JOURNAL OF COMPARATIVE ECONOMICS **25,** 366–384 (1997)
ARTICLE NO. JE971478

Learning from Transition Economies: Assessing Labor Market Policies across Central and Eastern Europe[1]

Tito Boeri

Università Bocconi and IGIER, Istituto di Economia Politica, via Sarfatti, 25, 20136 Milan, Italy

Received November 26, 1996; revised August 4, 1997

Boeri, Tito—Learning from Transition Economies: Assessing Labor Market Policies across Central and Eastern Europe

Central and Eastern European countries transformed *radically* their unemployment benefit systems and altered significantly the composition of their active labor market policy budgets in the transition process. Their recent experience is valuable from an OECD country perspective. Based on a rich data base of district-level outflows from registered unemployment and active labor market policy expenditures and intakes, this paper provides a preliminary assessment of the effectiveness of active labor market policies in Central and Eastern Europe. Estimates of an augmented matching function do not point to significant deadweight losses associated with active program intakes. This does not rule out the possibility that active policies displace those already employed, but such substitution effects may not be undesirable given the stagnancy of the unemployment pools in these countries. *J. Comp. Econom.*, December 1997, **25**(3), pp. 366–384. Università Bocconi and IGIER, Istituto di Economia Politica, via Sarfatti, 25, 20136 Milan, Italy. © 1997 Academic Press

Journal of Economic Literature Classification Numbers: J41, J64, J68.

1. INTRODUCTION

Currently there is much disenchantment in OECD countries about the effectiveness of labor market policies. Disincentives to job search associated with unemployment benefit entitlements are frequently emphasized and active policies are increasingly challenged on the grounds that they are very costly and all too often associated with deadweight losses. The dramatic rise of unemployment

[1] I thank Janos Köllö, two anonymous referees, and participants in a workshop in Vienna for valuable comments on an initial draft. I am also indebted to Martina Lubyova and Assen Assenov for assistance in gathering data.

0147-5967/97 $25.00

experienced in the 1990's by Sweden, the country in which active policies have been most widely implemented, has amplified these concerns.

There are two general problems with the literature on the evaluation of labor market policies. First, it is not always clear on which grounds and by which criteria labor market policies should be evaluated. Second, there is not much variation in policies to exploit when making inferences on their effects because consolidated entitlements often prevent governments from altering significantly the design of unemployment benefit systems and shifting resources from passive to active labor market policies. These two problems are much less serious in transition economies than in OECD countries.

At the start of the transition, a rise in unemployment was not only considered inevitable but was also taken as an indicator of the extent to which reforms were progressing. It follows that the *stated* objective of policies was not to prevent the rise of unemployment but to cushion its social costs and to avoid the spread of long-term unemployment. The stagnancy of unemployment pools in these countries (Boeri, 1994) makes this objective an overriding one. Promoting unemployment outflows can be an objective in its own right for transition economies. Needless to say, it would be much more difficult to reach consensus about such a normative criterion, which does not necessarily sanction the substitution effects associated to labor market policies in many OECD countries.

Moreover, the stringency of fiscal problems faced by Central and Eastern European countries and the short history of income support systems for the unemployed have forced (and allowed at the same time) public authorities in the region to radically transform benefit systems and to alter significantly the composition of their active labor market policy (ALMP) budgets. Similarities in starting conditions and initial labor market regulations, if not implementation mechanisms, across countries such as the Czech and Slovak Republics also provide an interesting cross-country perspective against which the effects of the policies can be evaluated. Hence, the recent experience of the transition economies with labor market policies is an interesting laboratory.

The purpose of this paper is to draw preliminary lessons about the effectiveness of labor market policies from the experiences of transition economies by exploiting high-frequency and district-level data on unemployment and vacancy stocks and flows as well as inflows into active policy programs in Central and Eastern Europe. In Section 2, the actual scope and time-series variations of labor market policies, and of the associated implementation mechanism, in transition countries is characterized. In Section 3, the rationale for ALMPs in transition countries is discussed and the corresponding normative criteria used to evaluate the effectiveness of policies are proposed. Section 4 presents some estimates of the aggregate impact of policies on outflows from unemployment to employment, which are based on an augmented matching function approach. Final remarks are presented in Section 5.

2. THE POLICY EXPERIMENTS

During the early stages of transition, all countries in the region introduced income support schemes for the unemployed and a wide-ranging menu of active labor market policy instruments, encompassing training for the unemployed, subsidies to employment in the private sector, and direct job creation in the public sector (OECD, 1993 and 1994). Toward the end of 1991, the steep rise in the number of unemployment benefit claimants and budgetary restraints forced public authorities in most countries to tighten significantly the eligibility requirements for benefits and reduce their maximum duration.[2] The reforms involved the reduction by half of the maximum duration for unemployment benefits in the Czech and Slovak Republics and in Hungary, and the setting of a 1-year maximum benefit duration in Poland, whose unemployment benefit system was previously open-ended. Gross statutory replacement rates were also decreased in Bulgaria, the Czech and Slovak Republics, and Poland where the former earnings-related system was turned into a flat-rate scheme. In the Czech and Slovak Republics, regulatory changes were enforced retroactively, while in Bulgaria, Poland, and Hungary unemployment benefits started before the policy change were maintained under the old rules.

As a result of these policy changes, a dramatic decline in the proportion of registered jobseekers receiving unemployment benefits occurred. In addition to the tightening of benefits, the spread of long-term unemployment and, hence, in the pool of those exhausting the maximum duration of benefits played an important role in reducing the coverage of unemployment benefit systems. In most countries, there are currently more unemployed persons under means-tested social assistance than people on the unemployment benefit compensation rolls.

While unemployment benefit systems have undergone frequent modifications since the start of the transitions, the main innovations on the active labor market policy front have concerned the implementation of policies rather than their legal framework. Changes in the delivery mechanism for labor market policies have been accompanied by rather dramatic modifications in the ALMP portfolio (OECD, 1996). In the Czech Republic, for instance, wage subsidies have been cut significantly since 1992 leading to a reduction in the share of registered unemployed participating in this scheme from about 70% to less than 30% over 2 years. Needless to say, adjustments of this magnitude in the scale of ALMP implementation are observed rarely in OECD countries as the interplay between participation into programs and entitlement to unemployment benefits tends to create circles that prevent the necessary flexibility in ALMP implementation (Calmfors, 1994).

[2] These quite radical changes in the design of passive policies, which occurred in most countries at the end of 1991, are described in detail in Boeri and Edwards (1996).

3. STATING THE OBJECTIVES OF POLICIES

The rationale for labor market policies is usually found either in offsetting matching rigidities created by incomplete information and market imperfections, i.e., first-best arguments, or in remedying distortions either present in other markets or not strictly associated with the matching process itself, i.e., second-best arguments. Typical examples of the latter include the use of labor market policies to offset the negative consequences on labor demand of capital market imperfections, monopoly power, trade barriers, or wage pressures associated with insider–outsider mechanisms. In transition economies, a case can be made on both grounds for labor market policies.

On the one hand, rapid structural change exacerbates informational asymmetries and hence adverse selection problems intrinsic to the matching of job seekers to vacancies. Table 1 documents a persistent stagnancy of the unemployment pool, with monthly outflows from registered unemployment to jobs in all countries, except the Czech Republic, of the order of 5% at most, and thus, involving an average duration of unemployment in the steady state of about 2 to 3 years. Table 1 also points to significant regional mismatch (third row) with as much as 40% of the unemployed being located in regions offering poor employment prospects.[3]

On the other hand, distortions outside the labor market are often more serious than in Western economies and cannot be removed in the short run. For instance, credit rationing for the emerging private sector in the first years of transition, which is associated with the vetting capabilities of the banking sector, suggest that there is scope for grants or loans given by the Public Employment Service (PES) to small and medium-sized enterprises that want to create additional jobs and to the unemployed who want and are able to start their own business. Examples are most startup loans schemes and the ‘‘Socially Purposeful Jobs’’ program in the Czech Republic. Table 1 indicates a lack of vacancies reported to the labor offices (fourth row). Congestion in job matching is exacerbated by the presence of a relatively large number of employed job-seekers.

Under these conditions, long-term unemployment is spreading (fifth row of Table 1) even in those countries that have recently experienced a decline of unemployment, e.g., Hungary and the Slovak Republic. Unemployment of increasing duration and long-term unemployment involving large cohorts of

[3] The mismatch index displayed in Table 1 is defined as follows:

$$\mathrm{I} = \frac{1}{2}\sum_{i=1}^{n}\left|\frac{u_i}{U} - \frac{v_i}{V}\right|,$$

where u_i and v_i stand for registered unemployment and vacancies, respectively. Capital letters denote country averages and subscripts denote the various regions. See Boeri and Scarpetta (1996) for details about data sources used in computing this index.

TABLE 1

Congestion in Job Matching, Regional Mismatch, and the Spread of Long-Term Unemployment

	Bulgaria		Czech Republic		Hungary		Poland		Slovak Republic	
	1992	1995	1992	1995	1992	1995	1992	1995[e]	1992	1995
Unemployment rate[a]	*12.8*	*16.5*	*3.2*	*3.7*	*9.9*	*10.3*	*13.5*	*13.3*	*11.6*	13.1
Monthly outflows to jobs rates[b]	1.3	2.4	10.4	14.2	2.7	5.1	2.3	4.0	5.2	3.0
Regional mismatch[c]	0.21	0.23	0.38	0.35	0.18	0.25	0.34	0.32	0.33	0.32
Unemployed per vacancy	*49*	28	*2.1*	1.7	*31*	19	*76*	70	*21*	22
Long-term unemployment (%U)[d]	—	*64.3*	14.1	*30.6*	*20.3*	*49.3*	32.9	*40.0*	30.4	*53.1*

Source. OECD–CCET Labour Market Database; Boeri and Scarpetta (1996).

[a] Labour Force Survey data in italics. The remaining data points are provided by counts of the registered unemployed.

[b] Monthly outflows from registered unemployment to jobs. Data on Hungary refer to beneficiaries of unemployment insurance and career beginner's benefits.

[c] The index captures the proportion of unemployed located in regions with lower vacancy rates than the country's average. See the text for details about the index.

[d] Unemployed for 12 months or more. Italicized figures denote data from national Labour Force Surveys.

[e] Polish Data for 1995 end in June.

school-leavers and up to 50% of people who are aged 24 or less, is likely to entail a significant loss of human capital and to reduce the responsiveness of wages to unemployment. In addition to the efficiency losses associated with declines in the effective labor supply, the spread of long-term unemployment increases labor-market related hardship. Household budget surveys indicate that poverty rates among the unemployed are two to four times higher than those prevailing in the population at large (Milanovic, 1995). The fact that a nonnegligible component of those exhausting the maximum duration of unemployment benefit qualify for incomes or means-tested social assistance, which is available only to those with incomes below the social minima, is a further indication of this strong association between long-term unemployment and poverty.

Hence, there is a strong rationale for active policies that promote unemployment outflows, especially outflows to jobs, in Central and Eastern Europe. These policies, almost by definition, involve substitution of unemployed for employed jobseekers; such substitution effects are likely to be even more significant in heavily congested labor markets like those of Central and Eastern Europe. However, the above argument suggests that some substitution of unemployed for employed may be desirable on equity grounds and may not necessarily involve efficiency losses.

4. EVALUATING POLICIES

The previous two sections indicate that promoting outflows from unemployment to jobs can be considered as an objective in its own right for transition economies and that there has been considerable variation over time in the implementation, if not in the design, of labor market policies in these countries. In this section, the time variation of policies documented in Section 2 will be exploited to make inferences on the role played by labor market policies in achieving the overriding goal identified in Section 3, that is, promoting additional outflows to jobs.

The empirical framework for our estimates is a matching function relating outflows to jobs to the stocks of unemployed and vacancies, augmented with measures of the size of active labor market policy programs (Boeri and Burda, 1996). The intuition behind the matching function, which has already been used in modeling empirically the unemployment dynamics in transition economies,[4] is that exits from unemployment to jobs are a byproduct of a time-consuming search process in which workers and employers are engaged. The rationale for including ALMPs in the arguments of the matching function is that active policies should induce additional outflows to jobs from those associated with a given stock of unemployed and vacancies. Otherwise, ALMPs would be ineffective in that they either reintegrate into work unemployed persons who would have a found a job anyway or replace unemployed nonparticipants with unemployed people involved in some active scheme.[5]

4.1. Data Issues

As in previous studies, matching functions were estimated using monthly administrative data on unemployment stocks, outflows from the register to jobs, and vacancies reported to the PES. Regional data on ALMP expenditures and program intakes, limited in most countries to the period 1993–1994 only, were also used at the highest frequency available. Given the rather highly decentralized structure of the PES in these countries, large panels of data could be obtained in Bulgaria, the Czech Republic, Hungary, Poland, and the Slovak Republic with significant variation in stocks and flows. Table 2 documents this large and, for most series, mainly cross-sectional variability of data. For example, in the Czech Republic, there are districts with a little more than 100 unemployed and no active program intake and districts with almost 11,000 unemployed and about 1,000 program intakes. In Poland, the

[4] See Boeri (1994), Burda (1993), and Burda and Lubyova (1995) for estimates of matching functions in transition economies.

[5] A normative criterion that may also be proposed for transition economies is the redistribution of employment opportunities among the unemployed themselves, i.e., by improving the marketability of the long-term unemployed vis-à-vis the short-term unemployed. According to this criterion, ALMPs may be successful even if they simply substitute unemployed nonparticipants with unemployed participants. However, there is no clear indication as yet of the ranking by duration of unemployment in hiring policies of firms that may justify such a policy objective on other than equity grounds.

TABLE 2

Descriptive Statistics

Country		OJ	U	V	ALMPIN
Bulgaria (6/94–9/95)	mean	366	16512	512	132
28 regions	median	298	15887	358	91
	max	1748	39871	4180	1110
	min	25	5129	45	0
	std dev	262	6977	512	141
	within[a]	85.0%	8.0%	13.0%	63.0%
	across[b]	15.0%	92.0%	87.0%	37.0%
Czech Republic (1/92–12/94)	mean	335	2085	959	80
76 regions	median	278	1856	822	71
	max	2500	10629	20965	724
	min	18	123	58	0
	std dev	249	1548	1976	106
	within[a]	78.1%	29.9%	2.7%	73.2%
	across[b]	21.9%	70.1%	97.3%	26.8%
Hungary (1/93–8/95)	mean	648	29723	2094	293
20 regions	median	553	24253	1290	202
	max	1993	78335	15986	2988
	min	168	8984	59	1
	std dev	355	15498	2553	303
	within[a]	18.1%	0.1%	0.7%	9.6%
	across[b]	81.9%	99.9%	99.3%	90.4%
Poland (1/94–6/95)	mean	1980	58230	772	60
49 regions	median	1308	49300	3675	44
	max	6772	179998	7952	179
	min	240	17364	0	0
	std dev	1080	26286	1085	103
	within[a]	72.5%	0.4%	37.3%	90.7%
	across[b]	27.5%	99.6%	62.7%	9.3%
Slovak Republic (1/92–12/94)	mean	286	8577	309	159
38 regions	median	235	8393	197	62
	max	1588	21123	4306	1279
	min	0	1671	11	0
	std dev	217	3220	447	179
	within[a]	38.5%	4.8%	6.6%	75.1%
	across[b]	61.5%	95.2%	93.4%	24.9%

Note. OJ, outflows to jobs; U, registered unemployed; V, vacancies reported to the PES; ALMPIN, inflows into active labor market policy programs, i.e., subsidized employment or public works.

[a] Variance within districts as a percentage of the total variance.

[b] Variance across districts as a percentage of the total variance.

number of unemployed persons ranges from 17,500 in some regions to about 180,000 in others.

Data are drawn from records maintained by the PES. An advantage of such administrative data over information from the Labor Force Survey (LFS), which is undertaken currently in all countries covered in this paper, is that they provide a continuous time measurement of unemployment flows. Retrospective questions have been introduced in the LFS questionnaire of some countries only recently and in Bulgaria surveys have been carried out in the past almost at yearly frequencies. Low frequency data reduce the heuristic content of flows across labor market states estimated on the basis of matched records across LFS waves.[6] These countries, assisted in some cases by international organizations like the World Bank and the OECD, have invested significant resources in setting up a fully computerized information system based on the PES records. Data on outflows to jobs are likely to offer a good coverage of actual placements insofar as transition economies, unlike some OECD countries, do not have fully open vacancy registers and do not allow employers to consult freely the register of jobseekers. The latter practice clearly reduces the intermediation of the PES and, consequently, prevents a systematic reporting of outflows from the register to jobs.

As in most western countries, available vacancy data offer a highly imprecise and possibly distorted picture of the dynamics and regional dispersion of labor demand, insofar as vacancies reported to the PES represent a minor portion of posts being advertised by employers. In OECD countries, the vacancy coverage rate of the PES has rarely been found to cover more than 30% of the total number of job openings. Although no serious attempt has been made to date to estimate this coverage rate in transition economies, there is no reason to presume that it should be lower than in the western countries. In Central and Eastern Europe, the ratio of placement to hirings, with the latter estimated on the basis of matched LFS records, is rather high by western standards.[7] Moreover, a large component of employment in these countries was, and still is, in public enterprises that are typically more prone to report vacancies to the PES than are private enterprises. It takes time to develop a network of private placement agencies to develop that could compete with the PES in the coverage of vacancies.

Available data on active labor market programs are of two kinds. Information is available at monthly frequencies and by district on subsidized posts agreed by the PES with employers, who are local authorities in the case of public work schemes, in the context of subsidized employment or direct job creation schemes. These are not really program intakes but simply new slots in the various programs that may be filled gradually over time or even remain unfilled. In other words, we are dealing with inflows of ‘‘subsidized vacanc-

[6] Transitions across labor market states estimated on the basis of matched records between consecutive quarters and over yearly intervals in Poland point to a substantial amount of ‘‘round-tripping,’’ i.e., an unemployed person finds a job and then loses it within two survey dates. Hence, flows estimated on the basis of the LFS may underestimate seriously actual job flows.

[7] This ratio ranges between 26% in the Czech Republic and 37% in the Slovak Republic, compared with 10% in Denmark and Norway, 16% in Sweden, and 30% in the U.K.

ies'' (e.g., vacancies of subsidized jobs). Moreover, only inflows into either direct job creation schemes or subsidized employment schemes were considered. Unfortunately, separate data on the two kind of programs are not available in most countries and the instruments proposed below are meaningful only when all active programs are lumped together. Data on active policy spending are also available but, for most countries, only at yearly frequencies.

4.2. Econometric Issues

In previous work (Boeri, 1994 and OECD, 1996), we have tested the stability of matching functions and the hypothesis that the tightening of unemployment benefit systems has shifted the matching function by stimulating greater search intensiveness by the unemployed. We found no significant change in the elasticity of job finds with respect to unemployment in Hungary, Poland, and the Slovak Republic. Only in the Czech Republic did the estimated elasticity of job finds with respect to unemployment increase significantly after the policy shift. This result was due, perhaps, to the documented relatively large number of employment opportunities in this country. In economies with a low supply of vacancies, like the other Central and Eastern European transition economies, increased search intensity is unlikely to exert a significant impact on outflows to jobs.

In the current study, we use only data covering the period after the tightening of unemployment benefits.[8] While this procedure should avoid problems with the stability of matching functions, it is quite likely that the ALMP coefficients will capture part of the effects of the tightening of unemployment benefits. As argued above, the lowering of unemployment benefits by itself may not be conducive to a significant increase in flows from unemployment to employment in situations when there is a lack of vacancies. However, when lower replacement rates are accompanied by an enhanced capacity on the part of the PES to implement ALMPs, and when training allowances, startup loans, and wages paid under public work schemes are not cut in line with unemployment benefits, the tightening of passive measures may actually encourage larger intakes to these active schemes and strengthen the motivation of participants, thereby indirectly improving the re-employment prospects of unemployed people. Similarly, reductions in the duration of entitlements may have encouraged participation in ALMPs merely as a way to restore entitlement to benefits rather than as a route back into employment, as witnessed by the spread of recurrent unemployment in these countries. Hence, evidence on the impact of ALMPs presented below should not be interpreted as an

[8] In Hungary and Poland the tightening of unemployment benefit systems was enforced only for those registering after the policy change. Hence, although the reforms were introduced at the end of 1991, they started being effective for all registered unemployed only at the end of 1992. We use here data pertaining to the 1993–1995 period in Hungary and to 1994–1995 in Poland.

indication of the effectiveness of active versus passive policies or vice versa, but simply as an indication of the effects of ALMPs *when implemented against the background of rather strict unemployment benefit systems.* These relevant interactions between active and passive policies are ignored too often by the literature that evaluates labor market policy.

A second econometric problem concerns the choice of the functional form for estimation. As usual in this field, we take the Cobb–Douglas specification[9] without imposing any particular restriction on the size of the coefficients, e.g., not imposing, as often done in the literature, constant returns to scale on the matching technologies. In our framework, ALMPs enter the matching function as a separate factor input.[10] This is because our ALMP measure can be interpreted as a vacancy insofar as the subsidized post has yet to be filled and is easier to fill than ordinary vacancies because there is already an agreement with a given employer to subsidize the post. An alternative would have been to allow our ALMP measure to enter the matching function in a multiplicative fashion, e.g., as disembodied technological progress. This would have been justified only if our ALMP measure was expected to capture the overall brokerage function performed by the PES rather than job creation schemes.

A third econometric problem is the potential endogeneity of active policy spending. As discussed in Boeri and Burda (1996), OLS estimates of the effects of ALMPs may be biased insofar as resources for active labor programs are not randomly allocated across districts and, hence, cannot be considered as an exogenous variable. In particular, suppose that active labor policy resources are allocated among the local districts according to the following equation:

$$(1 - d(L))\mathrm{almp}_{it} = \beta_0 + \beta_1 u_{it-1} + \beta_2 v_{it-1} + \beta_3 o_{it} + [\mathbf{D}_{it}' \mathbf{S}_{it}']\varphi + \eta_{it}, \quad (1)$$

where almp_{it} measures active policies implemented in district i over the period t, u_{it-1} and v_{it-1} denote, respectively, the stock of unemployed individuals registered at the employment agency and the stock of unfilled vacancies reported to the PES at the end of period $t-1$, o_{it} is the outflow during period t of unemployed individuals in district i into employment, $\mathbf{D}_{it}$ is a column vector of fixed effects, $\mathbf{S}_{it}$ is a column vector of variables affecting the allocation of ALMP resources to the districts, and $d(L)$, a polynomial in L, is the lag operator.

[9] Tests of the functional form of the matching function in Poland did not support the choice of another specification, e.g., the general CES, over the Cobb–Douglas.

[10] Given that we cannot rule out (dis)economies of scale in the filling of slots in active labor market programs, we allowed the elasticity of job finds with respect to ALMPs to vary together with the scale of active programs. However, as discussed below, in one country only was the squared log ALMP term found to be significantly different from zero.

Consider also the following dynamic log-linear specification of the matching function:

$$(1 - c(L))o_{it} = \alpha_0 + \alpha_1 u_{it-1} + \alpha_2 v_{it-1} + \mathbf{D}'_{it}\theta + \gamma_1 \mathrm{almp}_{\mathbf{it}} + \gamma_2 \mathrm{almp}^2_{\mathbf{it}} + \varepsilon_{\mathbf{it}}, \quad (2)$$

where α_i, γ_1, and γ_2 are scalars, θ is a vector of coefficients, $c(L)$ is a polynomial in the lag operator,[11] ε_{it} is a random error term, and lower cases denote logarithms.

If $\beta_3 \neq 0$ or if ε_{it} and η_{it} are contemporaneously correlated, OLS estimators would be inconsistent. Two standard cases in which this is likely to happen are if ALMPs are allocated preferentially to districts with lower expected outflows or if higher inflows in such programs anticipate reductions in outflows to jobs. Another possibility is that outflows and inflows are highly correlated over short periods, as we work with data at monthly frequencies, so that a shock of higher inflows will induce both a contemporaneous increase in ALMP resource allocation and an increase in outflows. OLS estimates of (2) under either of these conditions are inconsistent. In the case where resources are diverted away from (expected) high-outflow districts or time periods, OLS estimates on the impact of ALMPs on outflows to jobs are biased downward. On the other hand, in the case of positive correlation between inflows and outflows, they are biased upward.

Such endogeneity problems can be dealt with by using instrumental variables (IV) techniques. The crucial issue is finding the appropriate instruments, i.e., variables correlated with the ALMP measure but not with the error term in (2). Indications of the relevance of this endogeneity problem and of possible remedies to it can come from analysis of the ALMP allocation mechanism in various countries, an issue to which we turn below.

4.3. *The Allocation Mechanism*

In all Central and Eastern European countries, the regional allocation of resources for ALMPs is based on an assessment[12] of local labor market conditions and plans submitted by the office directors. The latter have considerable discretion during the year in deciding how to allocate the ALMP budget across the various program categories and on the timing of program intakes, while the central administration has a role mainly, but rather unfrequently, in redistributing resources from one office to another when under- or overspending occurs in some areas.

[11] The lag structure $c(L)$ on the endogenous variable allows partial adjustment in the matching process, i.e., an autoregressive adjustment process.

[12] As discussed below, the Slovak Republic is the only country in which a fixed rule for allocating ALMP resources across the various district offices that gives well-defined weights to indicators such as the levels and incidence of unemployment, the share of long-term unemployment, and the overall size of the district, was established during the period covered by data.

TABLE 3

The Allocation Mechanism: Rank Correlation Coefficients of ALMP Expenditure per Capita[a] against District-Level Labor Market Indicators

		URATE		VRATE		LTU %		CONTR	
Czech Republic	1992	0.63	**	−0.58	**	0.31	**	−0.07	
(n = 76)	1993	0.75	**	−0.78	**	0.25	*	−0.11	
Hungary	1992	0.66	**	−0.35		0.66	**	−0.54	**
(n = 20)	1993	0.71	**	−0.45	*	0.50	*	−0.57	**
Poland	1994	0.93	**	−0.36	**	0.65	**	−0.68	**
(n = 49)									
Slovak Republic	1992	0.44	**	−0.36	*	0.20		−0.42	**
(n = 38)	1993	0.38	**	−0.14		0.15		−0.35	*

Note. URATE, district unemployment rate; VRATE, district vacancy rate; LTU%, incidence of long-term unemployment, i.e., unemployed for 12 months or more, in the district; CONTR, regional contribution rate, i.e., the total wage bill.

[a] per person in the labor force.

* Significance at 95%.

** Significance at 99%.

Table 3 sheds some light on the criteria actually followed in the regional allocation of ALMP funds. Spearman rank correlation coefficients are displayed for ALMP percapita expenditure and labor market indicators across districts for each country and for time periods in which data were available. Table 3 indicates a strong positive correlation between the incidence of unemployment and ALMP expenditure across districts and a negative, although not always statistically significant, correlation between vacancy rates, i.e., the number of unfilled vacancies reported to the PES as a percentage of the regional labor force and active policy expenditures per capita. The share of long-term unemployment was positively correlated with ALMP expenditure especially in the earlier stages of transition in Hungary and the Czech Republic. Finally, the contribution base, i.e., the total wage bill, is often negatively correlated with ALMP expenditure allocations indicating significant redistribution associated with regional ALMP expenditure allocations.

Overall, ALMP allocations across districts seem to have a strong redistributive goal that targets the incidence of unemployment, if not its duration.[13] The fact that local labor market conditions do play an important role in the allocation mechanism suggests that OLS estimates of augmented matching

[13] Long-term unemployment shares were closely correlated to the incidence of unemployment across regions especially in the early stages of transitions (Boeri and Scarpetta, 1996). This may suggest that the correlation between ALMP per capita expenditure and long-term unemployment highlighted by Table 3 is simply a byproduct of an allocation mechanism based on unemployment rates rather than one based on the incidence of long-term unemployment.

functions may suffer from simultaneous equation bias. Fortunately, the analysis of the allocation mechanism also suggests some valuable instruments that could possibly correct this simultaneous equation bias, as we discuss below.

4.4. Estimation

Table 4 reports estimates of the augmented matching function (2) using the data described in Table 2. As mentioned above, ALMPs are measured as inflows into the various schemes, which is the only active policy measure available at monthly frequencies.[14] Poland is the only country in which it is possible to disentangle outflows to subsidized jobs from other outflows to jobs. For the other countries, equations using only total outflows to jobs, including subsidized posts, could be estimated.[15] Thus, the estimated elasticities reported in Table 4, with the exception of the second set of estimates for Poland, refer to the impact of active policies on all reported outflows to employment, subsidized or not. As indicated in (2), our estimated equation includes a squared log term for ALMPs because we did not want to impose an a priori restriction that the elasticity of job finds with respect to active programs is constant. However, the coefficient for this squared term (γ_2) was found to be statistically significant only in the case of Poland.

As is shown in Table 4, γ_1 is positive and significant in all countries when OLS is used. However, as discussed above, OLS estimates of the effects of ALMPs may be biased insofar as active labor programs cannot be considered to be an exogenous variable at the district level. Hence, Table 4 also reports IV estimates for the ALMP coefficients in which the fixed yearly ALMP expenditure allocations at the regional level were used as instruments.[16] The above analysis of the allocation mechanism suggests that ALMPs at the local level depend on expenditure allocations that are themselves correlated to local labor market conditions but only at yearly frequencies.[17] Allocations are established at the beginning of the year and hence uncorrelated to shocks

[14] Results using active labor market program expenditure data in the Czech and Slovak Republics, the only two countries where data on active spending by district are available at quarterly frequencies, are reported in Boeri and Burda (1996) and in Burda and Lubyova (1995), respectively. Consistent with our results, a positive and significant effect of ALMPs on outflows to jobs is reported in both cases.

[15] It was not possible to obtain outflows to nonsubsidized jobs by simply deducting inflows into ALMPs from total outflows to jobs because not all ALMP program intakes are counted as outflows to jobs, e.g., when the program is short, participants continue to be registered at the PES.

[16] In the case of Bulgaria, where ALMP expenditure data were not available by region, we could run only OLS.

[17] Redistribution of resources across regions is inhibited in these countries by various procedural obstacles. The use of yearly expenditure allocations as instruments is also consistent with these rigidities in the regional allocation mechanism.

TABLE 4

Job Matching and Active Labor Market Policies

Estimated equation:

$$o_{it} = \alpha_0 + \alpha_1 u_{it-1} + \alpha_2 v_{it-1} + c_1 o_{it-1} + c_2 o_{it-2} + D'_{it}\theta + \gamma_1 \text{almp}_{it} + \gamma_2 \text{almp}^2_{it} + \varepsilon_{it}$$

	Coefficients					Test statistics[a]			
	c1	c2	gamma1	gamma2	long-run multiplier	Wald	W(ALMP)	LMtest	nobs
Bulgaria (1994–1995)									
OLS	0.152	−0.082	0.070	−0.008	0.209				
	*0.052**	*0.049*	*0.047**	*0.007*	*0.125**	*53**	*2.98*	*−0.9*	*392*
Czech Republic (1993–1994)									
OLS	0.395	0.228	0.051	−0.004	1.592				
	*0.022**	*0.024**	*0.019**	*0.008*	0.771*	*4,722**	*3.66**	*−0.42*	1672
IV	0.347	0.160	0.209		4.984				
	*0.051**	*0.045**	*0.060**		2.048*	*1,160**	*6.55**	*0.05*	1672
Hungary (1993–1995)[b]									
OLS	0.895	−0.125	0.006	0.004					
	*0.042**	*0.065**	*0.017*	*0.007*		*58,156**	*0.32*	*−3.02**	640
IV	0.914	−0.140	−0.069						
	*0.050**	*0.071**	*0.184*			*10,702**	*0.14*	*−3.65**	640
Poland (1994–1995)[c]									
(1) OLS	0.287	0.093	0.339	−0.045	1.348				
	*0.045**	*0.046**	*0.042**	*0.013**	0.798*	*4,782**	*180.94**	*1.0*	784
(1) IV	0.300	0.125	0.194		2.377				
	*0.055**	*0.048**	*0.036**		0.030*	*7,939**	*29.31**	*1.0*	784
(2) OLS	0.398	0.117	0.283	−0.042	1.123				
	*0.055**	*0.055**	*0.034**	*0.011**	0.862*	*5,501**	*78.12**	*1.0*	784
(2) IV	0.434	0.168	0.067		1.185				
	*0.034**	*0.031**	*0.017**		0.013*	*10,169**	*16.29**	*1.0*	784
Slovak Republic (1993)									
OLS	0.589	0.166	0.017	0.003					
	*0.109**	*0.047**	*0.011*	*0.004*		*465**	*0.55*	*0.051*	1292
IV	0.499	0.236	0.094		0.823				
	*0.053**	*0.051**	*0.032**		0.079*	*386**	*0.71**	*−0.94*	1292

Source. OECD–CCEET Regional Database.

[a] Wald, Wald test of joint significance. W(ALMP), Wald test of significance of gamma1 (joint with gamma2, when applicable); LMtest, Lagrange multiplier test of first order serial correlation of residuals. Robust standard errors with respect to heteroskedasticity reported in italics. Standard errors for long-run multipliers (see the text for details on their derivation) computed on the basis of the delta method.

[b] Quarterly time-dummies and no regional dummies.

[c] Outflows to jobs in regressions (1) include inflows into subsidized jobs, while in regressions (2) concern only jobs that are not subsidized.

* Significance at 5%.

** Significance at 1%.

hitting monthly outflows to jobs during the following year. In the case of the Slovak Republic, we also chose as instruments the fixed rule used in the allocation of ALMP funds, which is dependent on the levels and incidence of unemployment, the LTU share, and the capacity of the various districts to raise funds for the financing of ALMPs.[18] Although our instruments are open to criticisms, as are all instruments used under severe data constraints, they seem to have performed rather well in increasing the efficiency of estimates.

4.5. *Interpreting the Cross-Country Variability of Estimates*

Table 4 indicates the significant effect ALMPs have on outflows to jobs in Poland (even when the focus is on unsubsidized jobs only), the Czech Republic, and Bulgaria. In the Slovak Republic, the coefficient is also significant when IV estimators are used, while in Hungary it is never significant. The fact that ALMPs do not seem to induce additional outflows to jobs in Hungary may be explained by the fact that flow data in this country refer only to the recipients of unemployment benefits. Hence, if participants and indirect beneficiaries of ALMPs come mainly from the ranks of the long-term unemployed, who are no longer on the unemployment benefit compensation rolls and are often targeted by direct job creation schemes, increased outflows for this group will not appear in the data.

As pointed out by the long-run multipliers reported in the fourth column,[19] an additional post per month in a scheme could in the long-run yield between 1 and 2 additional monthly outflows to jobs in Poland and as many as 5 such placements in the Czech Republic. Multipliers greater than 1 suggest that ALMP intakes not only do not negatively affect flows into ordinary vacancies, but also promote outflows to nonsubsidized posts. However, given the relatively high costs of ALMPs, and the fact that they often exceed the costs of unemployment benefits, long-run multipliers approaching 1 indicate that ALMPs may not be very cost-effective from a public finance standpoint. For example, in Poland in 1994 the average monthly cost of placements in

[18] In particular, up to October 1995, a weight of 0.6 was given to the sum of the district unemployment rate and its LTU share, a weight of 0.25 to the share of the district in total unemployment, and a weight of 0.15 to per-capita contributions to the Employment Fund relative to the country average. The correlation between the allocations obtained by using this fixed rule and the yearly expenditure allocations is .7 and highly significant. As shown in Table 5, estimates of the relevant parameters do not change significantly when the fixed allocation rule is used as an instrument.

[19] The latter are estimated as follows:

$$\hat{\eta} = \frac{\bar{\mathrm{O}}}{\overline{\overline{\mathrm{ALMP}}}} \frac{\partial o}{\partial \mathrm{almp}} \frac{1}{(1 - c_1 - c_2)},$$

where bars denote sample means and $\partial o/\partial$almp is the impact multiplier of active labor market policies.

intervention works and public works accounted for more than 65% and for more than 125% of the average monthly wage, respectively.[20] Thus, our lower estimate for the long-run multiplier implies that inducing additional outflows in the long-run would cost per month between 55 and 105% of the average monthly wage while the average unemployment benefit actually paid to registered jobseekers does not exceed 40% of the average wage. By contrast, the implicit monthly cost of inducing additional outflows is lower in the Czech Republic given the larger elasticity of outflows to jobs to ALMPs observed in this country. Since the monthly costs of the two major programs considered in our estimates were 20 and 35% of the average monthly wage in 1993, the monthly costs of any policy-induced outflow to jobs would be only in the order of 4 to 7% of the average monthly wage, compared with an average unemployment benefit that does not exceed 30% of average earnings.

Although quite costly, ALMPs seem to induce additional outflows in a number of countries and more outflows than those associated only with program intakes. From where do such multiplier effects of active policies come? They may arise from improved contacts with private employers who, having benefited from subsidized employment schemes, may be more prone to hire PES clients in the future, although this effect should be for the most captured by ‘‘ordinary’’ vacancy coefficients. Alternatively, they may be a byproduct of increased placement efforts by the PES staff with respect to those remaining in the register. In the latter case, the impact of ALMPs on outflows to jobs should be decreasing with the size of the unemployment pool,[21] an observation that is consistent with larger elasticities in the Czech Republic than in the other countries.

In Table 5, we report estimates of the matching function in the Czech and Slovak Republics and in Poland, the countries for which PES staff data at the regional level were available. In these estimates, the elasticity of outflows to jobs with respect to ALMPs is allowed to vary with the degree of staffing of the PES. In particular, we define two interaction variables, denoted by almp_{it}^{+} and almp_{it}^{-}, that capture ALMP inflows in regions and months where the PES staff per unemployed was larger or lower, respectively, than the sample mean plus or minus one-half of the standard deviation. As shown in the table, only in the Czech Republic is some support found for a decreasing relationship between, on the one hand, impact of ALMPs on outflows to jobs and, on the other hand, PES staff to unemployed ratios, as the coefficient for

[20] Unfortunately, it was not possible to identify separately the effects of public work programs and wage subsidy schemes as the proposed instrument is valid only when the focus is on all ALMP inflows.

[21] Suppose, for example, that staff attention (a) is shared equally across all registered jobseekers, i.e., that $a = (s/u)$, where s denotes the PES staff and u, as usual, the stock of registered unemployed. Then we have $\partial a/\partial u = -s/u^2$ which tends to zero for large u.

TABLE 5

PES Staff and the Effectiveness of Active Labor Market Policies

Estimated equation:

$$o_{it} = \alpha_0 + \alpha_1 u_{it-1} + \alpha_2 v_{it-1} + c_1 o_{it-1} + c_2 o_{it-2} + D_{it}'\theta + \gamma \text{almp}_{it} + \gamma^{+}\text{almp}_{it}^{+} + \gamma^{-}\text{almp}_{it}^{-} + \varepsilon_{it}$$

	Czech Republic (1993–1994)		Slovak Republic (1992–1994)			Poland (1994–1995)[d]	
Coefficients	*OLS*	*IV*	*OLS*	*IV1*[b]	*IV2*[c]	*OLS*	*IV1*[b]
c1	0.376	0.286	0.565	0.566	0.562	0.373	0.428
	*0.040**	*0.047**	*0.051**	*0.052**	*0.028**	*0.042**	*0.048**
c2	0.218	0.147	0.185	0.184	0.186	0.158	0.167
	*0.031**	*0.041**	*0.043**	*0.044**	*0.027**	*0.008**	*0.051**
b1	0.341	0.300	0.156	0.180	0.144	0.262	0.287
	*0.037**	*0.053**	*0.061**	*0.081**	*0.075**	*0.059**	*0.052**
b2	0.026	0.080	0.045	0.043	0.046	0.018	0.010
	0.018	*0.042**	*0.018**	*0.020**	*0.021**	*0.005**	*0.006**
gamma	0.033	0.242	0.020	0.070	0.075	0.138	0.072
	*0.009**	*0.081**	*0.019*	*0.054**	*0.048**	*0.017**	*0.022**
gamma plus	0.007	0.013	0.005	0.009	0.009	0.006	0.004
	0.006	*0.008*	*0.728*	*0.006*	*0.011*	*0.004*	*0.003*
gamma minus	−0.007	−0.016	0.004	0.004	0.005	0.001	0.001
	0.005	*0.007**	*0.006*	*0.578*	*0.579*	*0.003*	*0.003*
Test statistics[a]							
Wald	9126*	2893*	2238*	2537*	1094*	5398*	8513*
Wald (γ, γ^+, γ^-)	17*	16*	1	5*	5*	76*	11*
LMtest	−0.5	1.2	−1.3	−1.2	−1.3	−1.1	−0.9

Source. OECD–CCEET Regional Database.

[a] Wald, Wald test of joint significance. W(γ, γ^+, γ^-), Wald test of significance of γ, γ^+, and γ^-; LMtest, Lagrange multiplier test of first order serial correlation of residuals. Robust standard errors with respect to heteroskedasticity reported in italics.

[b] IV1, instruments are the average yearly ALMP expenditure.

[c] IV2, instruments are the average yearly ALMP expenditure and the stated allocation rule.

[d] Outflows to jobs exclude inflows into subsidized jobs.

* Significance at 5%.

** Significance at 1%.

almp_{it} is negative and significant. In the Slovak Republic[22] and Poland both coefficients (γ^+ and γ^-) are insignificant. This result may suggest that externalities related to increased staff efforts on placement activities are significant only for low unemployment to staff ratios. In Poland in 1993 this ratio was 235, compared to 123 in the Slovak Republic and less than 30 in the Czech Republic. It should also be stressed that the direct effects of changes in the number of PES staff on outflows to jobs are likely to be captured by monthly time dummies.

[22] This result holds regardless of the instrument for ALMPs, i.e., yearly expenditure per district, as in the fourth column or the fixed allocation rule, as in the fifth column.

Overall, the observed cross-country variation of estimated elasticities of job finds with respect to the number of slots in active labor market programs cannot be attributed to differences in the staffing of the PES. However, in the country with the lowest unemployment rate, the Czech Republic, the impact of ALMPs on outflows to jobs is significantly higher in the districts with larger PES staff per unemployed. Put another way, low unemployment is associated not only with stronger effectiveness of active labor market programs but also with a more important role for PES staffing on ALMP effectiveness. It should be stressed that the Czech Republic is the country that has always enforced more strictly work tests for unemployment benefit claimants. Hence, this staffing effect may capture virtuous interactions between active and passive policies.

5. FINAL REMARKS

Despite mounting criticisms of the effectiveness of active policies, ALMPs seem to have had an impact on outflows to jobs in most transition economies. There are, however, a number of caveats to this finding.

First, as our focus is on total outflows from unemployment, we can control only for substitution between unemployed participants and nonparticipants in ALMPs. In other words, we cannot assess the net employment effects of ALMPs and identify the substitution effects frequently highlighted by the microeconometric literature, whereby active policies placing jobseekers end up displacing other workers. Second, our estimates cannot establish the duration of employment spells induced by ALMPs. Some subsidized jobs may last for a short period of time or give rise to ‘‘policy circles’’ whereby ALMP participants regain entitlement to unemployment benefits and enter once more the unemployment compensation rolls. Third, we cannot identify separately the effects of different, by design, cost, and targeting, ALMP programs like wage subsidies and public work programs, and, therefore, shed some light on their mutual advantages and disadvantages. Only analyses based on individual unemployment durations and the tracking of individuals over a fairly long time-span, sometimes too long to make the results valuable to policymakers, can shed light on displacement effects, policy circles, and the effectiveness of the various programs. Fourth, differences in labor market conditions, e.g., the case of the Czech Republic vis-à-vis the other transition economies, and the varying effectiveness of the delivery mechanism for ALMPs may alter significantly the effects of active policies on outflows to jobs. These differences may partly account for the significant variation of ALMP coefficients across countries and discourage generalizations of our results to other countries and time periods.

Bearing in mind the above caveats, our results do indicate that ALMPs do not affect negatively flows into ordinary vacancies and do actually increase the turnover of the unemployment pool beyond the inflows into the various schemes. As argued in the first three sections, this larger turnover can be considered as an objective in its own right in these countries. Estimates of augmented matching functions also suggest that outflow multiplier effects of active policies are stronger for low unemployment levels and low unemployed to PES staff ratios. Thus, if such an option exists, it may be preferable to implement such schemes on a large scale and in conjunction with a tightening of unemployment benefit systems before a large and stagnant unemployment pool has developed, as was the case in the Czech Republic in 1992. Needless to say, many transition economies and OECD countries are unfortunately already beyond that stage. With two-digit unemployment rates and a large incidence of long-term unemployment, there seems to be no alternative to pursuing a selective and narrowly targeted use of active labor market policies that can still serve the purpose of preventing some groups from leaving the labor force. Even in high-unemployment countries, a large-scale implementation of active policies in conjunction with a tight enforcement of work tests for those receiving unemployment benefits can prevent the spread of long-term unemployment in regions threatened by mass redundancies.

REFERENCES

Boeri, Tito, ‘‘Transitional Unemployment.’’ *Econom. Transition* **2,** 1:1–25, Mar. 1994.

Boeri, Tito, ‘‘Labour Market Flows in the Midst of Structural Change.’’ In O. Blanchard, and S. Commander, Eds., *Enterprise Restructuring and Unemployment in Models of Transition,* Cambridge, UK: Cambridge Univ. Press, forthcoming.

Boeri, Tito, and Burda, Michael C., ‘‘Active Labour Market Policies, Job Matching and the Czech Miracle.’’ *European Econom. Rev.* **40,** 3–5:805–817, Apr. 1996.

Boeri, Tito, and Edwards, Scott, ‘‘Long-Term Unemployment and Short-Term Unemployment Benefits.’’ Paper presented at the OECD Workshop on Long-Term Unemployment and the Transition between Unemployment Benefits and Social Assistance, Vienna, 1996.

Boeri, Tito, and Scarpetta, Stefano, ‘‘Regional Mismatch and the Transition to a Market Economy.’’ *Labour Econom.* **3,** 3:233–254, Oct. 1996.

Burda, Michael, ‘‘Unemployment, Labor Markets and Structural Change in Eastern Europe.’’ *Econom. Policy* **8,** 16:101–28, Apr. 1993.

Burda, Michael, and Lubyova, Martina, ‘‘The Impact of Active Labor Market Policies: A Closer Look at the Czech and Slovak Republics.’’ In David Newbery, Ed., *Tax and Benefit Reform in Central and Eastern Europe,* CEPR 173–205, 1995.

Calmfors, Lars, ‘‘Active Labor Market Policy and Unemployment: A Framework for the Analysis of Crucial Design Features.’’ *OECD Econom. Stud.* **0,** 22:7–47, Spring 1994.

Milanovic, Branko, ‘‘Poverty, Inequality and Social Policy in Transition Economies.’’ World Bank Research Paper no. 9, 1995.

Organisation for Economic Co-operation and Development, *Employment Outlook,* Paris: OECD, July 1993.

Organisation for Economic Co-operation and Development, *Unemployment in Transition Countries: Transient or Persistent?,* Paris: OECD, 1994.

Organisation for Economic Co-operation and Development, *Lessons from Labour Market Policies in the Transition Countries,* Paris: OECD, 1996.