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STRUCTURAL CHANGE AND UNEMPLOYMENT IN CENTRAL AND EASTERN EUROPE: SOME KEY ISSUES

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ABSTRACT

Structural Change and Unemployment in Central and Eastern Europe: Some Key Issues*

Labour markets in Central and Eastern Europe (CEE) will be a key vehicle for the expression and reallocation of skills and talents in the transformation process. To a large extent, the emergence of unemployment is an indicator of this restructuring and reallocation. This paper surveys some of the issues involved in the rise of CEE unemployment as well as the policy options available for dealing with it. Specifically, the paper looks at reallocation of human resources across industries, occupations, space, and labour market states. The matching function is proposed as one possible device for summarizing and studying these developments. The paper briefly evaluates current labour market policies in the CEE economies in this light.

JEL classification: J20, J60, O15
Keywords: Central and Eastern Europe, labour markets, transformation, unemployment

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NON-TECHNICAL SUMMARY

The transformation to a market system and the exposure to world competition has been associated with sharp declines in measured economic activity in the economies of Central and Eastern Europe (CEE). Since 1989, gross industrial output has declined cumulatively by 28% in Hungary (GDP: 21%), by 34% in the Czech Republic (GDP: 20.3%) and by 35% in Poland (GDP: 20%). This decline seems largely independent of macroeconomic policies and reform strategies pursued by the national governments. It therefore seems unlikely that a very large component of the rise in unemployment is due to aggregate demand shifts during the transformation. What is occurring in the CEE economies represents the unwinding of several decades of distortions and misallocation of human capital and talents. The emerging labour markets of these economies will be a key vehicle for the expression and reallocation of human resources, and the emergence of unemployment is to a large extent an indicator of this restructuring and reallocation. This paper surveys some of the aspects of this restructuring taking place in labour markets and some of the ways that policies may affect it.

Several aspects of restructuring can be anticipated. First, available evidence indicates that many workers are under pressure to change industries and occupations. The early predictions of massive reorientation of trade towards the West have been borne out, and profitable production of goods to Western standards will require drastic improvements in productivity and product quality. At the same time, rapid growth of an abnormally underdeveloped service sector has given rise to employment opportunities for unemployed workers in industry. The need for reallocation of labour's talent and human capital are not constant across space, leading to remarkably high degrees of mismatch in relatively small countries such as Bulgaria and Hungary.

A little-studied aspect of the transformation is mobility across labour force status. The meaning of employment in pre-revolution CEE was different than it is in capitalist economies, and this ambiguity carries over to the meaning of *labour force participation*. Employment was a mechanism of social integration and protection; as a result, pre-revolution labour force participation in the CEE was extraordinarily high by the standards of industrial countries, especially for women. If experience of OECD countries is a guide, pressure to change labour force status will increase dramatically in these countries as enterprises are relieved of their social protection function and shed low productivity staff. Changes in labour force participation since the onset of transformation have been as dramatic as those across sectors, and are more abrupt than any changes observed over the past two decades in OECD countries.

Naturally, patterns of restructuring across labour force states will be influenced by incentives to stay in the labour force. This includes the administration of social

safety net programmes, as stricter administration of unemployment benefits leads to a 'self-selection' of low productivity workers out of the labour force and into home or shadow economy production. While such a policy may have negative social aspects, it would also seem inappropriate to maintain the illusion that all individuals of working age can or should find work under market conditions, as this is certainly not the case in OECD economies.

A final aspect of labour markets discussed in the paper is restructuring across generations. Education and literacy levels in the CEE economies are generally thought to reflect high levels of human capital. Yet a large component of human capital consists of work experience which was to some extent rendered obsolete by the move to a market-oriented system. There is increasing evidence that rates of return on new, experience-related human capital have increased in the transforming economies. Because of its time-to-build aspect, this human capital investment will be most productive and easiest to amortize for younger workers. The emergence of a 'generational conflict' is a consequence of the transformation, especially in the short run when the demand for labour and the supply of jobs is given.

Under the extreme conditions in the CEE economies, labour market policies and institutions will have considerable influence on the speed at which unemployment returns to some 'natural' rate as well as the natural rate itself. For example, unemployment benefit policy, which has been implemented in different ways in CEE countries, will affect the rate at which non-participation converges to 'normal' levels. Bulgaria, the Czech Republic and Slovakia, with relatively strict administration of unemployment benefits, have already sharply reduced labour force participation towards levels prevailing in low-income OECD countries, whereas Hungary and Poland have shielded their labour forces from such hard choices. Early retirement programmes, which can be viewed as a write-off of certain types of low-productivity human capital, are another potentially important policy option. Despite their budgetary cost, these programmes can increase total (present discounted) output under plausible conditions. The most important aspect of the East German early retirement programme has been its positive effect on youth unemployment, in contrast to Hungary and Poland, where early retirement is much more limited and youth unemployment is high.

Active labour market policies are designed to affect directly the efficiency of the matching process. Retraining programmes fall into this category, as do mobility grants, re-interview programmes, and efforts directed at specific high-unemployment groups. The information transmission function of labour offices is important for transforming economies, as workers are still learning how to search effectively for new opportunities. The effectiveness of Czech and Slovak employment offices, which employ relatively large staffs, is evidence for this hypothesis. A more important type of active labour market policy is direct job creation. Make-work has the same kind of integrative effect that state

employment did under communism. The highly successful active labour market policies of the former Czechoslovakia stress both direct and subsidized job creation, which now account for 70% of all active labour market policy expenditures there. In addition, programmes target young people, the unskilled and the long-term unemployed. Combined with rigorous administration of unemployment support, this policy has proved successful, even in Slovakia, where unemployment is considerably higher.

Public works therefore appear to be an important means of supporting short-run turnover in the labour market. These measures are funded to a large extent by savings on jobless benefits, explaining why active measures remain such a large component of total spending in these countries. Such policies appear superior to wage subsidies, which tend to freeze existing inefficiencies, remove pressure for change, and distort compensation structures. The risk of state dependence should motivate concern among policy-makers in Central and Eastern Europe about current high joblessness among those who truly seek employment. The Czech and Slovak experience teaches us that short-term job creation and effective targeting of marginal rather than inframarginal groups can be an effective response to current adverse labour market conditions in these economies.

1. Introduction

In his book *Economic Behavior in Adversity,* Hirshleifer (1987) describes the remarkable recovery of both Germany and Japan after severe bombing damage sustained during World War II. In particular, he makes particular note of the similar experiences of Hiroshima and Hamburg, which according to allied bombing reports were destroyed to considerably different degrees. His central conclusion from this experience as well as other catastrophic events over the past millenium is that the stock of human knowledge and talents is more decisive for rapid recovery from economic adversity than the destruction of physical equipment and structures. In the words of Marshall, "the most valuable of capital is that invested in human beings."

The future development of Central and Eastern Europe (CEE) may provide crucial evidence for Hirshleifer's hypothesis. The transformation to a market system and the exposure to world competition after the collapse of communism has been associated with considerable adversity in these economies: since 1989, gross industrial output has declined cumulatively by 28% in Hungary, (GDP: 21%); by 34% in the Czech Republic (GDP: 20.3%), by 35% in Poland (GDP: 20%).[1] In addition to sudden exposure to foreign competition, the collapse of demand from traditional markets, the Gulf War and the civil war in Yugoslavia, the countries of Central and Eastern Europe suffered sharp reductions in their stocks of effective productive capital the moment they were exposed to international trade. After an initial reluctance, firms have now begun to cut staff in earnest, and unemployment has risen largely independently of reform strategies pursued by the national governments. For example, Poland pursued a "shock therapy" price liberalization and stabilization, Hungary adopted a "go-slow" approach, and Romania has taken only modest steps towards real reform; in all three countries unemployment has increased from zero to roughly 15%. Only the Czech Republic (and to some extent Slovakia, see below) has been spared the increase in unemployment. In the face of such adversity the knowledge and talents of the citizens of Eastern and Central Europe will be severely tried.

The developing labor markets of these economies will be a key vehicle for the expression and reallocation of skills and talents, and to some extent, the emergence of unemployment is an indicator of this restructuring and reallocation. Several questions have arisen regarding the extent and the nature of the current high unemployment in Central and Eastern Europe: whether it reflects aggregate demand, restructuring, the gathering of fundamentally new information about labor and product markets, bad government policies, or some combination of all of these. In such a setting, the question of the appropriateness of the natural rate model also arises. The objective of this paper is to survey some of the issues involved in rise of CEE unemployment as well as policy options available for dealing with it.

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[1] Source: EBRD (1993).

Section 2 presents an overview of several different aspects of unemployment and "restructuring" in labor markets. Specifically, we look at reallocation of human resources across industries, occupations, space, and labor market states. In Section 3, the matching function is proposed as a device for summarizing these developments. Section 4 briefly evaluates labor market policies in the CEE economies in this light and Section 5 concludes.

2. Restructuring in Transforming Labor Markets: Alternative Interpretations

It is hard to know what unemployment is in Central and Eastern Europe, since *employment* under state socialism did not correspond to conventional market economy concepts. Evidently central planners attached social value to employment which exceeded the marginal contribution of labor to the production process. Pre-revolution employment was a key means of social integration and protection. It also served as a vehicle for redistribution of national output, providing individuals with both pecuniary benefits (wages) as well as in-kind goods and services (medical benefits, additional access to goods in factory stores, vacation homes, day care, as well as socialization into the working population), regardless of individual productivity or talents. Firms were obliged to take on additional workers, and could finance new employment with cheap credit; it was in their interest to do so, since in a shortage economy the shadow price of any inventory is generally positive and high. Wage structures did not reflect labor scarcity. Since layoffs were not possible and unemployment was illegal, labor mobility was expressed via abnormally high inter-enterprise turnover.

Thus while output demand has certainly collapsed in the CEE, a reduction of employment would have occurred in any event in a transition to a system in which firms do not bear principle responsibility for social security and redistribution. It seems unlikely that more a fraction -- at most half -- of the rise in unemployment is due to aggregate demand shifts in the traditional sense. For reasons of comparative advantage or economic geography, much demand from the republics of the ex-Soviet union will not return once markets are in place; it will be replaced by exports to more demanding, competitive world markets. The real reallocation of labor that will ensue as a result over the next decade represents the unwinding of several decades of distortions and misallocation of human capital and talents.

2.1. Reallocation of Human Capital: Restructuring across industries and space

It is well-known that the structure of output in the CEE was biased towards heavy industry and away from labor-intensive manufacturing and especially services. Table 1 provides a picture of the fraction of GDP and employment attributable to agriculture, industry and services (residual) in 1988 and 1992. Industrial activity represents only 27% of total GDP in Hungary to more than 60% in the Czech Republic, Slovakia, and Poland. In the planned

economy, industrial structure, firm size and location were often less driven by economic rather than political or military considerations. For example, it is well-known that Slovakia's industrial base was influenced by Soviet military needs.

The transformation has witnessed sharply varying evolutions of output structures. In Romania and Bulgaria, where Stalinist industrialization was probably most irrational, industrial production has fallen relative to agriculture and services. In all economies, the share of industrial employment has fallen, sometimes despite a rising share in value-added. The strength of manufacturing in the Czech and Slovak Republics reflects strong Western demand for their output, primarily basic intermediate products. As predicted by Collins and Rodrik (1991), exports have been sharply redirected to the West, and now represent 75% of the total in Hungary and 63% in the former CSFR. The "reverse restructuring" in favor of agriculture observed in Bulgaria, Romania, and Poland to some extent reflects a fundamental comparative advantage (especially vis-a-vis the European Union) as well as the economic hardship which has forced a return to self-employment in farming.

Table 1
The Structure of Output and Employment in the CEE Economies

Fraction of GDP originating in:

	Agriculture		*Industry*		*Services*	
	1988	**1992**	**1988**	**1992**	**1988**	**1992**
Bulgaria	11%	16%	61%	43%	28%	41%
Czech Rep	7%[1]	8%[2]	60%[1]	63%[2]	33%[1]	29%[2]
Hungary	16%	14%	34%	27%	50%	59%
Poland	13%[2]	27%[3]	58%	60%[2]	29%	13%
Romania	15%	20%	54%	44%	31%	36%
Slovakia	7%[2]	8%[2]	60%[1]	62%[2]	33%[2]	30%[2]

Source: EBRD (1993). Services is a residual, includes government but excludes informal sector.
[1]CSFR. [2]1990. [3]1991.

Fraction of employment in:

	Agriculture		*Industry*		*Services*	
	1989	**1992**	**1989**	**1992**	**1989**	**1992**
Bulgaria	19%	18%	45%	40%	36%	42%
Czech Rep	11%	8%	47%	44%	42%	48%
Hungary	18%	10%	40%	37%	42%	53%
Poland	30%	29%	35%	32%	35%	39%
Romania	29%	33%	44%	37%	27%	30%
Slovakia	14%	12%	46%	41%	40%	47%

Source: EC (1993)

Another source of restructuring is the reallocation of labor's talent and human capital across space. In Central and Eastern Europe the pattern of regional immobility is similar to if

not more extensive than Western Europe. Table 2 displays regional unemployment rates (registry data) for two of the smallest CEE countries, Bulgaria and Hungary, which have a surface area smaller than that of Arkansas, a US state. Similar results are found when unemployment relative to reported vacancies is considered instead; see Burda (1993). The difference in unemployment rates between Sofia town and the surrounding administrative oblast is particularly striking.

Table 2
Regional Unemployment, Hungary and Bulgaria, 1993:2 (%)

Hungary:	**13.4**	**Bulgaria:**	**15.7**
TransDanube	14.2	Sofia Town	8.8
Great Plain	17.6	Burgas	15.7
North East	22.5	Varna	11.3
North West	9.8	Lovetch	14.5
of which:		Michailovgrad	20.9
Budapest	6.5	Plovdiv	19.6
		Russe	20.7
		Sofia District	15.2
		Haskovo	18.8

Source: EEC (1993). Data refer to registered unemployment.

2.2. Labor Force Participation: Restructuring across Labor Market States

As mentioned in the previous section, the meaning of employment in pre-revolution CEE was different than it is in capitalist economies, and this ambiguity carries over to the meaning of *labor force participation.* As enterprises are relieved of their social protection function and are increasingly driven by the profit motive, they have begun to shed low productivity staff. Registered unemployment is now a claim to social protection that resembles employment under the old system, even though reemployment prospects may be bleak or nonexistent.

This point is supported by Table 3, which shows the recent evolution of labor force participation in the total working population and by sex. Pre-revolution labor force participation in the CEE was extraordinarily high by the standards of industrial countries, especially for women. Changes in labor force participation since the onset of transformation have been as dramatic as those across sectors, and are more abrupt than any changes observed over the past two decades in OECD countries. There is however, wide variation among CEE countries. Large declines in participation (especially female) have been registered in Bulgaria, the Czech Republic and Slovakia; in contrast, females in Hungary and Poland have maintained their participation levels. In Poland participation has fallen the least, and female participation may have actually risen in 1993.

Table 3
Labor force participation (% of population of working age)

		Total	*Male*	*Female*
Bulgaria	**1989**	87.4	82.5	92.9
	1992	74.2	68.1	81.1
CSFR	**1989**	84.8	87.0	82.3
	1992	78.8	85.7	71.4
Hungary	**1989**	82.5	85.9	78.8
	1992	78.4	78.8	78.0
Poland	**1989**	76.1	83.6	68.6
	1992	74.5	80.7	68.2
Memo:				
France	**1991**	65.7	74.5	56.8
Germany	**1992**	69.8	80.1	59.0
Portugal	**1992**	74.0	85.9	62.8
Sweden	**1992**	80.7	82.7	78.7

Source: Boeri (1993b), OECD (1993).

It is evident, however, that part of the favorable unemployment development in the Czech and Slovak Republics can be attributable to forcing women into nonactivity, and that unemployment in Bulgaria would be much higher in the absence of this development. Yet when compared with other OECD-European countries female labor force participation remains significantly higher in Central and Eastern Europe. If female labor supply is more wage-elastic than that of men, the recent collapse of real wages would be expected to induce greater reduction in female than male participation. Wealthier OECD economies have generally seen declining male and increasing female participation over time. Taking Portugal as a benchmark country, further declines in participation of both sexes can be expected in the CEE economies in the future, even taking taste differences into account.[2]

Patterns of restructuring across labor force states will be influenced by incentives to stay in the labor force. This includes the administration of social safety net programs, as stricter administration of unemployment benefits leads to a "self selection" of low productivity workers out of the labor force. While such a policy has negative social side effects, it would

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[2] This has been most evident in the Czech Republic, [illegible]

also be wrong to expect that all individuals of working age can find work under market conditions, as this is certainly not the case in OECD economies. Current policy practiced to widely different extents in the CEE countries is to force individuals into nonparticipation.

An indication of the extent to which this selection process is occurring is the degree to which declines in aggregate employment (ΔL) occur alongside increases in aggregate unemployment (ΔU).[3] Although both variables are endogenous in a market economy, the primary cause of employment declines in the CEE countries in the recent past and for the foreseeable future is exogenous labor shedding in state enterprises. In a world with a fixed labor force, the ratio $\Delta U/\Delta L$ should be unity. Yet this ratio ranges from much less than 0.5 in the CR, Slovakia, and Bulgaria, to greater than 1 in Poland, and Romania. The differences across the CEE countries examined in Table 4 seem too large to be due to chance. As might be expected, countries with stricter administration of unemployment benefit exhibit considerably greater reduction in participation. One group of countries consisting of Bulgaria, the Czech Republic and Slovakia, has consequently reduced labor force participation rates towards OECD levels, especially among women, and thereby open unemployment rates. In contrast, the second group of Hungary, Poland, and Romania exhibit a $\Delta U/\Delta L$ ratio grater than 1; in Hungary and Poland the ratio has actually *increased* over the last two years.[4]

Table 4
Changes in Employment and Unemployment, 1989-1992:4

Country	ΔL (000s) 1989-1992:4	ΔU (000s) 1989-1992:4	$\Delta U/\Delta L$ 1989-1992:4	$\Delta U/\Delta L$ 1991-1992:4	Unemp.Rate 1993: 2 (%)	Benefit Meas., 1992
Bulgaria	-1861	577	-0.31	-0.15	15.7	671
CSFR	-2656	395	-0.15	-0.05	2.6/12.5	522
Hungary	- 832	620	-0.75	-1.42	13.4	3388
Poland	-2206	2509	-1.14	-1.22	14.8	1240
Romania	- 741	929	-1.25	-1.02	9.3	1286

Source: EEC (1993). The benefit measure is from Burda (1993), which depends on the replacement rate, the duration of claim, and the fraction of registered unemployed who are eligible.

2.3. Obsolescence of Human Capital: Restructuring across Generations

While many studies have emphasized the large gap in equipment and infrastructural capital between East and West, high education and literacy levels in the population are generally considered indicators of high levels of human capital in the East.[5] Yet a large

[3]See Blanchard, Commander and Coricelli (1993).
[4]Part of this pattern may be due to non-monetary benefits (medical insurance, pension contributions) made available to registered unemployed and their family members. I thank Marek Gora for pointing this out to me.
[5]See for example David Begg et al. (1990), Susan Collins and Dani Rodrik (1991), and Carl Hamilton and Alan Winters (1993).

component of human capital consists of work experience (see George Becker, 1975), and much experience-related human capital accumulated during socialism was rendered obsolete by the move to a market-oriented system. There is increasing evidence that rates of return on certain forms of new human capital have increased in the transforming economies. For example, in the three years following monetary union, data on the earnings of workers under the new regime have become increasingly available in eastern Germany, where restructuring of labor markets has been most consequent and radical. Earnings equations estimated on such data sets consistently show lower returns to experience and job tenure accumulated before the revolution than those estimated in the West.[6] This finding is less robust for education *per se* in Eastern Germany, especially at primary and secondary levels. These results suggest that the transformation was associated with significant human capital obsolescence for workers of all cohorts. Assuming that their tenure and experience variables are set to zero in an equation estimated on workers in the western sub-sample of the German Socioeconomic Panel, Bird et al. (1993) estimate income losses of up to 40% for East German workers aged 40 and older .

The increase in the effective return to new experience signals that considerable investment in human capital will be undertaken in these countries over the next decade. Because of its time-to-build aspect, this human capital investment will require a longer period to bear fruit, and will be most productive and easiest to amortize for younger workers. It follows that policies should be implemented that foster, or at least do not hinder human capital formation. One such policy, which has been quite successful despite some criticism, is the option of early retirement offered to eastern German males aged 55 or older who lost their job before the end of 1992.[7] By the end of 1993, more than 825,000 individuals had been removed from the labor force via early retirement. This policy can be viewed as a write-off of certain types of low productivity human capital, as well as an implicit insurance scheme of the state, in which the state indemnifies individuals against catastrophic losses. Despite these problems and the cost of such programs, it is straightforward to show the conditions under which such policies makes economic sense.

Suppose all workers have working lives of S years and retire at age T. In both retirement and unemployment, they receive fraction θ of their last wage in a pay-as-you-go system. Workers of age s have (marginal) productivity $y^s(t)$ at time t, which grows at constant rate γ^s until retirement.[8] Swapping a younger unemployed worker of age s^y with current

[6]See Schwarze (1993), Schwarze and Wagner (1993), Bird et al. (1993), and Geib et al. (1993).

[7]*Vorruhestandsgeld* (implemented before unification) and *Altersübergangsgeld* (the current program offered to Easterners by the Federal Employment Office). These programs provide for a pre-pension retirement benefit, paid by the employment office, of 65% of the last net wage for up to five years. These two programs account for more than half of all the individuals assisted through active labor market programs in Eastern Germany. For a more detailed description, see EEC (1992).

[8]The example can be easily modified to account for more realistically (concave) age-earning/productivity profiles without changing the qualitative conclusions.

productivity $y^y(0)$ for an older employed worker of age s^o with current productivity of $y^o(0)$ has net effect on the present value of GDP at time 0 of

$$\int_0^{T-s^y} y^y(0)e^{-(r-\gamma^y)t}\,dt \; - \int_0^{T-s^o} y^o(0)e^{-(r-\gamma^o)t}\,dt$$

or

$$y^y(0)[1-e^{-(r-\gamma^y)(T-s^y)}]/(r-\gamma^y) - y^o(0)[1-e^{-(r-\gamma^o)(T-s^o)}]/(r-\gamma^o)$$

where r ($>\gamma^s$ for all s) is the real discount rate. Since normally $y^y(0) < y^o(0)$, contemporaneous GDP declines as a result of an early retirement, even if overall present value of GDP increases. It is straightforward to show that the net gain is increasing (decreasing) in $y^y(0)$, γ^y, and s^o ($y^o(0)$, γ^o, and s^y).

Early retirement programs can have a significant effect on the government budget, both in terms of current cash flow and intertemporal budget balance. Let us assume that the enterprises are already privatized (but pensions and benefits are paid by the government) and that value-added is taxed at uniform tax rate τ. If the younger worker were expected to draw unemployment benefit until the retirement of the older worker (i.e. for $T-s^o$ periods), the net discounted budgetary impact of the swap is given by

$$\tau \{ [y^y(0)/(r-\gamma^y)][1-e^{-(r-\gamma^y)(T-s^y)}] - [y^o(0)/(r-\gamma^o)][1-e^{-(r-\gamma^o)(T-s^o)}] \}$$

$$- (\theta/r)\{ y^o(0)[1- e^{-r(S-s^o)} - e^{-(r-\gamma^o)(T-s^o)}(1- e^{-r(S-T)})]$$

$$- y^y(0)[1 - e^{-r(T-s^o)} - e^{-(r-\gamma^y)(T-s^y)}(1-e^{-r(S-T)}) \}$$

The first term is the additional tax revenue from the swap, and must be positive for early retirement to have merit at all. The second term (negative) represents the cost of the early retirement package for the older worker less that of a "normal retirement"; the third term (negative) represents the net cost to the system of the younger person, who will start work earlier, have a higher pension upon retirement but no longer draw unemployment pay. The sum of these effects are are quite possibly negative. The deterioration of intertemporal budget balance will be greater, the longer the expected remaining lifetime of the prematurely retired ($S-s^o$), and the shorter the time to retirement of the younger worker ($T-s^y$). It is ambiguously related to the retirement period (S-T) and the time otherwise remaining for older workers (T-

s^O).[9] Obviously, the negative effect on the budget is decreasing in the tax rate τ and increasing in the replacement ratio θ.

Because the formulas above are not easily reduced to simple expressions, the following numerical example may be instructive. Suppose that a 55 year-old Hungarian with life expectancy of 75 years has (marginal) productivity of 200,000 forint per year, assumed constant until retirement at 65. This is roughly twice the actual 1993 gross minimum wage (108,000 forint/year) and the minimum allowable benefit (103,200 forint/year). (For comparison, the average take-home income in Hungary is HFT 180,000; assuming a tax wedge of 50%, this corresponds to a gross labor cost of HFT 360,000). Assume that a young person aged 20 can begin work in a new enterprise a lower initial productivity level but with real growth of 2% per year until retirement; if unemployed for the next ten years he is assumed (unrealistically) to lose no human capital (i.e. y(0) is constant despite unemployment). The current retirement benefit in Hungary is 100% of the last net wage up to HFT 168,000; for simplicity we assume (generously) that the retirement benefit for older, less productive workers who leave the labor force is equal to the unemployment benefit. A real discount rate of 3% is assumed. If the total number of jobs is fixed, the present value of GDP is raised by substituting younger for older workers as long as the younger worker's initial productivity exceeds roughly HFT 121,000 or 61% of that of the older colleague. At this break-even point however, a marginal early retirement causes the government intertemporal budget constraint to deteriorate by roughly HFT 180,000 in present value.

It is evident that availability of external finance for such a program, as was in the case of eastern Germany, is imperative for its success. The unwillingness or inability of the state to offer attractive retirement package to older workers (or to force them aside) explains why these programs have met with less success in Hungary, Poland, or elsewhere.[10] On the other hand, creative solutions might be found to occupy older workers -- part-time jobs as "trainers" for younger workers is an example -- or, as in many CEE countries, allowing retirees to work in the informal economy. The most important aspect of the eastern German early retirement program has been its positive effect on youth unemployment. In Hungary, where early retirement is much more limited, 25% of all unemployment is aged 15-19, and more than 45% of all unemployed are younger than 30 years old (EEC 1993): In Poland, 29% of unemployed are 25 years or younger. An active early retirement policy should be an important weapon against widespread human capital destruction caused by unemployment. Older, less

[9]The ambiguity arises because longer retirement periods have two effects in this example. First longer retirement periods increase the attractiveness of early retirements, since they "lock in" workers at a lower persion level. On the other hand, they increase the fiscal burden for "normal" retirements and make early retirement relatively less attractive.

[10]If anything, the Hungarian pension system is expected to *increase* the male retirement age, for budgetary reasons, from (55 to 60 for females).

productive workers have little hope of restructuring their skills, but there is also little incentive for them to withdraw from the labor force.[11]

3. The Matching Process in Labor Markets in Transition

The transformation of CEE labor markets is a dynamic process which demands explicit consideration of stock-flow labor market relationships. The most important flows are from employment in the state sector into unemployment or into other jobs in the private sector, and exits from unemployment into new jobs, or out of the labor force. The matching approach to labor markets offers a convenient summary device for thinking about many aspects of the transformation.[12] Central to the approach is the *matching function*, which takes as arguments stocks of unemployment and vacancies and returns the flow of new matches (which can include "matches" into household production or exits from the labor force):

$$x(u,v)$$

where u and v are respectively the stocks of unemployment and vacancies. In the event that exits are time or duration dependent, u and v may stand for a vector of unemployment and vacancy stocks of varying durations. Normally it is assumed that x_u, $x_v > 0$, x_{uu}, $x_{vv} < 0$, and $x_{uv} > 0$. Under constant returns it summarizes the probability of exit from unemployment or job match f=x(1,v/u), which is a positive function of the relative availability of vacancies. The idea that the unemployed and vacancies require time to "find" each other is central to matching makes it an attractive account of the facts presented in Table 2, for example.

Recently researchers have estimated this function using regional and time series data from transforming economies.[13] When estimated under a Cobb-Douglas specification, matching functions exhibit positive elasticities of job matches with respect to both unemployment and vacancies; values are relatively close to those in Western Europe, with elasticities of roughly 0.6-0.7 for unemployment and 0.2-0.3 for vacancies (see for example Layard et al. 1991 or Burda and Wyplosz 1993). Remarkably, while a positive trend is evident in the efficiency of the matching function since 1990 (Burda 1992, Boeri 1993a,b), the

[11]The situation in Eastern Europe is only a point on a continuum on which Western Europe finds itself as well. Given that misguided passive unemployment policies has led to widespread depreciation of human capital, early retirement may be one means of easing more productive but less adaptable insiders out of the labor force in a world where retraining at an older age is considered too expensive or cost-ineffective.

[12]See Chris Pissarides (1990) and Olivier Jean Blanchard and Peter Diamond (1992).

[13]Tito Boeri (1993a)) and Burda (1992, 1993b) have estimated matching functions in several CEE countries and Western Germany. Hartmut Lehmann (1993) reports less success with a panel of Polish vovoidship data. His results may reflect the high degree of measurement error in Polish job vacancy data (due to the informal economy).

function appears stable across fairly abrupt policy regime changes (i.e. changes in benefit provisions) so as a policy tool it may actually survive the Lucas Critique.[14]

The matching function relates to equilibrium unemployment in the following way. Ignoring gross entry and exit from the labor force, the unemployment rate u is the solution to the differential equation $du/dt=s(1-u)-fu=s-(s+f)u$, where s and f are job separation and job finding rates respectively.[15] In the steady state, $u=s/(s+f)$, which can also be thought of as the product of an inflow rate s and an average duration which is the inverse of the gross turnover rate, s+f. This accounting exercise has little information content until we know more about the evolution of f and s. Clearly s is rising from near-zero levels in Eastern Europe to levels typical of Western economies (1-2% of employment per month) and its increase reflects in part the restructuring of large enterprises, and in part the increasing role of the private sector, which has a higher turnover rate than the state sector.[16] Since f is the intensive form of the matching function, it is positively influenced by v/u, the ratio of vacancies to unemployment, which is a function of both active and passive labor market policies as well as general business conditions. Trivially, it is negatively related to the availability of public works vacancies. It is also influenced by the efficiency of matching -- information flows and job agencies, the incentive to search or wait given by unemployment benefits or the underground economy -- as well as the supply of jobs by the private sector.

4. Implications for Labor Market Policy in the Transition

The existence of a matching process implies that the transformation of CEE labor markets will require precious time. This has implications for the pace of commercialization and privatization of state enterprises, which are normally associated with layoffs and plant closings. If there are social costs to unemployment, there may be an optimal rate of release of labor resources from the state sector. Heuristically, "feeding the matching function" must be balanced against the effectiveness of the matching process as well as social costs of unemployment. The extent of geographic mismatch is extreme in CEE countries, where "monoculture" towns dominated by a single large enterprise were common. A layoff policy that does not take the matching process and potential mismatch into account will lead to sharp increases in unemployment.

Institutions will play a central role in the process. The level and duration of unemployment benefits will affect the emergence of long-term unemployment as it has in the

[14]Burda (1992) and Boeri (1993) tested for the econometric stability of the matching function across identifiable regime changes (ie changes in unemployment benefits regimes) and were unable to reject homogeneity. On the other hand the power of the tests may be low, since adaptation of behavior may require more time than the few months observed since the regime change.

[15]This accounting framework has been used by Robert Hall (1979) and Robert Barro (1988) among others.

[16]The private sector already accounts for more than 50% of employment in Poland.

West. It will also affect the adjustment of CEE labor force participation patterns to OECD levels, as well as the rate at which individuals change occupation, industry and location.[17] There are serious time consistency issues related to jobless pay as well; the prospect of administrative extension of benefits seen in France and Spain in the 1980s is now occurring in Poland and Romania and will create expectations of further extensions in the future. Although increasingly under fire in Sweden (see Assar Lindbeck et al. 1993), active labor market policies should be expanded and substituted for passive income support in the CEE countries.[18] Make-work has the same kind of integrative effect that employment did under communism. The risk of state-dependence should motivate concern among policymakers in Central and Eastern Europe about current high joblessness among those who truly seek employment, especially the young.

The first type of active labor policies are designed to affect directly the efficiency of the matching process. Retraining programs fall into this category, as do mobility grants, re-interview programs, and efforts directed at specific high unemployment groups. The information function of labor offices is quite important in transforming economies, as workers are still learning how to search effectively for new opportunities. In the Czech and Slovak republics, staffing is closer to levels in the West (30:1 in the CR, 123:1 in Slovakia (EEC 1993)) than in other CEE countries. Although there are more than three times as many unemployed in Slovakia as in the Czech Republic, Czech labor offices have more than twice as many staff and 40% more consultants as in Slovakia (Uldrichova and Karpisek 1993), which suggests that high and rising unemployment with fixed staff can lead to reduced supervision, and less effective job intermediation and assistance, and possibly multiple equilibria in local labor markets. Training and reintegration programs to improve matching seem to be less successful. In fact, countries which spend the most on training as a fraction of their active labor market policies have showed the poorest performance. This applies especially to Hungary, which spends almost as much as a fraction of GDP on total active labor market policies as the former CSFR.

The second and possibly more important type of active labor market policy is direct job creation. The matching required presumes both the availability of unemployed individuals and unfilled jobs, but in reality the job/vacancy-creating process requires time to react to new conditions, and the continued high rate of enterprise taxation is likely to discourage job creation. In this sense public works are an important means of supporting turnover in the labor market. The highly successful active labor market policies of the former Czechoslovakia stress both direct and subsidized job creation, which now account for 70% of all active labor market

[17]For a theoretical exposition of this point see Avinash Dixit and Rafael Rob (1992).
[18]It should be noted that the Lindbeck Report emphasizes short-term job creation through public works.

policy expenditures there.[19] In addition, programs target young people, the unskilled and the long-term unemployed. Combined with rigorous administration of unemployment support, this policy has proved successful, even in Slovakia, where unemployment is considerably higher.[20] A poor alternative to make-work is direct government subsidies to employers to maintain staffing (wage subsidies). Employment subsides are more widely used in Romania and Bulgaria, and may be increasing in Hungary. Grant programs for entrepreneurial startups seem to play a limited role in job creation and have been scaled back considerably.

Finally, the importance of the informal or "underground" economy cannot be overlooked in designing labor market policies. High rates of income taxation and lax enforcement of existing laws have made unreported income quite attractive (when they can, individuals tend to hold a "regular" job which entitles them to social benefits, and then supplement this income with part-time, unreported work). For the unemployed, informal activity offers supplemental income to benefits, and job offers in the informal sector seem to be readily available.[21] While this may reduce the financial loss to households in unemployment, the underground economy puts additional strain on public finances, and either crowds out useful active labor market programs or leads to tax increases on legally registered business. It would thus seem appropriate to design policies which neither penalize nor encourage underground activity, but rather which bring it into the light of day. Tax reform will be an important element of such a policy.

5. Conclusions

The success of the transformation of Central and Eastern Europe will ultimately lie in making it palatable to a broad number of citizens. The economic adversity of the years following transformation can be overcome only if considerable reallocation of talent and human capital across states, space, and use is possible. Labor market institutions will play a large role in influencing the outcome, as will overall economic policy. Government intervention can be useful, by creating conditions which do not unduly inhibit structural change currently in progress. The CEE economies can learn from the mistakes of many

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[19]After the breakup of the country in January 1993, both the Czech and Slovak republics have maintained similar labor market policies, despite the larger collapse of economic activity in the latter. See John Ham et al. (1993).

[20]Although job creation is higher and unemployment is lower in Slovakia than in other CEE countries, it is unclear why it has fared so much worse than the Czech Republic. Jan Svenjar (1993) attributes the poor Slovak labor market performance to the greater decline in output in the Slovak republic, a high proportion of Gypsies in the Slovak Republic (who have high average unemployment rates), as well as the opportunity for Czechs to work legally or illegally in Germany.

[21]In the 1992 labor force survey in Hungary, 461,000 individuals reported being out of work and looking for a job (10.5% of the labor force), whereas 644,000 were registered with the employment offices (13.5%) (EEC 1993). Similarly, recent evaluation of the Polish survey data show that in 1993, registered unemployment continued to rise whereby survey unemployment fell. Banacek (1994) notes that from January 1991 to April 1992 some 450,000 Czechs and Slovaks quit jobs in state enterprises without reappearing as unemployed, employed, or working abroad -- presumably to work in the informal sector.

Western European economies, which chose to subsidize the status quo in "rustbelt" industries, pursue passive unemployment benefit systems with little incentive for adaptation to changing conditions, effectively leaving the unemployed alone to fend for themselves. For older less productive individuals who are unable or unwilling to adapt, early retirement can make room at the bottom for younger people with longer investment horizons for human capital investment.

The bringing together of job searchers and open positions requires time and resources, so it is unrealistic to suppose that the private sector can replace the public sector immediately. Forcing unemployment is one way of restructuring the enterprises, especially as turnover is low under current depressed economic conditions. At the same time, it is recognized that unemployment is partly time dependent, so a large state effort to prevent widescale mass unemployment is necessary. The experience of Central and Eastern Europe teaches that public works programs are an important element of a successful policy. In the Czech Republic in 1992, 112,000 "socially purposeful" and "socially useful" public works jobs were created (in Slovakia 102,000). These measures are funded by savings on jobless benefits, explaining why active expenditures remain such a large component compared to passive unemployment support in these countries. In contrast, wage subsidies tend to freeze existing obsolete structures, remove pressure for change, and distort compensation (see Bird et al. (1993) for evidence on Treuhand firms). The Czech and Slovak experience teaches us that short-term job creation and effective targeting of marginal rather than inframarginal groups are the most appropriate responses to the current adverse labor market situation in the Central and Eastern Europe.

References

Banácek, V. (1994) "Small Businesses and Private Entrepreneurship During Transition: The Case of the Czech Republic," mimeo, April.

Barro, R. (1988), "The Persistence of Unemployment" *American Economic Association Papers and Proceedings* 78, 32-37.

Becker, G. (1975) *Human Capital* (Chicago: University of Chicago Press).

Begg, D. et al. (1990) *Monitoring Eastern Europe* London: Centre for Economic Policy Research.

Bird, E. J. Schwarze, G. Wagner (1993) "Wage Effects of the Move Toward Free Markets in East Germany," mimeo, August.

Blanchard, O., S. Commander and F. Coricelli (1993) "Unemployment and Restructuring in Eastern Europe," presented at the OECD-CCET Technical Workshop "The Persistence of Unemployment in Central and Eastern Europe," September.

_____ (1992) "The Flow Approach to Labor Markets," *American Economic Review Papers and Proceedings* 82, 354-359.

Boeri, T. (1993a) "Labor Market Flows and the Persistence of Unemployment in Central and Eastern Europe," presented at the OECD-CCET Technical Workshop "The Persistence of Unemployment in Central and Eastern Europe," September.

_____ (1993b) "Unemployment Dynamics and Labor Market Policies," presented at conference "Unemployment, Restructuring and the Labor Market in East Europe and Russia," World Bank, October 1993.

Burda , M. (1992) "Unemployment, Labor Market Institutions and Structural Change in Eastern Europe," CEPR Discussion Paper No.746.

_____ (1993a) "Unemployment, Labor Markets and Structural Change in Eastern Europe," *Economic Policy* 16, 101-37.

_____ (1993b) "Modelling Exits from Unemployment in Eastern Germany: A Matching Function Approach" CEPR Discussion Paper No 800, May.

_____ (1993c) "Labor Market Institutions and the Economic Transformation of Central and Eastern Europe," presented at the conference "Unemployment, Restructuring and the Labor Market in East Europe and Russia," World Bank, October 1993.

_____ and C. Wyplosz (1993) "Gross Job and Worker Flows in Europe," presented at the 1993 ISOM conference, Kiel.

Collins, S. and D. Rodrik (1991), *Eastern Europe and the Soviet Union in the World Economy,* Institute for International Economics, Washington DC.

Dixit, A. and R. Rob (1992) "Switching Costs and Sectoral Adjustment in General Equilibrium with Uninsured Risk," mimeo, October.

European Bank for Reconstruction and Development, "Statistical Tables," *Economics of Transition* 1 (3) 1993, p.370.

European Community (1992) "Early Retirement Benefit: A Bridge Between Unemployment and a Pension," *Employment Observatory: East Germany* 5 (November), 5-6.

European Community (1993) *Employment Observatory: Central and Eastern Europe* 4 and 5 (May and December).

Geib, T. M. Lechner, F Pfeiffer, S. Salomon (1992), "Die Struktur der Einkommensunterschiede in Ost- und Westdeutschland ein Jahr nach der Vereinigung," ZEW Discussion Paper 92-06, July.

Hall, R. (1979) "A Theory of the Natural Unemployment Rate and the Duration of Unemployment," *Journal of Monetary Economics* 5, 153-170.

Ham, J. J Svenjar, and K.Terrell (1993) "The Czech and Slovak Labor Markets during the Transition," presented at conference "Unemployment, Restructuring and the Labor Market in East Europe and Russia," World Bank, October 1993.

Hamilton, C. and A.Winters (1992) "Opening Up Trade with Eastern Europe," *Economic Policy* 14: 72-116.

Hirshleifer, J. (1987) *Economic Behaviour in Adversity* Chicago: University of Chicago Press.

Layard, R., S. Nickell, and R. Jackman (1991) *Unemployment.* Oxford University Press.

Lehmann, H. (1993) "Labour Market Flows and the Evaluation of Labour Market Policies in Poland," CEP Discussion Paper No 161, July.

Lindbeck, A., P. Molander, T. Persson, O. Peterson, A. Sandmo, B. Swedenbourg, N. Tygesen (1993) "Options for Economic and Political Reform in Sweden," IIES Seminar Paper 540, Stockholm, August.

OECD (1993) *Employment Outlook.* Paris.

Pissarides, C. (1990) *Equilibrium Unemployment Theory*, Oxford: Basil Blackwell.

Schwarze, J. (1991) "Ausbildung und Einkommen von Männern. Einkommensfunktions-schätzungen für die ehemalige DDR und die Bundesrepublik Deutschland," *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* (24), 63-69.

_____ (1993) "Qualifikation, Überqualifikation und Phasen des Tranformations-prozesses," *Jahrbücher für Nationalökonomie und Statistik*, 211/1-2, 90-107.

_____ and G. Wagner (1993) "Earnings Dynamics in the East German Transition Process," Ruhr Universität Bochum Diskussionspapier No 93-08, October.

Svenjar, J. (1993) "The Czech and Slovak Federal Republic: A Solid Foundation," in Portes, ed., *Economic Transformation in Central Europe: A Progress Report* (London: CEPR), 21-57.

Uldrichova V. and Z. Karpisek (1993) "Labour Market Policy in the Former Czech and Slovak Federal Republic," presented at the OECD-CCET Technical Workshop "The Persistence of Unemployment in Central and Eastern Europe," September.