and Micklewright (1991). In the present study, however, one observes duration retrospectively (as uncompleted spells) solely among the current unemployed, and with benefit receipt determined as of the survey date.

**TABLE 2**  
**Mean (Percentage) Values for  $P(S \geq t)$  by Type of Job-Loss**  
**for The Czech Republic, Slovak Republic and Poland**  
**(Unemployed with Prior Work Experience)<sup>a</sup>**

| Country /<br>$P(S \geq t)$     | Type of Job-Loss: |                          |
|--------------------------------|-------------------|--------------------------|
|                                | Voluntary         | Involuntary <sup>b</sup> |
| <b>Czech Republic (1994):</b>  |                   |                          |
| $P(S \geq 3)$                  | 60.0              | 56.9                     |
| $P(S \geq 6)$                  | 39.5              | 36.0                     |
| $P(S \geq 12)$                 | 18.7              | 22.0                     |
| $P(S \geq 24)$                 | 7.4               | 7.2                      |
| <b>Slovak Republic (1995):</b> |                   |                          |
| $P(S \geq 3)$                  | 80.9              | 88.7*                    |
| $P(S \geq 6)$                  | 66.0              | 77.9*                    |
| $P(S \geq 12)$                 | 48.2              | 62.3*                    |
| $p(S \geq 24)$                 | 24.3              | 33.6*                    |
| <b>Poland (1994):</b>          |                   |                          |
| $P(S \geq 3)$                  | 76.3              | 84.2*                    |
| $P(S \geq 6)$                  | 58.3              | 69.9*                    |
| $P(S \geq 12)$                 | 31.6              | 43.8*                    |
| $P(S \geq 24)$                 | 13.7              | 18.5*                    |
| $P(S \geq 36)$                 | 6.4               | 7.6                      |

\* = Mean values for voluntary and involuntary  $P(S \geq t)$  are significantly different at the 1 percent (or better) level based upon t-test.

<sup>a</sup>Derived from each country's labor force survey microdata and pertain to 1994 (1995 for the Slovak Republic). All individuals were required to be of age 18-64 and unemployed at the time of their respective surveys, and in addition to have prior work experience.

<sup>b</sup>Includes both dismissals and redundancies.

$P(S \geq t)$  in Table 2, workers involuntarily separated from employment within the Slovak Republic and Poland experience relative hardships within their transition labor markets, and these effects persist to be registered in long-term unemployment of two years or more.

Such estimates, of course, provide no control for personal (family) characteristics of the unemployed, industry/occupation of prior work, region of residence, and benefit receipt, each of which may vary systematically by type of job-loss. For instance, redundant workers may face differential hardships (extended job-search) within the transition labor market due to the fact that their prior industries are in a state of relative decline. Although this situation presents negative outcomes for the workers involved, and in particular long-term unemployment, no stigmatization has occurred. Also, as noted above, the targeting of unemployment benefits to redundant workers, and the probable extension of search duration, may confound the observed relationship between redundancy and long-term unemployment. In addition, search duration and benefit receipt are likely to be jointly determined. These issues are addressed below in the design of a multivariate model of long-term unemployment,  $P(S \geq t)$ , where current search duration and benefit receipt are determined in a simultaneous fashion.

### 3. LONG-TERM UNEMPLOYMENT: MODEL AND ESTIMATES

#### A. Model

Based upon considerations above, the likelihood that a currently unemployed individual (with prior work experience) has been searching for reemployment for a period of “t” or more months can be represented as

$$P(S \geq t) = f[\text{PER}, \text{INVOL}, \text{BEN}, \text{IND}, \text{OCCUP}, \text{REG}], \quad (1)$$

where PER is a vector of personal and family characteristics, INVOL is a variable to distinguish involuntary job-loss from voluntary quits, BEN represents current benefit receipt, IND and OCCUP are controls for the worker's past industry and occupation, and REG is a control for the region of residence. Although it would be desirable to consider equation (1) as a true duration, or hazard, model, this is precluded by the LES convention of providing "length of search" information solely for individuals unemployed at the time of the survey.<sup>8</sup> Thus,  $P(S \geq t)$  above differs somewhat from its interpretation in that model. In this regard,  $P(S \geq t)$  represents the likelihood that a currently unemployed individual (with prior work experience) has been searching for reemployment for "t" months or more, and is an indicator of the *difficulty* of finding a job rather than an absolute measure of search duration. In considering  $P(S \geq t)$  among the *pool* of unemployed, note that individuals in equation (1) are distinguished by their personal characteristics (PER), job prospects, and job-specific human capital, that vary by prior industry and/or occupation (IND and OCCUP), regional labor market conditions (REG), current benefit receipt (BEN), and type of job termination (INVOL).<sup>9</sup> INVOL, of course, is the major test instrument for the study, with  $f[\text{INVOL}] > 0$  indicative of worker stigmatization.

Because BEN is an argument of  $P(S \geq t)$  in equation (1), and the receipt of unemployment insurance is subject to time limitations in each country, then BEN and  $P(S \geq t)$  are jointly determined. With this in mind, the likelihood that a currently

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<sup>8</sup> In this regard, all observations are right-censored, and no information is provided (as required by hazard models) on completed spells. In addition, the LES "duration of search" variable is delineated in 3-month intervals rather than actual weeks. On the other hand, other Central European duration data (produced in several countries based on administrative sources) is compiled *solely* for those among the registered unemployed drawing benefits [OECD (1992)]. Unfortunately, the direction of bias in these latter measures of unemployment duration is unclear.

<sup>9</sup> Excluded from this *pool* are job losers (involuntary and voluntary) who subsequently: (1) departed the labor force; (2) searched for reemployment, became discouraged, and departed the labor force prior to the survey; or (3) searched for reemployment and accepted a job prior to the survey. Although voluntary quits (as a group) are more likely than redundancies and dismissals to exit the labor force upon job termination [(1) above], no information is provided in the LES microdata regarding comparative outcomes for (2) and (3).

unemployed individual receives benefits, given that search has occurred for “t” months or more,  $S \geq t$ , can be stated as

$$P(\text{BEN}) = f [\text{PER}, \text{INACT}, \text{INVOL}, S \geq t, \text{IND}, \text{OCCUP}, \text{REG}], \quad (2)$$

where INACT represents a period of inactivity following employment termination (delayed job-search), and all other variables are as defined above. Personal and family characteristics, PER in equations (1) and (2), include age, education, gender and marital status of the unemployed individual. In addition, because partners’ labor market behavior involves joint decision-making, the spouse’s education is included in both equations (if married) as an *instrument* for such behavior.<sup>10</sup> In this regard, although a partner’s labor force participation and effort (job-search, employment) are correlated with his/her education, the former are clearly endogenous to equations (1) and (2) while the latter is not.

Among the stock of current unemployed, the likelihood of long-term unemployment,  $P(S \geq t)$  in equation (1), is expected to increase with age and to decrease with completed education. In addition,  $P(S \geq t)$  of women is expected to exceed that of their male counterparts, *ceteris paribus*. On the other hand, although unemployment benefit systems vary among the countries,  $P(\text{BEN})$  in equation (2) most likely decreases with “t” due to limits on benefit duration.<sup>11</sup>  $P(\text{BEN})$  should also decline with INACT, since prior work requirements are constrained in time, and with both age and education to the extent that eligibility is means tested. Finally,  $P(\text{BEN})$  likely increases with INVOL due to targeting of assistance to redundant workers.

The sign on BEN in equation (1) is indeterminate. On the one hand,  $P(S \geq t)$  should increase with BEN since marginal search costs and unemployment insurance

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<sup>10</sup> For a discussion of joint labor supply decisions within the household, see Ehrenberg and Smith (1997). pp. 226-233.

<sup>11</sup> Each of the three countries provided unemployment insurance at the time of the surveys. See OECD (1992) for an overview of unemployment benefit systems in the three countries. For detailed analyses of such systems in the Czech Republic, Slovak Republic, and Poland, see Terrell and Munich (1996), Terrell, Lubyova, and Strapec (1996), and Gora, Lehmann, Socha, and Sztanderska (1996), respectively.

(UI) are negatively associated. On the other,  $P(S \geq t)$  should decrease with BEN among the *current* unemployed, and especially so for higher values of “t”, due simply to time limitations on UI receipt.<sup>12</sup> Consequently, like INVOL, the signing of BEN in equation (1) is an empirical issue.

## B. Econometric Estimates

For each country, estimates of equations (1) and (2) are based upon the microdata described above in Section 2, and thus pertain to the current unemployed with prior work experience. Each dependent variable is binary, and is set to unity (vs. zero) whenever  $S \geq t$  in equation (1) and/or the individual receives benefits in equation (2). Among personal characteristics, gender is represented by a binary variable set equal to unity for females, while two binary variable regimes are utilized to distinguish age and completed education within the samples. On the other hand, family characteristics include controls for joint labor supply, and are represented by: (1) a variable set equal to unity for married females, and (2) a binary variable regime pertaining to the spouse’s education (if married). In addition, INACT and INVOL are set to unity (vs. zero) for inactivity, or delayed job-search, following employment termination in the first instance, and for involuntary job-loss in the latter. Finally, IND and OCCUP are each represented by a set of nine (eight included) binary variables, while REG provides similar controls for 8, 38, and 49 regions within the Czech Republic, Slovak Republic and Poland, respectively.

For any duration “t”, the likelihoods of long-term unemployment and benefit receipt,  $P(S \geq t)$  and  $P(\text{BEN})$ , are determined jointly with equations (1) and (2). Given our interest in possible stigmatization, the discussion that follows is centered upon estimates of  $P(S \geq t)$ , and specifically the parameter on INVOL in equation (1). Since

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<sup>12</sup>This, of course, assumes that UI starts at the outset of unemployment spells. Also, to the extent that BEN represents training rather than UI, then  $P(S \geq t)$  and BEN may be positively associated.

both dependent variables in the system are binary, estimates are obtained under the two-stage procedure suggested by Maller (1977). Under this procedure, analogous to two-stage least squares, initial (first stage) logit estimates of  $P(\text{BEN})$  are derived in terms of all exogenous variables in the system.<sup>13</sup> Predicted values of  $P(\text{BEN})$  are then substituted for  $\text{BEN}$  in equation (1). In the second stage, binary logit estimates of  $P(S \geq t)$  are obtained based upon these consistent first-stage estimates and other right-side variables in equation (1).

Examples of such second-stage estimates for Poland are provided in Table 3, and pertain to long-term unemployment of 12 months or more,  $P(S \geq 12)$ . Alternative models are provided that vary by the inclusion (exclusion) of explanatory variables in equation (1). In this regard, while model (1) is comprised of personal and family characteristics as well as the major test variable for involuntary job-loss, model (2) adds benefit receipt, model (3) adds controls for both prior industry and occupation, and model (4) adds controls for region of residence. Notice first in this table that estimates on involuntary job-loss are both positive and significant across the four models, and as a consequence are robust to model specification. Thus, among unemployed workers in Poland, the likelihood of long-term unemployment,  $P(S \geq 12)$ , is elevated whenever prior employment was terminated by the employer rather than the employee. In addition, the possibility of attributing this effect to factors other than *stigmatization* necessarily decline as one moves from left to right within the table. In this regard, model (2) adjusts for simultaneity in the determination of search duration and benefit receipt (eligibility), model (3) adds controls for reemployment opportunities in the individual's prior industry and occupation, as well as job-specific human capital acquired there, and model (4) further adjusts for labor market opportunities that

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<sup>13</sup>This is equivalent to logit estimation of equation (2) with  $S \geq t$  excluded. Note that this procedure yields a consistent set of first-stage estimates of  $P(\text{BEN})$  appropriate for any "t" in the second-stage of equation 1.

**TABLE 3**  
**Determinants of Long-Term Unemployment, P(S ≥ 12):**  
**Alternative Binary Logit Estimates for Poland**  
**(Unemployed with Prior Work Experience)<sup>a</sup>**

| Variable:                                     | Models:   |           |           |           |
|---|-----------|-----------|-----------|-----------|
|   | (1)       | (2)       | (3)       | (4)       |
| Constant                                      | -1.687*** | -1.650*** | -1.512*** | -2.148*** |
| <b>Personal / Family Characteristics:</b>     |           |           |           |           |
| Female  | .175      | .175      | .160      | .196      |
| Married Female                                | .334**    | .332**    | .312**    | .376**    |
| Age: <sup>b</sup>                             |           |           |           |           |
| 25 - 34                                       | .893***   | .879***   | .894***   | .921***   |
| 35 - 44                                       | 1.155***  | 1.138***  | 1.162***  | 1.214***  |
| 45 - 54                                       | 1.370***  | 1.351***  | 1.366***  | 1.438***  |
| 55 - 64                                       | 1.546***  | 1.515***  | 1.518***  | 1.628***  |
| Completed Education: <sup>c</sup>             |           |           |           |           |
| Level 2                                       | -.133     | -.130     | -.197**   | -.238**   |
| Level 3                                       | -.212**   | -.207**   | -.349***  | -.404***  |
| Level 4                                       | .057      | .056      | .018      | .005      |
| Spouse's Education (if married): <sup>c</sup> |           |           |           |           |
| Level 1                                       | -.348***  | -.334**   | -.332**   | -.394***  |
| Level 2                                       | -.265**   | -.256**   | -.256**   | -.294**   |
| Level 3                                       | -.503***  | -.493***  | -.520***  | -.573***  |
| Level 4                                       | -.259     | -.257     | -.302     | -.346*    |
| <b>Job-Loss: Involuntary</b>                  | .572***   | .589***   | .551***   | .484***   |
| <b>Receives Benefits<sup>d</sup></b>          | Excluded  | -.093     | .081      | .438      |
| <b>Controls:</b>                              |           |           |           |           |
| Prior Industry / Occupation <sup>e</sup>      | Excluded  | Excluded  | Included  | Included  |
| Region <sup>f</sup>                           | Excluded  | Excluded  | Excluded  | Included  |

\*\*\* = significant at the 1 percent level \*\* = significant at the 5 percent level \* = significant at the 10 percent level

<sup>a</sup>Estimates represent second-stage reduced form parameters in equation (1). All variables and the microdata sample are described in the text. Among the unemployed with prior work experience, long-term unemployment represents search for 12 months or more. For each model, the number of observations is 3431 and the log likelihood ratio test statistic is significant at the one percent level or better.

<sup>b</sup>The omitted category is age 18 - 24.

<sup>c</sup>Level 1 represents education at the primary level or less, level 2 is indicative of basic vocational and/or apprenticeship training, level 3 represents secondary levels of either general or vocational education, and level 4 is indicative of university and post-graduate education.

<sup>d</sup>Predicted value from first-stage estimating equation for benefit receipt [equation (2) with S ≥ t excluded]. See column 3 in the Appendix Table.

<sup>e</sup>Prior industry and occupation are each represented by a set of nine (eight included) binary variables. Represented by a set of 49 (48 included) binary variables.

vary spatially.<sup>14</sup> Finally, note the robustness of estimates on personal and family characteristics across the four models.

Estimates of model (4) for Poland in Table 3 are listed alongside equivalent estimates for the Czech and Slovak Republics in Table 4, and provide a comparison of long-term unemployment determinants among Central European countries. Although not shown in the table, binary variable regimes were introduced for each country to control for industry and occupation of prior work, as well as region of residence. Values for the benefit variable at the bottom of the table were obtained from the first-stage estimating equations listed in the Appendix.<sup>15</sup> Note among significant estimates in Table 4 that the likelihood of long-term unemployment,  $P(S \geq 12)$ , is higher among women than men in the Czech Republic, but that the opposite obtains in the Slovak Republic. In addition,  $P(S \geq 12)$  generally increases with age in each country, and sequentially so in both the Slovak Republic and Poland. On the other hand,  $P(S \geq 12)$  declines with additional completed education through level 3 (secondary exposure to general or vocational training) in the Czech Republic and Poland, and through level 2 (basic vocational and/or apprenticeship training) in the Slovak Republic.

Family characteristics are included in equation (1) as controls for joint labor supply. Instead of including a single binary variable to distinguish married individuals within the samples, four variables are included for such individuals that, in addition, identify the completed education of the spouse. As mentioned above, these variables represent *instruments* for the partner's labor supply. In addition, the "married female" variable provides a control for the spouse's gender. In this regard, marriage reduces

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<sup>14</sup>Values of BEN included in models (2), (3) and (4) are based upon first-stage estimates of equation (2) listed in the third column of the Appendix Table. Regarding models (3) and (4), the industry variables also provide controls for any temporal variation in the timing of redundancies and quits, at least to the extent that such variation is responsive to past industry performance.

<sup>15</sup> Although it is somewhat difficult to characterize such (first-stage) estimates, the likelihood of benefit receipt is significantly diminished among married women (in comparison to married men), and among individuals of age 55 to 64 as well. In addition, for unemployed workers in Slovakia and Poland,  $P(\text{BEN})$  is apparently diminished by delayed job-search following employment termination, and enhanced when such terminations are involuntary in nature.

**TABLE 4**

**Determinants of Long-Term Unemployment, P(S ≥ 12):  
Binary Logit Estimates for The Czech Republic, Slovak Republic and Poland  
(Unemployed with Prior Work Experience)<sup>a</sup>**

| Variable:                                     | Country:              |                        |                       |
|---|-----------------------|------------------------|-----------------------|
|   | Czech Republic (1994) | Slovak Republic (1995) | Poland (1994)         |
| Constant                                      | -1.502                | -3.038 <sup>***</sup>  | -2.148 <sup>***</sup> |
| <b>Personal / Family Characteristics:</b>     |                       |                        |                       |
| Female  | .481 <sup>*</sup>     | -.882 <sup>***</sup>   | .196                  |
| Married Female                                | .132                  | 1.574 <sup>***</sup>   | .376 <sup>**</sup>    |
| Age: <sup>b</sup>                             |                       |                        |                       |
| 25 - 34                                       | .190                  | .909 <sup>***</sup>    | .921 <sup>***</sup>   |
| 35 - 44                                       | .569                  | 1.080 <sup>***</sup>   | 1.214 <sup>***</sup>  |
| 45 - 54                                       | .520 <sup>*</sup>     | 1.214 <sup>***</sup>   | 1.438 <sup>***</sup>  |
| 55 - 64                                       | 1.138 <sup>*</sup>    | 2.799 <sup>***</sup>   | 1.628 <sup>***</sup>  |
| Completed Education: <sup>c</sup>             |                       |                        |                       |
| Level 2                                       | -.528 <sup>**</sup>   | -.353 <sup>*</sup>     | -.238 <sup>**</sup>   |
| Level 3                                       | -.571 <sup>*</sup>    | -.287                  | -.404 <sup>***</sup>  |
| Level 4                                       | .021                  | -.187                  | .005                  |
| Spouse's Education (if married): <sup>c</sup> |                       |                        |                       |
| Level 1                                       | .188                  | -.394 <sup>*</sup>     | -.394 <sup>**</sup>   |
| Level 2                                       | -.172                 | .081                   | -.294 <sup>**</sup>   |
| Level 3                                       | -.301 <sup>d</sup>    | -.023                  | -.573 <sup>***</sup>  |
| Level 4                                       | d                     | .178                   | -.346 <sup>*</sup>    |
| <b>Job-Loss: Involuntary</b>                  | .102                  | -.219                  | .484 <sup>***</sup>   |
| <b>Receives Benefits<sup>e</sup></b>          | .699                  | 6.014 <sup>***</sup>   | .438                  |
| Number of Observations                        | 949                   | 1491                   | 3431                  |

\*\*\* = significant at the 1 percent level \*\* = significant at the 5 percent level \* = significant at the 10 percent level

<sup>a</sup>Estimates represent second-stage reduced form parameters in equation (1). Although not shown in the table, prior industry and occupation are each represented by a set of nine (eight included) binary variables. Binary variables were also entered to represent 8, 38 and 49 regions in the Czech Republic, Slovak Republic and Poland, respectively. All variables and the three microdata samples are described in the text. Among the unemployed with prior work experience, long-term unemployment represents search for 12 months or more. The log likelihood ratio test statistic is significant at the one percent level or better in each model.

<sup>b</sup>The omitted category is age 18 - 24.

<sup>c</sup>Level 1 represents education at the primary level or less, level 2 is indicative of basic vocational and/or apprenticeship training, level 3 represents secondary levels of either general or vocational education, and level 4 is indicative of university and post-graduate education.

<sup>d</sup>For spouse's education in the Czech Republic, levels 3 and 4 are combined (as level 3).

<sup>e</sup>Predicted value from first-stage estimating equation for benefit receipt [equation (2) with S ≥ t excluded]. See the Appendix Table.

$P(S \geq 12)$  in Table 4 among unemployed Polish men, and by the greatest degree when the wife has completed secondary levels of either general or vocational education (level 3). Conversely, marriage increases  $P(S \geq 12)$  among all unemployed Slovak women, and certain unemployed women in Poland, the latter dependent upon the husband's education.<sup>16</sup>

Also note in Table 4 that estimates on benefit receipt are positive in each country, but demonstrate significance solely in the Slovak Republic. Thus, among unemployed Slovak workers, current unemployment duration is likely extended due to reduced opportunity costs of job-search (related to UI receipt) and/or the provision of training.<sup>17</sup> Finally, with long-term unemployment defined as 12 months or more, estimates on involuntary job-loss in Table 4 indicate possible stigmatization in Poland but not in either the Czech or Slovak Republics.<sup>18</sup> Thus, for workers in the former country, potential employers apparently utilize involuntary job-loss as a negative screen on reemployment.

#### 4. DURATION EFFECTS: SCARS VS. BLEMISHES

Although hardships experienced within the transition labor market are assumed to increase with  $P(S \geq t)$ , and thus with stigmatization, the *severity* of such hardship most certainly increases with duration, or “t”. In this regard, a finding of stigmatization as a determinant of  $P(S \geq 24)$  is more detrimental to workers than is a similar finding for  $P(S \geq 12)$ . This question, one of *scars vs. blemishes*, is easily addressed through

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<sup>16</sup> For an unemployed married male, the marital effect on  $P(S \geq t)$  is equal to the estimate appropriate to the wife's education listed under “spouse's education” in Table 4. Alternatively, for an unemployed married female, the equivalent marital effect is equal to the sum of the estimate on “married female” and the estimate appropriate to the husband's education listed under “spouse's education” in Table 4.

<sup>17</sup> See Section 3-A and note 12 above.

<sup>18</sup> When  $P(S \geq 12)$  in the Slovak Republic is considered under the four models developed for Poland in Table 3, estimates on involuntary job-loss are positive and significant in models (1), (2) and (3), but not in model (4). Thus, redundant Slovak workers are apparently seeking reemployment within regional labor markets unfavorable to their search outcomes.

reestimation of equation (1) for various values of “t”, or current durations of unemployment. Consequently, estimates of equation (1) were obtained for each of the durations listed in Table 2 utilizing the joint estimation technique for  $P(S \geq t)$  and  $P(\text{BEN})$  described above.<sup>19</sup> Marginal impacts of involuntary job-loss were subsequently calculated from predicted  $P(S \geq t)$  determined alternatively with the binary variable on involuntary job-loss set to zero in the first instance and to unity in the second, and with all other independent variables set to their mean values.

Resulting increases (decreases) in  $P(S \geq t)$  due to involuntary job-loss, stated as percentages, are listed in the second column of Table 5. Similar estimates based upon mean differences in Table 2 are provided in the first column. Significance levels in column 1 relate to t-tests on mean differences in Table 2, while those in column 2 pertain to estimates (above) on the job-loss variable in equation (1).

Estimates in column 2 of Table 5 represent the marginal impact of involuntary job-loss on  $P(S \geq t)$  for a *representative* individual among the current unemployed, and thus for a person characterized by typical: (1) personal and family characteristics, (2) chances of benefit receipt, (3) prior work (industry and occupation), and (4) regional labor market conditions. On the other hand, notice in column 1 that mean differences in long-term unemployment likelihood provide little, and often misleading, information concerning the relative job-search outcomes of redundant and quitting workers. Comparisons of estimates between the two columns of Table 5 indicate that this is especially relevant for Slovakia, where mean differences in  $P(S \geq 3)$  through  $P(S \geq 24)$  imply differential, and persistent, labor market hardships for workers involuntarily terminated by their prior employers. Not only is this false when other

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<sup>19</sup> Since  $S \geq t$  is deleted from equation (2) when obtaining first-stage estimates, the determinants of current benefit receipt listed in the Appendix Table are also applicable here. See note 13. Estimates of  $P(S \geq 12)$  were considered above in Section 3-B and Table 4. Estimates of  $P(S \geq 3)$ ,  $P(S \geq 6)$ , and  $P(S \geq 24)$ , as well as  $P(S \geq 36)$  for Poland, are available from the author upon request.

**TABLE 5**  
**Percentage Increase (Decrease) in  $P(S \geq t)$**   
**Due to Involuntary Job-Loss:**  
**Estimates for The Czech Republic, Slovak Republic and Poland<sup>a</sup>**

| Country /<br>$P(S \geq t)$     | Estimates Based Upon: |                          |
|--------------------------------|-----------------------|--------------------------|
|                                | Means <sup>b</sup>    | Regressions <sup>c</sup> |
| <b>Czech Republic (1994):</b>  |                       |                          |
| $P(S \geq 3)$                  | (5.2)                 | (7.2)                    |
| $P(S \geq 6)$                  | (8.9)                 | (16.5) <sup>*</sup>      |
| $P(S \geq 12)$                 | 17.6                  | 8.6                      |
| $P(S \geq 24)$                 | (2.7)                 | (6.9)                    |
| <b>Slovak Republic (1995):</b> |                       |                          |
| $P(S \geq 3)$                  | 9.6 <sup>***</sup>    | (1.5)                    |
| $P(S \geq 6)$                  | 18.0 <sup>***</sup>   | (8.8) <sup>**</sup>      |
| $P(S \geq 12)$                 | 29.2 <sup>***</sup>   | (9.2)                    |
| $P(S \geq 24)$                 | 38.3 <sup>***</sup>   | 17.6                     |
| <b>Poland (1994):</b>          |                       |                          |
| $P(S \geq 3)$                  | 9.9 <sup>***</sup>    | 9.2 <sup>***</sup>       |
| $P(S \geq 6)$                  | 19.9 <sup>***</sup>   | 18.2 <sup>***</sup>      |
| $P(S \geq 12)$                 | 36.6 <sup>***</sup>   | 35.7 <sup>***</sup>      |
| $P(S \geq 24)$                 | 35.0 <sup>***</sup>   | 4.0                      |
| $P(S \geq 36)$                 | 18.7                  | (34.5) <sup>**</sup>     |

\*\*\* = significant at the 1 percent level

\*\* = significant at the 5 percent level

\* = significant at the 10 percent level

<sup>a</sup>Numbers are based upon estimates of  $P(S \geq t)$  for voluntary and involuntary job-loss, and are equal to  $100[(\text{involuntary} - \text{voluntary}) / \text{voluntary}]$ .

<sup>b</sup>Mean values of  $P(S \geq t)$  for voluntary and involuntary job-loss are listed in Table 2. Significance levels relate to t-tests on mean differences.

<sup>c</sup>Based upon logit estimates of  $P(S \geq 3)$ ,  $P(S \geq 6)$ ,  $P(S \geq 12)$ , and  $P(S \geq 24)$  for each country [as well as  $P(S \geq 36)$  for Poland], of which  $P(S \geq 12)$  is shown in Table 4. For each country and time period "t", estimates in the second column above relate to predicted  $P(S \geq t)$  determined alternatively with the binary variable on involuntary job-loss set to zero in the first instance and to unity in the second, and with all other independent variables set to their mean values. Significance levels relate to estimates on the job-loss variable in the logit regressions.

determinants of search duration are accounted for (see column 2), but on the contrary, redundant workers are 8.8 percent less likely than their quitting counterparts to have searched for six months or more.

As indicated in Table 1, the Czech Republic is distinguished among the three transition countries by its tight labor market (3.3 percent sample unemployment rate). Notice in Table 5 that redundant workers in this country experience no apparent differential hardship, relative to quitting workers, in their efforts to find reemployment. On the contrary, redundant workers among the current unemployed are 16.5 percent less likely than unemployed quits to have searched for six or more months.

Stigmatization of redundant Polish workers was observed above based upon long-term unemployment of 12 months or more (see Tables 3 and 4). The estimate for  $P(S \geq 12)$  in the second column of Table 5 indicates that redundancy increases the chances of such long-term unemployment by roughly 36 percent. In addition, stigmatization is observed for shorter durations ( $t = 3$  and  $6$ ) as well. Conversely, no evidence of stigmatization is provided in the second column for longer durations ( $t = 24$  and  $36$ ); redundant Polish workers instead demonstrating considerably less risk than their quitting counterparts to extended unemployment of 36 months or more.

## 5. CONCLUSIONS

Redundant workers are thought to experience significant hardship within transition labor markets in comparison to both voluntary quits and new entrants. In addition to reduced self-esteem and motivation (that diminish search effort), search duration may be prolonged to the extent that potential employers utilize involuntary termination as a negative screen. This study examined whether such workers are, in fact, stigmatized in transition labor markets, and if so, the severity of the effects.

Job-search was considered early in the transition period in the Czech Republic, Slovak Republic, and Poland within a modeling framework whereby current search

duration (likelihood of long-term unemployment) and benefit receipt are jointly determined. Among the pool of unemployed with prior work experience, stigmatization was assumed to obtain whenever likelihoods of long-term unemployment are systematically elevated, among otherwise equivalent individuals, by involuntary job-loss. In addition, the persistence of such stigmatization (and implied hardship within transition labor markets) was determined by repeated analysis under alternative definitions of long-term unemployment.

Although simple tabulations of current unemployment duration indicate increased risks of extended job-search (two years or more) among redundant workers in both the Slovak Republic and Poland, econometric estimates that control for (other) determinants of search duration do not. In this regard, stigmatization was detected solely among Polish workers, with elevated likelihoods of long-term unemployment extending no longer than two years. No evidence of more lasting, or persistent, hardship was observed for Polish workers based upon alternative definitions of long-term unemployment, namely durations of 24 or more (36 or more) months. Thus, although redundant workers are stigmatized in Polish labor markets (and sustain *blemishes*), they apparently are not permanently *scarred* by the transition process.

These findings for the Czech Republic, Slovak Republic and Poland raise important questions concerning the efficacy of active and passive labor market policies existing at the outset of transition, or put in place shortly thereafter. This, of course, is of particular relevance to the study in that benefits are often targeted at redundancies in general, and to workers dismissed via mass layoffs in particular. After adjusting for benefit receipt (UI and/or training), and controlling for personal/family characteristics, nature of prior work, and regional labor market conditions, involuntary job-loss has no discernible harmful effect on current unemployment duration in either the Czech or Slovak Republics. Whether this favorable outcome is attributable to labor market tightness (in the Czech Republic), effective labor market policy, and/or affirmative

hiring (rehiring) practices among employers, is unknown, but will likely receive increased scrutiny in the future by policy analysts.

## APPENDIX TABLE

### Determinants of Current Benefit Receipt: Binary Logit Estimates for The Czech Republic, Slovak Republic and Poland (Unemployed with Prior Work Experience)<sup>a</sup>

| Variable:  | Country:                    |                              |                       |
|--|-----------------------------|------------------------------|-----------------------|
|  | Czech<br>Republic<br>(1994) | Slovak<br>Republic<br>(1995) | Poland<br>(1994)      |
| Constant   | -1.371                      | -.808                        | -1.142 <sup>***</sup> |
| <b>Personal / Family Characteristics:</b>        |                             |                              |                       |
| Female   | .305                        | .488 <sup>**</sup>           | .005                  |
| Married Female                                   | -.502 <sup>*</sup>          | -1.096 <sup>***</sup>        | -.414 <sup>**</sup>   |
| Age: <sup>b</sup>                                |                             |                              |                       |
| 25 - 34  | .194                        | -.314 <sup>*</sup>           | -.554 <sup>***</sup>  |
| 35 - 44  | .525 <sup>**</sup>          | -.265                        | -.733 <sup>***</sup>  |
| 45 - 54  | .090                        | -.355                        | -.792 <sup>***</sup>  |
| 55 - 64  | -1.290 <sup>***</sup>       | -1.114 <sup>***</sup>        | -1.304 <sup>***</sup> |
| Completed Education: <sup>c</sup>                |                             |                              |                       |
| Level 2  | -.315 <sup>*</sup>          | -.352 <sup>**</sup>          | .338 <sup>***</sup>   |
| Level 3  | -.158                       | -.371 <sup>*</sup>           | .431 <sup>***</sup>   |
| Level 4  | -1.117 <sup>*</sup>         | -.689                        | .121                  |
| Spouse's Education (if married): <sup>c</sup>    |                             |                              |                       |
| Level 1  | -.164                       | .422 <sup>**</sup>           | .545 <sup>***</sup>   |
| Level 2  | -.220                       | -.205                        | .505 <sup>***</sup>   |
| Level 3  | -.387                       | -.241                        | .416 <sup>***</sup>   |
| Level 4  | .118                        | -.361                        | .082                  |
| <b>Inactivity Following Job-Loss<sup>d</sup></b> | -.285                       | -.518 <sup>*</sup>           | -1.134 <sup>***</sup> |
| <b>Job-Loss: Involuntary</b>                     | -.116                       | .408 <sup>***</sup>          | .590 <sup>***</sup>   |
| <hr/>  |                             |                              |                       |
| Number of Observations                           | 949                         | 1491                         | 3431                  |

\*\*\* = significant at the 1 percent level    \*\* = significant at the 5 percent level    \* = significant at the 10 percent level

<sup>a</sup>Represents first-stage estimates of equation (2) with  $S \geq t$  excluded. The dependent variable is set to unity (vs. zero) for registration at a public employment office and receipt of benefits and/or assistance. Although not shown in the table, prior industry and occupation are each represented by a set of nine (eight included) binary variables. Binary variables were also entered to represent 8, 38 and 49 regions in the Czech Republic, Slovak Republic and Poland, respectively. All variables and the three microdata samples are described in the text. The log likelihood ratio test statistic is significant at the one percent level or better in each model.

<sup>b</sup>The omitted category is age 18 - 24.

<sup>c</sup>Level 1 represents education at the primary level or less, level 2 is indicative of basic vocational and/or apprenticeship training, level 3 represents secondary levels of either general or vocational education, and level 4 is indicative of university and post-graduate education.

<sup>d</sup>A binary variable set to unity (vs. zero) for delayed job-search following employment termination.

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