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Working Paper

Evaluating active labor market programs in Romania

IZA Discussion Papers, No. 2464

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Rodríguez-Planas, Núria; Benus, Jacob (2006) : Evaluating active labor market programs in Romania, IZA Discussion Papers, No. 2464, Institute for the Study of Labor (IZA), Bonn, <https://nbn-resolving.de/urn:nbn:de:101:1-2008060626>

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IZA DP No. 2464

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November 2006

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Discussion Paper No. 2464
November 2006

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ABSTRACT

Evaluating Active Labor Market Programs in Romania

We evaluate the presence of effects from joining one of four active labour market programs in Romania in the late 1990s compared to the no-program state. Using rich survey data and propensity score matching, we find that three programs (training and retraining, small business assistance, and employment and relocation services) had success in improving participants' economic outcomes and were cost-beneficial from society's perspective. In contrast, public employment was found detrimental for the employment prospects of its participants. We also find that there is considerable heterogeneity, which suggests that targeting may improve the effectiveness of these programs.

JEL Classification: J68

Keywords: active labour market programs, propensity score matching,
transition economies, net social benefits

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I. Introduction

Even though open unemployment was practically non-existent in Romania prior to 1989, with the introduction of social, political, and economic reforms, labour surplus soared. The restructuring process affected many workers who saw the value of their human capital tank, and struggled into finding new job or business opportunities. Fortunately, the Romanian government soon recognized the urgency of developing effective social safety programs, including active labour market programs (ALMPs hereafter) to help the unemployed during this transition period.

In this paper, we evaluate the effectiveness (including cost-effectiveness) of four ALMPs that were implemented in Romania at the end of the 1990s. These programs are: (1) training and retraining (TR), (2) small business assistance (SB), (3) public employment (PE), and (4) employment and relocation services (ER). The objective of the paper is to determine the effects of these programs as compared to the outcome if the individual had continued to search for a job as openly unemployed, that is, not participating in any of the ALMPs under evaluation. The effects are measured in terms of employment experiences and earnings. The focus is on the direct effects of the programs; no attempt is made to assess the general equilibrium implications.

Our analysis of program impacts reveals that three of the four programs (TR, SB and ER) had success in improving participants' economic outcomes and were cost-beneficial from society's perspective. We find that ER succeeded in increasing the likelihood of participants' employment and their earnings, and reducing the likelihood of receiving unemployment benefits. We also find that SB improved its participants' employment prospects, although it did not have a significant impact on their earnings. And that TR increased the earnings of its participants and reduced the likelihood of receiving unemployment benefits. In contrast, our analysis reveals that PE was found detrimental for the employment prospects of its participants.

While the literature on evaluations of ALMPs in developed market economies is vast, the

evidence on transition countries is scarcer. Recently, several studies have analysed the effectiveness of ALMPs in transition economies, like Czech Republic, Slovak Republic, Hungary, Poland, Bulgaria, Estonia, and East Germany.¹ Overall, our results are consistent with earlier results.

This study contributes to the Romanian and the international literature in five ways. First, it provides an evaluation of the effects of ALMPs in Romania. Second, it calculates the net social benefits of those ALMPs found effective. Third, it applies non-parametric approach to estimate the impacts of the ALMPs. Fourth, it uses survey data particularly rich with baseline information, which allows us to address the selection issues in a reasonable way. And fifth, its results find considerable heterogeneity among participants as well as across types of programmes, which suggests that targeting may improve the effectiveness of this programmes in the future.

This paper is organized as follows. The next two sections present the Romanian economic context and the ALMPs under evaluation. Section four explains how the data was collected and displays the descriptive statistics. Section five discusses the economic evaluation strategy and the empirical implementation. Section six and seven display the results. Section eight concludes with the cost-benefit analysis.

II. The Economic Context

Romania's transition to a market economy has been slow partly as a result of its stop-and-go approach to the restructuring and the reform process. Following the fall in output, registered unemployment soared and reached over 10 percent of the labour force in 1994. The unemployment rate then fell temporarily during 1995-1996, only to rise rapidly thereafter

¹ See Kluge et al., 1999; and Lechner et al., 2005, among others. Most of the studies published prior to 2000 use parametric approaches.

reaching 11.5% in 1999. Since then, it has fallen gradually to 9% of the labour force in 2001.

Data on registered unemployment in Romania understate the real problem with dislocated workers for at least the following three reasons. First, during the 1990s the increase in open unemployment was contained by Romania's policy approach of limiting job destruction by adjusting through real wages, combined with a series of early retirement programs. Even though these policies succeeded in limiting the increase in registered unemployment, it pushed workers out of the labour force and into low productivity jobs, primarily in agriculture. Second, a high share of Romania's employment is in subsistence agriculture—the share of agricultural employment in 2001 was 42% of total employment (up from 28% in 1989). And third, the existence of borderline employment categories—such as unpaid family helpers, involuntary part-timers, or people in unpaid leave initiated by the employer—to measure employment in Romania substantially overstates employment and influences key indicators of labour market performance.

III. Labour Market Programs

The Romanian government soon recognized the urgency of developing effective social safety programs, including active labour market policies to help the unemployed during this transition period. Thus, in the early 1990s, the Ministry of Labour and Social Protection combined social insurance and means-tested income support with active policies aimed at increasing labour demand for youths, improving matching by providing retraining for unemployed individuals, and stimulating job creation through credits to businesses. However, the extent of these active programmes remained limited (as discussed in Earle et al., 1998). And it is not until the late 1990s that the Romanian government launched the real start of active programs on a significant scale by signing a loan agreement with the World Bank. The focus of the present paper is to evaluate the effectiveness of the four ALMPs implemented under this agreement: (1) training and retraining (TR), (2) small business assistance (SB), (3) public employment (PE), and (4)

employment and relocation services (ER).

Implementation of ALMPs

Implementation of ALMPs began in 1997 by the National Agency for Employment and Vocational Training and the county agencies for Employment and Vocational Training. These services were not provided by the county agencies themselves, but were contracted out to public or private service providers. The county agencies were responsible for the public announcements of the tenders, conducting the tendering process, and contracting out the ALMPs.

Contracts to service providers were awarded with built-in incentives to improve labour market impact such as negotiated levels of job placement and business start-up. Thus, service providers were likely to select those unemployed individuals most likely to succeed in completing their program and accessing employment. As we shall see in Section IV, this will cause selection bias due to a correlation of individual program participation with the outcomes under investigation.

Description of the Programmes

The four programmes were clearly differentiated as evident from the description of their key characteristics presented in Table 1. While SB and ER offered services aiming to facilitate business start-ups for displaced entrepreneurs (the former), and job placement for recently unemployed workers (the latter), the other two programs were targeted to more difficult populations. TR offered vocational training, general education and literacy skills to those who lacked these basic skills or needed to learn new marketable ones. While PE is frequently considered as fully subsidised labour, and was mainly offered in those regions with the least economic opportunities.

There were some requisites that prevented duplication of payment and services. First, individual clients could not receive income support payments (e.g., minimum wage during TR or PE) if they were receiving other types of state financed income support, such as unemployment benefits. Second, individuals may not participate in both TR and PE. And third, individuals were not allowed to participate more than once in a programme in a period of 24 months.

Utilization of ALMPs

As indicated in Table 2, among these four ALMPs, there were 767 contracts completed as of September 1, 2001, and over sixty-four thousand clients served. The overall placement rate among these contracts varied largely by program—ranging from 41% for TR to 13% for PE. The program with the largest number of clients (ER) provided assistance to 31,679 individuals at an average cost of only 123.74 thousand lei per client (about 12US\$ per client). In contrast, the PE served a much smaller number of clients (9,496); the cost per client for this program was 2,915.77 thousand lei per client (about US\$294 per client).²

Based on discussions with program implementation staff, we determined that contracts that begun in 1999 most accurately reflect the operations of the ALMPs. Prior to 1999, the ALMPs were new and some of the procedures were not fully implemented. Contracts that begun after 1999 may not be suitable for the evaluation since some may still be in operation or recently finished at the time of the survey and impacts from these contracts may not yet be fully reflected in participants' outcomes. Thus, our sample was drawn from contracts that started during 1999.

² All costs figures have been deflated using 1998 deflator.

IV. The Data and Descriptive Statistics

Sample Selection

The data used in this study, a random sample of approximately 4,000 persons who registered at the Employment Bureau during 1999, was collected during January and February 2002. About half of this sample, 2,047 persons, were ALMP participants whose ALMP contract began in 1999.

To obtain a representative sample of ALMP participants, we randomly selected, for each of the four ALMPs, 10% of clients served in the fifteen counties with the largest number of clients served in 1999.³ These fifteen counties represented 86% of all clients served in 1999, and a broad spectrum of the Romanian economy.

The other half of the sample—the potential comparison group—were 1,949 persons who were registered at the Employment Bureau around the same time and in the same county than participants but who had *not* participated in an ALMP. To select non-participants, we first determined, for each of the four ALMPs, the number of participants that were selected for the participant sample in each of the counties. Next, in each county and for each ALMP, we randomly selected an equal number of non-participants from the same Employment Bureau register list.

The timing of events goes as follows. Some of the workers registered at the Employment Bureau during 1999 received services from one of the four ALMPs described above. The rest of the workers did not receive any of these services. Although it is possible some of the program participants may have continued to receive services during the year 2000 (since the maximum duration of the ALMPs varied between 6 and 12 months), it is quite unlikely since, in practice, the length of these programs was considerably shorter. During January and

³ Because of the low number of participants in the TR, we used a higher sampling rate (25% of clients served) for this ALMP.

February of 2002, we interviewed the selected sample of participants and non-participants. All interviewed persons were asked three types of questions: (1) questions on employment and earnings at the time of the survey, (2) retrospective questions on employment and earnings during the years 2000 and 2001, and (3) retrospective questions on employment and earnings during 1998, prior to participating in the ALMPs. Details regarding the outcome variables are given in Section VI.

Restriction that all data be available led to a sample of 3,396 individuals (1,627 participants and 1,501 non-participants). All the results presented below are robust to using all of the observations available for each of the different outcome variables. However, in order to work with the same sample in the whole paper we restricted our sample to have all data available.

Descriptive Statistics

Table 3 displays selected descriptive statistics for socio-economic variables for the different subsamples that are defined by treatment status (see Appendix Table A.1 for complete list of variables). The descriptive statistics conform to our expectations that different types of displaced workers participated in the different ALMPs. The results are summarized below.

Clearly, participants in PE are the most disadvantaged among the unemployed both in terms of level of education and employment history. Moreover, these participants are the most likely to live in rural or small urban areas with high unemployment. This is in line with the idea that PE is considered fully subsidised labour, and that it is offered mainly in those regions with the least economic opportunities.

On the other hand, participants in TR are the youngest among the four ALMPs with only one fifth older than 45 years old. This is consistent with the idea that substantive human capital investments are more beneficial the longer the productive period of the recipients.

In contrast, participants in SB and in ER have relatively more stable employment history during 1998 than participants of the other two ALMPs. There are, however, clear differences between these two groups. While, participants in SB tend to be more educated, participants in ER are more likely to live in large urban areas.

Non-participants resemble the most to participants in ER and SB. However, they experienced considerably more stable and better-paid employment during 1998. Moreover, with the exception of participants in PE, non-participants have a higher share of men in their group.

V. Identification and Estimation

The Evaluation Problem

The evidence in the previous two sections shows that the different ALMPs offered were considerably different and targeted to individuals with different skills and labour market experiences. Thus, we focus our analysis on comparing the outcomes of two alternative strategies available to displaced workers: to participate in a particular ALMP, or to continue searching for a job as openly unemployed, following the framework suggested by Rubin (1973).⁴

Let Y^t denote the outcome when a person gets the *treatment* (in this case, participates in one of the four ALMPs described above), and Y^c denote the outcome when a person does not participate in any of the ALMPs described above. Let D denote a binary assignment indicator that determines whether the individual gets the treatment ($D=1$) or not ($D=0$).

The average treatment effect on the treated (ATET) is defined as follows:

$$ATET = E(Y^t - Y^c | D=1) = E(Y^t | D=1) - E(Y^c | D=1) \quad (1)$$

⁴ We considered basing our analysis on the “multiple treatments” model. However, the large socio-economic differences across the different treatments combined with the relative modest samples, lead to large losses of observations due to the common support requirement, and poor matching.

The shorthand notation $E(\cdot|D=1)$ denotes the mean in the population of all individuals who participate in an ALMP, denoted by $D=1$.

ATET shows the expected effect of the program for those persons who actually participated. However, we cannot observe the counterfactual, $E(Y^c|D=1)$, i.e., the average outcome of those persons who participated in the program had they not participated. Thus, without further assumptions, ATETs are not identified. But if we can observe all factors that jointly influence outcomes and participation decision, then—conditional on those factors (call them X), the participation decision and the outcomes are independent. This property is exploited by the conditional independence assumption (CIA).

Is it Plausible to Assume Conditional Independence?

Our approach for meeting the CIA was to include in the matching process: (1) characteristics influencing the decision to participate in ALMP, (2) baseline values of the outcomes of interest, (3) variables influencing the outcomes of interest, and (4) variables reflecting local labour market conditions, and regional differences in program implementation or local offices' placement policies.

The characteristics, implementation, and utilization of the different ALMPs as well as the characteristics of their participants indicates that the level of education, previous earnings, and pre-program unemployment history are important factors in determining whether an individual will participate in any program, as well as in which of the programs. These factors are also likely to influence the future labour market outcome, and thus, in order for CIA to be plausible, they should be included in the estimation of the propensities.

Demographic characteristics, such as age and gender are also important determinants of labour market prospects. Moreover, family composition and whether the person is the family's main wage earner are also likely to influence individual's decision to participate in a

program or not.

We also include variables that capture the local labour market conditions. These variables measure the different employment opportunities in the counties. In addition, since differences in labour market conditions may favour a different mix of program and unemployment policies, these variables are also a proxy for different policy approaches across counties.

Finally, we include county dummies to capture unobserved local aspects that are likely to be correlated with program implementation and utilization, or local offices' placement policies, and thus relevant for program-joining decisions and individuals' potential labour market performance.

What important groups of variables are missing? The following four groups of variables are not included in the matching process. First, we do not use workers' pre-displacement job characteristics such as occupation, job position and employer characteristics. Second, we do not have information on another group of variables that capture workers' motivation, ability, and social contacts. However, we do have 1998 earnings, which can be considered a proxy for both workers' pre-displacement job characteristics and workers' motivation, ability and soft skills. Third, we do not observe individuals' discount rates, although we do observe family composition and whether the individual is the family main earner or its spouse. And fourth, we lack information on the willingness of the Employment Bureau staff of the different local offices to assign people into different programs, although we control for several county characteristics that most likely capture most of these local differences. Thus, we believe that our unusually informative data allows us to capture the major effects of unobservable variables that are both correlated with potential outcomes and the decision to participation.

Empirical Implementation

We selected four comparison groups (one for each of the four groups of ALMPs participants) from the sample of potential comparison group members.

We used propensity scores to select comparison groups for *each* treatment group, according to the following three steps. First, we estimated a probit model *separately* for each ALMP. Table A.2 in the Appendix displays the estimation results of the four different binary probits and provides a more exact description of the variables used in the analysis.

Second, we used the output from these selection models to estimate choice probabilities conditional on X (the so-called propensity scores) for each treatment and potential comparison group member. We then imposed the common-support requirement to guarantee that there is an overlap between the propensity scores for each pair.

Third, for each treatment group member, we selected potential comparison group members based on their propensity scores and their county. The selection process was done with replacement, using kernel-based matching with a calliper of 1%.

The results in Table A.3 in the Appendix show indicators on the quality of the match for each of the four ALMPs. Overall, matching on the estimated propensity score balances the X's in the matched samples extremely well (and better than the other versions of matching we experienced with). To adjust for the additional sources of variability introduced by the estimation of the propensity score as well as by the matching process itself, bootstrapped confidence intervals have been calculated.

VI. Program Impacts

Measurement of Labour Market Outcomes

Because the primary objective of these policies is to get displaced workers back to work in jobs, at least implicitly, as good as the previous one, our analysis focuses in two types

of outcomes: those that measure workers' reemployment probabilities and those that measure workers' earnings at the new job. Moreover, since our survey included retrospective questions, we measure these outcomes at two different points in time: at the time of the survey, and during the two-year period prior to the survey, that is, during the years 2000 and 2001.

In addition to measuring employment experience with employment and average usual monthly earnings at the time of the survey, we compute two variables that measure the reemployment probability for a period of at least 6 and 12 months, respectively, during the years 2000 and 2001. These two variables provide additional information on workers' reemployment experiences over the two-year period prior to the survey, and inform us on the workers' employment attachment over that period. We also include average usual monthly earnings during the two-year period prior to the survey as a proxy for worker's productivity.⁵ Finally, we include duration of the unemployment spell and months receiving unemployment benefits (UB) during the two-year period 2000-2001. Table 4 summarizes these outcomes by treatment status. Table A.4 in the Appendix describes the outcomes of interest.

Mean Effects of the Programmes for their Participants

Impacts were estimated as the difference in average outcomes between the treatment and the comparison group, and are shown in Table 5. These results were robust to several sensitivity tests. They are summarized below.

First, we find that ER was successful in improving participants' economic outcomes compared to non-participants in all dimensions. ER had a positive impact both on current employment and on employment during the years 2000-2001. For instance, it increase the

⁵ All earnings variables are deflated by gross domestic product (base=1998), and coded as zero if person reported not working at the time of the survey.

probability of being employed at the time of the survey by 8.45 percentage points, which represents a 20% increase in the likelihood of being employed at the time of the survey.⁶ Partly as a result of its positive impacts on employment, the program had a negative impact on the number of months unemployed and receiving UB during the 2000-2001. Finally, ER had a positive impact on earnings: it increased average current monthly earnings by 57 thousand lei (or 22%) and average monthly earnings during 2000-2001 by 87 thousand lei (or 28%) compared to the earnings of non-participants.

We also find that SB improved its participants' employment prospects. More specifically, SB increased by 8.38 percentage points (or 12%) the likelihood of being employed for 6 months during the two-year period 2000-2001. This programme also reduced the number of months participants were on average unemployed compared to non-participants by almost two months, and the number of months receiving UB payments by almost one month. However, we did not find that SB increased the average monthly earnings of its participants relative to non-participants. This lack of result could be explained by the following two reasons: (1) entrepreneurs under-reporting their earnings, and (2) lack of precision, due to the relatively small sample of SB participants.

We find that TR has a positive and large impact on the average usual monthly earnings perceived during 2000-2001: it increased the earnings of participants by 165 thousand lei relative to the earnings of non-participants. This is equivalent to 58% higher earnings than non-participants. TR also had an impact on the length of UB receipt, by making it practically non-existent on average among its participants. Unfortunately, due to the small sample size of our sample of TR participants, we lack precision for the other estimates. However, the size of these estimates is consistent with TR being successful in improving participants' economic

⁶ This result is calculated by dividing the ATET estimate (in this case, 8.45) by the percent of matched non-participants employed at the time of the survey, which is 42.83 percent.

outcomes compared to non-participants.

In contrast, we find that PW program had a negative impact on employment, and length of unemployment spell during the past two years. These detrimental effects are consistent with those found in other studies and they are usually explained by one or a combination of the following two explanations. First, participating in PE may be ineffective insofar as it does not rebuild human capital, boost search efforts or improve the image of the long-term unemployed individual. Second, participation in PE is a negative signal to the employer (Lehmann, 1995).

VII. Heterogeneity among Individuals

So far we have considered the average effects for the participants in the different programmes. Since participants are heterogeneous, there may be differences in how the programmes affect different types of individuals. Therefore, we stratify the sample along the dimensions unemployment duration, type of region, age, education, and gender, and match within strata. Unfortunately, the scope of this exercise is limited by the size of the subsamples.

Clearly, the most substantial (and significant) differences occur with respect to age, type of region, and unemployment duration prior to participation for the ER programme. These differences are displayed in Table 6. We find that ER improves economic outcomes of participating younger workers, workers with histories of short-term unemployment, and those living in rural areas compared to older workers, those with histories of long-term unemployment, and those living in urban areas, respectively.

Other statistically significant differences are summarised below (a complete list of estimates can be found in the Appendix Tables A.5 through A.9). We find that TR works better for younger workers than older workers, and that SB is more successful for females

than for males, for workers with a high-school diploma than for those without, and for workers living in rural areas compared to those in urban areas. Finally, even though we find that PE seems to have a *positive* effect on the employment probability and the earnings of participants living in rural areas at the time of the survey, this result does not hold when employment and earnings outcomes are measured during the period 2000-2001. Thus, this positive effect of PE in rural areas is most likely explained by participants re-entering PE once the requisite that “participants do not participate in more than one ALMP during a 24 months period” is satisfied.

VIII. Cost-Benefit Analysis and Conclusion

We analyse the effects of four ALMPs implemented in Romania during the late 1990s. Our analysis is based on unusually rich survey data that allow us to control for potential selection bias, to use robust nonparametric matching estimators, and to account for treatment effect heterogeneity with respect to both programmes and participants.

Our analysis of program impacts reveals that three of the four programs (TR, SB and ER) had success in improving participants' economic outcomes. In contrast, our analysis reveals that PE was found detrimental for the employment prospects of its participants. Moreover, we also find that there is heterogeneity across programs and groups of participants, which suggests that targeting ALMPs to those individuals most likely to benefit from them may considerably improve the effectiveness of these programs.

Even though this analysis has shown significant positive impacts of TR, SB, and ER programmes implemented in Romania in the late 1990s, the question remains as to whether these three ALMPs were cost-effective from society's perspective.⁷ Hence we now compare

⁷ When measuring cost-effectiveness from society's perspective, we measure whether aggregate benefits from implementing the policy are greater than the aggregate resources spent by the policy, abstracting from who enjoys its benefits and who bears its costs. Thus, under this perspective, increases in taxes paid due to the

the costs per client of the ALMP with the economic benefits, as reflected in predicted earnings.

We estimate the average cost per client served by dividing the total amount spent in each ALMP by the number of clients served. Table 2 displays these estimates. The cost per client served is 541.07 thousand lei for TR, 179.15 thousand lei for SB, and 123.74 thousand lei for ER.

To estimate the benefits of the policy, we use the estimated impact of these ALMPs on the usual average monthly earnings of their participants. We prefer using the earnings estimates over the 2000-2001 period because they are more likely to represent individuals' earnings than those observed at one point in time. This amounts to an annual sum of 5,393.04 thousand lei for TR, 4,783.20 thousand lei for SB (although this estimate was not statistically significant), and 1,047.84 thousand lei for ER, which cover by far the cost per client served. Therefore, these three policies are definitively cost-effective.⁸

A caveat in our cost-benefit analysis is that we did not include among potential benefits: (1) possible effects on labour market behaviour of the unemployed prior to participation, such as, intensifying job search before entering the programmes in order to avoid participation, or leaving the labour force and stop collecting UB; (2) reduced criminal activity due to improved employment prospects; (3) improvements in the quality of life for participants and their families, (4) savings in the deadweight losses due to reduced taxes required to pay participants' future unemployment benefits. Another caveat is that we did not consider in this analysis the following potentially important costs: (1) the deadweight loss of taxation to finance benefits, subsidies, and operation of programmes; (2) the cost of the

increased employment of participants or reductions in public assistance of participants are not counted as they are transfers from participants to the rest of society.

⁸ Given that benefits that accrue within the observation period are above the costs, we did not use a long-term perspective to estimate cost-effectiveness.

leisure forgone while participants are in the program or employed; and (3) possible displacement effects of non-subsidized workers. However, given that the measured benefits far exceed the costs of the programmes, we are confident that, at least the TR and ER, programs were socially beneficial undertakings for the unemployed in our sample.

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Table 1

Characteristics of ALMPs

	Training and Retraining	Small Business Assistance	Public Employment	Employment and Relocation Services
Content	Vocational, general education and literacy	Initial assessment of business skills, developing business plans, business advising	Environmental cleanup, refurbishment of public infrastructure, and assistance to social agencies	Job and social counseling, job search assistance, job placement services, and relocation assistance
Maximum duration	Up to 9 months ^a	No general rule, up to 12 months ^a	Up to 6 months ^a	Up to 9 months ^a
Participants' stipend	Subsistence stipend was at the minimum wage level and for a period equal to the difference between the months of unemployment benefits and months of training	There were provisions for short-term working capital loans of up to \$25,000 U.S. dollars to program participants	Stipend was set at a maximum of the average wage level of the type of activity provided and for the duration of the program	Up to two months of salary at the minimum wage. In addition, those clients receiving relocation assistance could be reimbursed for expenses associated with moving to another community—up to \$500 U.S. dollars equivalent in lei per family, based on submission of receipts).
Target group	Persons exposed to high risk of unemployment	Unemployed entrepreneurs	Long-term unemployed living in economically disadvantaged areas.	Recently unemployed
Negotiated placement rate of at least:	60 percent	5 percent	10 percent	10 percent

Note: In practice, the length of these programs was considerably shorter than the established maximum duration.

Table 2

Completed ALMP contracts as of September 1, 2001

	Number of contracts	Clients served	Clients placed	Placement rate	Total cost (Lei)	Cost per client (Lei)	Cost per placement (Lei)
Training and retraining	54	2,892.00	1,197	41.39%	1,564,771,985.06	541,069.15	1,307,244.77
Small business assistance	92	20,293.00	3,568	17.58%	3,635,562,636.30	179,153.53	1,018,935.72
Public employment	533	9,496.00	1,248	13.14%	27,688,156,974.32	2,915,770.53	22,186,023.22
Employment and relocation services	88	31,679.00	6,610	20.87%	3,920,060,312.43	123,743.18	593,049.97

Costs figures have been deflated using 1998 deflator.

Source: USDOL Technical Assistance Support Team

Table 3**Selected Descriptive Statistics According to Participation Status, 1998**
(Percentages except where noted)

Characteristics	Training and Retraining	Small Business Assistance	Public Employment	Employment and Relocation	Non-participants
Male	45.83	50.69	89.89	45.92	63.82
Judet's unemployment rate	10.67	11.37	15.76	11.86	13.12
Employed	54.17	76.18	40.90	77.64	80.81
Average monthly earnings (in thousand lei)	522.92 (65.25)	881.72 (39.38)	384.16 (25.64)	758.07 (22.51)	926.60 (17.88)
Average unemployment (months)	6.26 (0.58)	3.38 (0.25)	8.75 (0.19)	3.90 (0.17)	2.99 (0.11)
Unemployed at least 9 months	45.83	23.27	60.67	23.56	18.85
Sample size	72	362	445	747	1,501

Table 4
Outcomes for ALMP Participants
(Percentages except where noted)

	Training and Retraining	Small Business Assistance	Public Employment	Employment and Relocation
OUTCOMES				
Current experience				
Employed	57.81	50.86	31.74	51.28
Average monthly earnings (in thousand lei)	311.76	303.28	160.96	309.64
During the two year period 2000-2001				
Employed for at least 6 months	75.00	78.86	48.17	78.87
Employed for at least 12 months	65.62	59.71	33.56	63.39
Average monthly earnings (in thousand lei)	449.42	398.60	256.12	394.34
Months unemployed	9.52	10.36	16.22	9.45
Months receiving UB payments	0.06	1.44	1.78	0.79
Sample size	64	351	438	743

Monthly earnings have been deflated using 1998 deflator.

Table 5

Average Treatment Effects of Programmes on the Employment Experience of their Participants, by ALMPs
(Percentage points except where noted)

	Training and Retraining	Small Business Assistance	Public Employment	Employment and Relocation
OUTCOMES				
Current experience				
Employed	12.47 (-7.00; 29.54)	6.14 (-0.44 12.29)	0.61 (-6.07; 6.29)	8.45 (3.19; 13.90)
Average monthly earnings (in thousand lei)	65.67 (-76.45; 177.64)	37.58 (-13.25; 80.12)	3.10 (-33.87; 33.44)	56.86 (1 0.49; 109.51)
During the two year period 2000-2001				
Employed for at least 6 months	2.53 (-10.55; 27.28)	8.38 (2.29; 14.13)	-7.36 (-14.98; -0.75)	6.22 (2.35 ; 13.52)
Employed for at least 12 months	8.06 (-10.76; 26.91)	7.97 (-0.20; 14.40)	-8.45 (-15.41 -1.40)	7.65 (2.11 ; 13.73)
Average monthly earnings (in thousand lei)	164.81 (63.09; 362.20)	43.08 (-9.48; 87.58)	-6.65 (-47.29; 30.33)	87.32 (56.99; 130.21)
Months unemployed	-1.66 (-4.91; 2.79)	-1.82 (-3.00 -0.54)	1.95 (0.66; 3.21)	-1.90 (-3.15 ; -0.9 2)
Months receiving UB payments	-1.01 (-2.24; -0.53)	-0.75 (-1.50; -0.05)	0.21 (-0.60; 0.93)	-0.74 (-1.18 ; -0.29)
Sample size	768	1,326	1,829	1,775

Monthly earnings have been deflated using 1998 deflator.

Table 6

**Average treatment effects of Employment and Relocation Services
according to different socio-demographic characteristics**
(Percentage points except where noted)

	Males	Females	<36 years old	>35 years old	No high school diploma	High school diploma or more	Unemployment <6 months	Unemployment >5 months	Rural	Urban
OUTCOMES										
Current experience										
Employed	8.95*	8.24*	16.89*	6.73*	5.86	11.28*	12.25*✓	-3.83✓	17.93*	6.13*
Average wage (in thousand lei)	85.24*	44.19	65.73	60.67*	73.48	55.11*	102.01*✓	-70.20*✓	91.54*	47.19
During the two year period 2000-2001										
Employed for at least 6 months	6.65*	6.83	17.78*✓	3.96✓	3.87	6.47	7.55*✓	-5.02✓	7.73	3.68*
Employed for at least 12 months	8.18*	9.64*	26.20*✓	4.12✓	5.39	9.13*	7.33*	-1.15	17.25*	5.09
Average wage (in thousand lei)	109.04*	59.27*	116.62*	82.81*	60.08	97.01*	91.47*	18.83	144.24*✓	50.42*✓
Months unemployment	-2.42*	-1.79*	-4.62*✓	-1.21✓	-1.40	-1.96*	-2.04*	-0.20	-4.87*✓	-0.96✓
Months receiving UB payments	-0.33✓	-1.22*✓	-0.66	-0.76*	-0.83*	-0.76	-1.00*	-0.21	-1.57*	-0.50*
Sample size	901	804	362	577	990	725	1,282	324	454	1,177

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.

Note: the number of observations does not necessarily add up to the one in the full sample.

APPENDIX

Table A.1

Selected Descriptive Statistics According to Participation Status, 1998
(Percentages except where noted)

Characteristics	Training and Retraining (1)	Small Business Assistance (2)	Public Employment (3)	Employment and Relocation Services (4)	Non-participants (5)
Male	45.83	50.69	89.89	45.92	63.82
Age					
Less than 31 years old	5.56	4.99	13.03	7.50	8.93
Between 31 and 35 years old	27.78	22.71	19.33	14.59	16.46
Between 36 and 45 years old	47.22	40.44	38.43	40.16	36.58
Between 45 and 50 years old	15.28	17.73	18.20	20.62	19.79
More than 50 years old	4.17	14.13	11.01	17.14	18.25
Education completed					
Primary school	5.56	9.97	21.12	13.25	14.86
Secondary school	63.89	32.41	56.85	45.92	44.30
High school	27.78	37.67	18.65	28.65	29.31
University	2.78	19.45	3.71	12.82	11.26
Region					
Rural	8.33	5.82	35.06	11.24	17.92
Urban with less than 20 thousand inhabitants	18.06	35.46	19.10	18.34	18.45
Urban with 20 - 79 thousand inhabitants	16.67	14.13	39.10	20.08	28.11
Urban with 80 - 199 thousand inhabitants	27.78	27.15	5.39	39.89	25.98
Urban with 200 thousand inhabitants	29.17	17.45	1.35	10.44	9.53
Judet's unemployment rate	10.67	11.37	15.76	11.86	13.12
Not employed	45.83	23.82	59.10	22.36	19.19
Employed	54.17	76.18	40.90	77.64	80.81
1-3 months	4.17	1.39	5.62	4.42	2.53
4-6 months	12.5	6.37	16.85	8.70	7.40
7-9 months	4.17	3.05	8.09	10.71	5.53
9-12 month	33.33	65.37	10.34	53.82	65.36
Average monthly earnings (in thousand lei)	522.92 (65.25)	881.72 (39.38)	384.16 (25.64)	758.07 (22.51)	926.60 (17.88)
Average unemployment (months)	6.26 (0.58)	3.38 (0.25)	8.75 (0.19)	3.90 (0.17)	2.99 (0.11)
Unemployed at least 9 months	45.83	23.27	60.67	23.56	18.85
Received training	18.06	8.86	4.04	6.69	3.13
Average training (months)	0.68	0.29	0.15	0.26	0.10
Sample size	72	362	445	747	1.501

Table A.2

Results from the binomial probit estimations

	Training and retraining (1)	Small business consulting (2)	Public employment (3)	Employment and relocation (4)
Characteristics				
Male	.1713 (.1948181)	-.2015284 (.0926006)	.4609385 (.1283769)	-.1427264 (.0725004)
Age	.3892 (.3195778)	.0284343 (.1061328)	.0961576 (.1062873)	.0140676 (.0929445)
Age squared	-.0047 (.0038289)	-.0004043 (.0012505)	-.0010315 (.0012378)	-.0001519 (.0010719)
Education completed				
Secondary school	.6765 (.3441943)	.0398253 (.1420994)	-.1328247 (.1140381)	.0801002 (.1099728)
High school	.2033 (.3623174)	.3389603 (.1468737)	-.2036724 (.1386652)	-.0840283 (.1175862)
University	-.0648 (.490365)	.6136505 (.1687934)	-.3965541 (.2151126)	-.0083351 (.1411292)
Persons in the household				
Three	.0475 (.2794365)	.1021722 (.1271709)	-.0426679 (.1395565)	.0232715 (.1042423)
Four	-.1809 (.279879)	.0459635 (.1259283)	.1387877 (.1311306)	.133011 (.1018456)
>four	-.1987 (.3207308)	.0726954 (.1431552)	.164182 (.1377938)	.0280627 (.1143186)
Respondent is the main earner	-.0642 (.2694773)	-.1547861 (.1348952)	-.0809511 (.1153289)	.0962171 (.1111627)
Respondent is spouse of main earner	-.0171 (.2698388)	-.3095629 (.1379943)	-.2172834 (.1344928)	-.0487241 (.1115485)
Region				
Urban <20 thousand inhabitants	-.1565 (.4181727)	.4965981 (.1689958)	.3770499 (.1320217)	-.1270346 (.1306713)
Urban (20-79 thousand inhabitants)	.7201 (.4157758)	.2525536 (.1768784)	.20623 (.1191083)	.2316202 (.124284)
Urban (80-199 thousand inhabitants)	.1096 (.3873757)	.0461624 (.1719474)	-.0415508 (.1780473)	.3309776 (.119047)
Urban (200 thousand inhabitants)	.9841 (.5197499)	.7366886 (.2738287)	-.9707113 (.3477729)	-.0189794 (.1976237)
Counties' unemployment rate	-.5158 (.2246201)	-.1610341 (.0342555)	.0404204 (.0459796)	.0894544 (.0627584)
Work experience (years)	-.1100 (.1621206)	.0356114 (.0539121)	-.0053237 (.0564912)	.0307314 (.0490692)
Experience squared	.0021 (.0033456)	-.0007137 (.001081)	-.000234 (.0011154)	-.0007828 (.0009607)
1998 employment spell				
1-3 months	-1.3069 (.9093462)	-.9830641 (.499512)	.1871584 (.3420969)	-.6807008 (.3418347)
4-6 months	.5223 (.8894968)	-.1562037 (.4336655)	.0601928 (.3414572)	-.6466339 (.3363872)
7-9 months	-.0938 (.8874751)	-.2502013 (.4274598)	.2297862 (.3266278)	-.3247323 (.3236533)
9-12 month	.6000 (.9295796)	.9910766 (.4134734)	-.1674585 (.3296845)	-.123323 (.2971646)

Table A.2 (Continued)

Results from the binomial probit estimations

	Training and retraining (1)	Small business consulting (2)	Public employment (3)	Employment and relocation (4)
Characteristics				
Average earnings per month in 1998 (in thousand lei) (wage98)	-.0016 (.0004077)	-.0000 (.0000943)	-.0003 (.0001549)	-.0001 (.0000854)
500-600	1.2480 (.5832753)	-.2457 (.2942938)	-.6796 (.3086426)	-.1813 (.2095827)
601-700	.6409 (.6014568)	-.1330 (.249114)	-.3222 (.2664017)	-.2447 (.1841415)
701-850	.7412 (.518917)	-.0327 (.2145763)	-.2518 (.2322484)	-.1748 (.1698717)
851-1,000	1.1921 (.4613879)	-.2962 (.2074279)	-.1687 (.2431542)	-.2043 (.1625509)
1,001-1,200	1.0384 (.4632318)	-.3793 (.1984934)	.4523 (.2317394)	-.1763 (.1622569)
1,201-1,500	1.5699 (.4753651)	-.1055 (.1972956)	-.2128 (.2754237)	-.3851 (.1724099)
1,501-1,900	1.7622 (.5583888)	-.3607 (.2262893)	-.1731 (.3575139)	-.4094 (.1938586)
1,901-2,500	n.a.	-.3758 (.2408035)	-.8899 (.498729)	-.9456 (.2595758)
1998 average unemployment spell (months)	.6457 (.1682585)	.3975 (.0973285)	.2787 (.0788757)	.5042 (.0673983)
Avg. unemployment spell squared	-.0646 (.014862)	-.0289 (.009252)	-.0181 (.0070304)	-.0387 (.0071279)
1998 unemployed at least 9 months	2.9805 (1.099017)	.6637 (.7353178)	.0427 (.5103883)	.2608 (.5406227)
Received training during 1998	-.0509 (1.085547)	.5994 (.5026792)	-.5666 (.5482321)	-.2614 (.42072)
1998 average training length (months)	.5509 (.5871206)	-.0084 (.2404551)	.2683 (.2746366)	.1144 (.1907319)
Sample size	768	1,326	1,829	1,775

All regressions include county dummies. Pseudo R^2 for all four specifications are presented in Table A.2, column (4)

Table A.3

Indicators on the quality of the match, by ALMP

ALMP	Number of treated before (1)	Number of nontreated before (2)	Treated as a percentage of nontreated before (3)	Probit pseudo- R^2 before (4)	Probit pseudo- R^2 after (5)	Pr > X^2 After (6)	Median bias before (7)	Median bias after (8)	Number of treated lost to common support after (9)
Training and retraining	72	696	10.34	0.368	0.035	0.850	27.24	5.69	8
Small business services	362	964	37.55	0.162	0.013	0.985	11.31	2.29	11
Public service employment	445	1,384	32.15	0.359	0.013	0.996	24.64	1.87	7
Employment and relocation services	747	1,028	72.67	0.174	0.017	0.533	9.36	2.88	4

- (1) Number of treated, that is, joining an ALMP program in 1999.
(2) Number of potential comparisons, that is, persons who had registered at the Employment Bureau in 1999 but did not participate in an ALMP.
(3) Treated as a percentage of potential comparisons.
(4) Pseudo- R^2 from probit estimation of the joining probability on X , giving an indication of how well the regressors X explain the participants probability.
(5), (6), (7), and (10) are postmatching indicators on kernel-based matching (1 % caliper).
(5) Pseudo- R^2 from probit estimation of the joining probability on X on the matched samples.
(6) P-value of the likelihood ratio test after matching. After matching, the joint significance of the regressors is always rejected. Before matching, the joint significance of the regressors was never rejected at any significance level, with $\text{Pr} > X^2 = 0.0000$.
(7), and (8) Median absolute standardized bias before and after matching, median taken over all regressors X . Following Rosembaum and Rubin (1985), for a given covariate X , the standardized difference *before* matching is the difference of the sample means in the full treated and nontreated subsamples as a percentage of the square root of the average of the sample variances in the full treated and nontreated groups. The standardized difference *after* matching is the difference of the sample means in the matched treated, that is, the common support, and matched nontreated subsamples as a percentage of the square root of the average of the sample variances in the full nontreated groups:

$$B_{\text{before}}(X) \equiv 100 \cdot \frac{\bar{X}_1 - \bar{X}_0}{\sqrt{[V_1(X) + V_0(X)]/2}} \quad \text{and} \quad B_{\text{after}}(X) \equiv 100 \cdot \frac{\bar{X}_{1M} - \bar{X}_{0M}}{\sqrt{[V_1(X) + V_0(X)]/2}}$$

Note that the standardization allows comparisons between variables X and, for a given X , comparisons before and after matching.

- (9) Number of treated individuals falling outside of the common support (based on a caliper of 1 %).

Table A.4

Description of outcome variables

Variables	Definition
At the time of the survey	
Employed	Person was employed at the time of the survey (dummy variable)
Average monthly earnings	Average monthly earnings at the time of the survey.
During the two year period 2000-2001	
Employed at least 6 months	Person has been employed for at least 6 months during the period 2000-2001 (dummy variable)
Employed at least 12 months	Person has been employed for at least 12 months during the period 2000-2001 (dummy variable)
Months unemployed	Number of months the person has been unemployed during the period 2000-2001
Months receiving UB payments	Number of months the person has been registered with the Public Employment Services and receiving unemployment benefits payment during the period 2000-2001
Average monthly earnings	Average monthly earnings during the two-year period 2000-2001.

Note: Earnings are deflated by gross domestic product (base=1998). Earnings are coded as zero if person reported not working at the time of the survey.

Table A.5

Average treatment effects according to gender, by ALMPs
(Percentage points except where noted)

OUTCOMES	Training and Retraining (1)		Small Business Assistance (2)		Public Employment (3)		Employment and Relocation Services (4)	
	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
Current experience								
Employed	11.90	20.73	1.18	2.83	0.38	-1.57	8.95*	8.24*
Average wage (in thousand lei)	89.10	76.37	8.59	23.63	-1.42	1.17	85.24*	44.19
During the two year period 2000-2001								
Employed for at least 6 months	-2.72	0.92	1.47	13.15*	-6.93	-17.93	6.65*	6.83
Employed for at least 12 months	8.17	17.24	3.68	9.04	-8.46*	-13.17	8.18*	9.64*
Average wage (in thousand lei)	173.83	116.59	-21.72	46.86	-4.25	-2.47	109.04*	59.27*
Months unemployment	0.25	-3.67	-1.03	-1.55	1.94*	3.31	-2.42*	-1.79*
Months receiving UB payments	-1.31*	-0.51	-0.68	-1.16	-0.06	2.42	-0.33✓	-1.22*✓
Sample size	192	105	790	463	1,105	298	901	804

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.

Table A.6

Average treatment effects according to age, by ALMPs
(Percentage points except where noted)

OUTCOMES	Training and Retraining (1)		Small Business Assistance (2)		Public Employment (3)		Employment and Relocation Services (4)	
	<36 years	>35 years	<36 years	>35 years	<36 years	>35 years	<36 years	>35 years
Current experience								
Employed	25.64	13.58	-2.83	9.01*	-3.76	3.39	16.89*	6.73*
Average wage (in thousand lei)	147.63	58.50	-51.40	58.01*	-28.42	27.71	65.73	60.67*
During the two year period 2000-2001								
Employed for at least 6 months	14.01	-8.47	9.35	8.31	-1.79	-10.46*	17.78*✓	3.96✓
Employed for at least 12 months	34.42	3.11	12.89	10.76*	-8.36	-9.58*	26.20*✓	4.12✓
Average wage (in thousand lei)	230.69	103.24	5.11	43.27	-37.00	11.56	116.62*	82.81*
Months unemployment	-6.45	-0.29	-2.50	-2.22*	1.71	2.26*	-4.62*✓	-1.21✓
Months receiving UB payments	-1.65*	-1.14*	-0.71	-0.75	-0.19	0.41	-0.66	-0.76*
Sample size	62	265	273	955	340	992	362	577

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.

Table A.7

Average treatment effects according to education achievement, by ALMPs
(Percentage points except where noted)

OUTCOMES	Training and Retraining (1)		Small Business Assistance (2)		Public Employment (3)		Employment and Relocation Services (4)	
	No High school diploma	High school diploma or more	No High school diploma	High school diploma or more	No High school diploma	High school diploma or more	No High school diploma	High school diploma or more
Current experience								
Employed	9.30	13.81	5.15	5.48	-3.02	2.49	5.86	11.28*
Average wage (in thousand lei)	119.34	79.73	41.30	20.34	-31.18	19.78	73.48	55.11*
During the two year period 2000-2001								
Employed for at least 6 months	-0.71	0.96	4.89	13.45*	-11.08	-6.28	3.87	6.47
Employed for at least 12 months	10.08	5.75	1.45✓	19.35*✓	-14.69*	-6.00	5.39	9.13*
Average wage (in thousand lei)	95.60	194.67*	14.68	47.95	-51.15	4.59	60.08	97.01*
Months unemployment	-1.79	-3.09	-0.57✓	-3.61*✓	3.46*	1.42	-1.40	-1.96*
Months receiving UB payments	-0.82*	-0.95*	6.06✓	-1.93*✓	-0.26	-0.01	-0.83*	-0.76
Sample size	273	254	687	595	901	389	990	725

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.

Table A.8

Average treatment effects according to geographic area, by ALMPs
(Percentage points except where noted)

OUTCOMES	Training and Retraining (1)		Small Business Assistance (2)		Public Employment (3)		Employment and Relocation Services (4)	
	Rural areas	Urban areas	Rural areas	Urban areas	Rural areas	Urban areas	Rural areas	Urban areas
Current experience								
Employed	n.a.	3.07	9.90	4.00	10.91*✓	-8.99✓	17.93*	6.13*
Average wage (in thousand lei)	n.a.	13.18	36.90	42.54	58.30*✓	-45.49✓	91.54*	47.19
During the two year period 2000-2001								
Employed for at least 6 months	n.a.	-6.92	19.89*✓	0.06✓	-4.42	-10.55	7.73	3.68*
Employed for at least 12 months	n.a.	4.73	19.06*✓	5.38✓	-6.20	-11.72*	17.25*	5.09
Average wage (in thousand lei)	n.a.	88.23	10.28	34.48	1.44	-15.28*	144.24*✓	50.42*✓
Months unemployment	n.a.	-1.53	-3.64*✓	-1.20✓	0.95✓	3.04*✓	-4.87*✓	-0.96✓
Months receiving UB payments	n.a.	-0.83*	-3.61*✓	0.36✓	0.62✓	-0.50✓	-1.57*	-0.50*
Sample size	n.a.	375	427	774	618	201	454	1,177

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.

Table A.9

Average treatment effects according to pre-unemployment history, by ALMPs
(Percentage points except where noted)

OUTCOMES	Training and Retraining (1)		Small Business Assistance (2)		Public Employment (3)		Employment and Relocation Services (4)	
	<6 months	>5 months	<6 months	>5 months	<6 months	>5 months	<6 months	>5 months
Current experience								
Employed	8.51	5.32	4.29	18.98	-1.09	4.53	12.25*✓	-3.83✓
Average wage (in thousand lei)	78.16	-52.80	31.46	204.01*	-9.88	28.64	102.01*✓	-70.20*✓
During the two year period 2000-2001								
Employed for at least 6 months	11.61	6.43	5.64	3.15	-11.04	-3.56	7.55*✓	-5.02✓
Employed for at least 12 months	17.63	7.98	3.65	4.35	-7.62	-5.80	7.33*	-1.15
Average wage (in thousand lei)	138.95	86.77	19.68	123.90	20.90	1.21	91.47*	18.83
Months unemployment	-3.79	-2.85	-1.02	-1.55	2.02	1.34	-2.04*	-0.20
Months receiving UB payments	-1.14*	0.08*	-0.70	-0.01	0.00	0.35	-1.00*	-0.21
Sample size	190	72	244	208	830	331	1,282	324

Monthly earnings have been deflated using 1998 deflator.

* indicates that estimates are significant at the 5% level.

✓ indicates that the difference of the two estimated effects is significant at the 5% level.