

1998

# Evaluating the Effectiveness of Active Labor Programs in Hungary

Christopher J. O'Leary  
*W.E. Upjohn Institute, oleary@upjohn.org*

Upjohn Institute Technical Report No. 98-013

---

## Citation

O'Leary, Christopher J. 1998. "Evaluating the Effectiveness of Active Labor Programs in Hungary." Upjohn Institute Technical Report No. 98-013. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. <https://doi.org/10.17848/tr98-013>

This title is brought to you by the Upjohn Institute. For more information, please contact [ir@upjohn.org](mailto:ir@upjohn.org).

**Evaluating the Effectiveness of  
Active Labor Programs in HUNGARY**

Upjohn Institute Technical Report No. 98-013

Christopher J. O'Leary

November 1998

W.E. Upjohn Institute for Employment Research  
300 South Westnedge Avenue  
Kalamazoo, Michigan 49007-4686

# Evaluating the Effectiveness of Active Labor Programs in HUNGARY

May 1998

Prepared for:

International Labor Affairs Bureau  
U.S. Department of Labor  
Room S-5006  
200 Constitution Ave., N.W.  
Washington, DC 20210

National Labor Center  
Konyves Kalman korut 48-52  
Budapest, Hungary H-1087

Project Steering Committee  
World Bank  
1818 H Street, N.W.  
Washington, DC 20433

Prepared by:

Christopher J. O'Leary, Senior Economist  
W.E. Upjohn Institute for Employment Research  
300 South Westnedge Avenue  
Kalamazoo, Michigan 49007



# Evaluating the Effectiveness of Active Labor Programs in Hungary

## Table of Contents

Section	Page
LIST OF FIGURES .....	v
LIST OF MAPS .....	v
LIST OF TABLES .....	v
ACKNOWLEDGMENTS .....	xi
EXECUTIVE SUMMARY .....	xiii
1. Introduction .....	1
1.1 Economic context of employment policy .....	1
1.2 Administration of employment policy .....	2
1.3 Aims of this report .....	2
2. An Overview of Employment Policy .....	7
2.1 Active labor programs .....	7
2.2 Passive labor programs .....	9
2.3 Use of labor programs .....	9
3. Sample Considerations .....	17
3.1 Sample size .....	17
3.2 Site selection .....	18
3.3 Sample selection .....	19
3.4 Survey implementation .....	19
3.5 Results of the survey effort .....	20
4. Evaluation of Retraining .....	39
4a.1 The samples for analysis of individual retraining .....	39
4a.2 Impact estimates of individual retraining on employment and earnings .....	40
4a.3 A subgroup analysis of individual retraining impacts .....	42
4a.4 Net impacts of various individual retraining program features .....	45

Table of Contents  
(Continued)

Section	Page
4a.5	The timing of response to individual retraining . . . . . 47
4a.6	Impact of individual retraining on unemployment compensation costs . . . . . 49
4b.1	The samples for analysis of group retraining . . . . . 66
4b.2	Impact estimates of group retraining on employment and earnings . . . . . 66
4b.3	A subgroup analysis of group retraining impacts . . . . . 68
4b.4	Net impacts of various group retraining program features . . . . . 71
4b.5	The timing of response to group retraining . . . . . 73
4b.6	Impact of group retraining on unemployment compensation costs . . . . . 74
5.	Evaluation of the Employment Service . . . . . 87
5.1	The samples for analysis of the employment service . . . . . 88
5.2	Impact estimates of the employment service on employment and earnings . . . . . 89
5.3	A subgroup analysis of employment service assistance impacts . . . . . 91
5.4	Net impacts of various employment service features . . . . . 94
5.5	The timing of response to employment service assistance . . . . . 94
5.6	Impact of employment service assistance on unemployment compensation costs . . . . . 95
6.	Evaluation of Public Service Employment . . . . . 113
6.1	The samples for analysis of PSE . . . . . 113
6.2	Impact estimates of PSE on employment and earnings . . . . . 114
6.3	A subgroup analysis of PSE impacts . . . . . 116
6.4	Net impacts of various PSE program features . . . . . 118
6.5	The timing of response to PSE . . . . . 119
6.6	Impact of PSE on unemployment compensation costs . . . . . 120
7.	Evaluation of the Wage Subsidy . . . . . 133
7.1	The samples for analysis of the wage subsidy . . . . . 133
7.2	Impact estimates of the wage subsidy on employment and earnings . . . . . 134
7.3	A subgroup analysis of the wage subsidy impacts . . . . . 136
7.4	Net impacts of various wage subsidy program features . . . . . 138
7.5	The timing of response to the wage subsidy . . . . . 139
7.6	Impact of the wage subsidy on unemployment compensation costs . . . . . 141
8.	Evaluation of Self-employment Assistance . . . . . 153
8.1	The samples for analysis of self-employment assistance . . . . . 153

Table of Contents  
(Continued)

Section	Page
8.2	Impact estimates of self-employment assistance on employment and earnings . . . . . 154
8.3	A subgroup analysis of self-employment assistance impacts . . . . . 156
8.4	Net impacts of various self-employment assistance program features . . . . . 159
8.5	Some timing aspects of self-employment loan assistance . . . . . 160
8.6	Impact of self-employment assistance on unemployment compensation costs . . . . . 161
Appendix A	Questionnaires . . . . . 177
Appendix B	Notes on Evaluation Methodology . . . . . 219
REFERENCES	. . . . . 231

LIST OF FIGURES

Figure	Page
Figure 1.1	Unemployment Rate in Hungary 1990-96 . . . . . 4

LIST OF MAPS

Map	Page
Map 1.1	Unemployment Rate in All Counties of Hungary in April 1997 . . . . . 6
Map 3.1	Counties Surveyed in Hungary . . . . . 23

LIST OF TABLES

Table	Page
Table 1.1	Labor Market and Economic Conditions in Hungary, 1990-1996 . . . . . 5
Table 2.1	Active Labor Programs in Hungary . . . . . 11
Table 2.2	Passive Labor Programs in Hungary . . . . . 12
Table 2.3	Nominal Spending on ALP and PLP in Hungary, 1990 to 1996 . . . . . 13
Table 2.3.1	Spending in Share Terms on Active and Passive Labor Programs in Hungary, 1990-1996 . . . . . 14

LIST OF TABLES  
(Continued)

Table		Page
Table 2.4	Average Number of Participants in Labor Programs in Hungary, 1990 to 1996 .....	15
Table 2.5	Nominal Spending on ALPs and PLPs per Participant in Hungary, 1990 to 1996 .....	16
Table 3.1	Design of the Sampling Process for Evaluating ALPs in Hungary .....	22
Table 3.2	Comparative Statistics for Counties Surveyed in Hungary .....	24
Table 3.3	Number of Participants in the Four Main ALPs Within the 10 Selected Counties in 1995 .....	25
Table 3.4	Money Allocated to the Four Main ALPs Within the 10 Selected Counties in 1995 .....	26
Table 3.5	Cost per Participant of the Four Main ALPs Within the 10 Selected Counties in 1995 .....	27
Table 3.6	Number of Participants in the Four Main ALPs Within the 10 Selected Counties in 1996 .....	28
Table 3.7	Money Allocated to the Four Main ALPs Within the 10 Selected Counties in 1996 .....	29
Table 3.8	Cost per Participant of the Four Main ALPs Within the 10 Selected Counties in 1996 .....	30
Table 3.9.1	Sample Design and Survey Response in Hungary .....	31
Table 3.9.2	Sample Sizes and Survey Response Rates in Hungary .....	32
Table 3.9.3	Comparison of Respondents and Non-Respondents Among the ALP Participant and Comparison Group Samples According to Their Composition by Age and Education in Percentage Terms .....	33
Table 3.10.1	Means of Exogenous Characteristics for the Comparison Group and ALP Participants in Hungary .....	34
Table 3.10.2	Definitions of Descriptive Characteristics for ALP Participants and Comparison Group Members .....	35
Table 3.10.3	Unadjusted Differences from the Comparison Group Mean for ALPs in Hungary .....	36
Table 3.10.4	Proportions in Subgroup Categories for Various Samples .....	37
Table 4a.1	Comparison Group and Individual Retraining Means and Differences on Exogenous Descriptive Characteristics .....	50
Table 4a.1.1	Description of Variables in Table 4a.1 .....	52
Table 4a.2.1	Individual Retraining Impact Estimates on Employment and Earnings .....	54
Table 4a.2.2	Treatment and Comparison Group Differences for Exogenous Variables Matched Pair Analysis of Individual Retraining .....	55
Table 4a.2.2.1	Description of Variables in Table 4a.2.2 .....	57



LIST OF TABLES  
(Continued)

Table	Page
Table 4a.2.3	Control Variables for Regression Adjusted Impact Estimates of Hungarian Active Labor Programs ..... 59
Table 4a.2.4	Exogenous Variables Used for Creating Matched Pairs Comparison Groups for Hungarian Active Labor Program Participant Samples ..... 60
Table 4a.3	Net Impact Estimates of Individual Retraining by Subgroup ..... 61
Table 4a.4	Regression Adjusted Impacts of Various Aspects of Individual Retraining ..... 62
Table 4a.5.1	Individual Retraining Reemployment Hazards Measured from Start Date of Last Registration, Comparison Group is Matched Pairs ..... 63
Table 4a.5.2	Individual Retraining Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed ..... 64
Table 4a.6	Impact Estimates of Individual Retraining on Months of Employment, Unemployment and Unemployment Compensation in Hungary ..... 65
Table 4b.1	Group Retraining and Comparison Group Means and Differences on Exogenous Descriptive Characteristics ..... 76
Table 4b.2.1	Group Retraining Impact Estimates on Employment and Earnings ..... 78
Table 4b.2.2	Treatment and Comparison Group Differences for Exogenous Variables Matched Pair Analysis of Group Retraining ..... 79
Table 4b.3	Net Impact Estimates of Group Retraining by Subgroup ..... 81
Table 4b.4	Regression Adjusted Impacts of Various Aspects of Group Retraining ..... 82
Table 4b.5.1	Group Retraining Reemployment Hazards Measured from Start Date of Last Registration, Comparison Group is Matched Pairs ..... 83
Table 4b.5.2	Group Retraining Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed ..... 84
Table 4b.6	Impact Estimates of Group Retraining on Months of Employment, Unemployment and Unemployment Compensation in Hungary ..... 85
Table 5.1	Comparison Group Exogenous Characteristics Based on Employment Service Use ..... 98
Table 5.1.1	Methods of Job Search ..... 100
Table 5.2.1	Employment Service Impact Estimates on Employment and Earnings Among Persons in the Comparison Group ..... 101
Table 5.2.2	Exogenous Variable Differences for Comparison Group Members Who Used the Employment Service and the Matched Pair Comparison Group Members Who Did Not Use the ES ..... 102
Table 5.2.3	Employment Service Impact Estimates on Employment and Earnings Among the Full Sample of All ALP Participants and Comparison Group Members ..... 104

LIST OF TABLES  
(Continued)

Table		Page
Table 5.2.4	Employment Service Impact Estimates on Employment and Earnings in the Combined Samples of the Comparison Group with Each Group of ALP Participants Using an Interaction Model with Control Variables . . . . .	105
Table 5.3	Employment Service Impacts by Subgroup for the Comparison Group . . . . .	106
Table 5.4	Means and Net Impact Estimates of Alternative Employment Service Offerings on Employment and Earnings Based on a Matched Pairs Analysis Within the Comparison Group . . . . .	107
Table 5.5	Impact of Employment Service Use on the Timing of Reemployment Within the Pooled Comparison Group with ES Users Matched to ES Non-Users Within the Comparison Group . . . . .	108
Table 5.6	Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in Hungary, Analysis Within the Comparison Group . . . . .	109
Table 5.6.1	Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in Hungary, Analysis on the Full Sample of all ALP Participants and Comparison Group Members . . . . .	110
Table 5.6.2	Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in the Combined Samples of the Comparison Group with Each Group of ALP Participants . . . . .	111
Table 6.1	Comparison Group and Public Service Employment Means and Differences on Exogenous Descriptive Characteristics . . . . .	122
Table 6.2.1	Public Service Employment Impact Estimates on Employment and Earnings . . . . .	124
Table 6.2.2	Treatment and Comparison Group Differences for Exogenous Variables Matched Pair Analysis of Public Service Employment . . . . .	125
Table 6.3	Net Impact Estimates of Public Service Employment by Subgroup . . . . .	127
Table 6.4	Regression Adjusted Impacts of Various Aspects of Public Service Employment . . . . .	128
Table 6.5.1	Public Service Employment Summary of Reemployment Hazards Measured from Start Date of Last Registration . . . . .	129
Table 6.5.2	Public Service Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed . . . . .	130
Table 6.6	Impact Estimates of Public Service Employment (PSE) on Months of Employment, Unemployment and Unemployment Compensation in Hungary . . . . .	131

LIST OF TABLES  
(Continued)

Table		Page
Table 7.1	Comparison Group and Wage Subsidy Means and Differences on Exogenous Descriptive Characteristics . . . . .	143
Table 7.2.1	Wage Subsidy Impact Estimates on Employment and Earnings . . . . .	145
Table 7.2.2	Treatment and Comparison Group Differences for Exogenous Variables Matched Pair Analysis of the Wage Subsidy . . . . .	146
Table 7.3	Net Impact Estimates of the Wage Subsidy by Subgroup . . . . .	148
Table 7.4	Regression Adjusted Impacts of Various Aspects of Wage Subsidies . . . . .	149
Table 7.5.1	Wage Subsidy Summary of Reemployment Hazards Measured from ALP Ending Date for ALP Group Comparison Group Hazards Measured from Start Date of Last Registration . . . . .	150
Table 7.5.2	Wage Subsidy Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed . . . . .	151
Table 7.6	Impact Estimates of Wage Subsidies on Months of Employment, Unemployment and Unemployment Compensation in Hungary . . . . .	152
Table 8.1	Comparison Group and Self-employment Means and Differences on Exogenous Descriptive Characteristics . . . . .	163
Table 8.2.1	Self-employment Impact Estimates on Employment and Earnings . . . . .	165
Table 8.2.2	Treatment and Comparison Group Differences for Exogenous Variables Matched Pair Analysis of Self-employment . . . . .	166
Table 8.2.3	Frequency Distribution of Employees Working at Self-employment Enterprises on the Survey Date, Not Counting the Loan Recipient . . . . .	168
Table 8.2.4	Frequency Distribution of Employees Working at Self-employment Enterprises on the Survey Date who were Previously Unemployed, Not Counting the Loan Recipient . . . . .	169
Table 8.3	Net Impact Estimates of Self-employment by Subgroup . . . . .	170
Table 8.4	Regression Adjusted Impacts of Various Aspects of Self-employment . . . . .	171
Table 8.5.1	Frequency Distribution of the Duration in Months of Self-employment Enterprise Survival Counting from the End of Subsidy Receipt . . . . .	172
Table 8.5.2	Frequency Distribution of the Duration in Months of Self-employment Enterprise Survival Counting from the Start of Subsidy Receipt . . . . .	173
Table 8.5.3	Frequency Distribution of the Duration in Months of the Time from Registration as Unemployed until the Start of Self-employment Subsidy Receipt . . . . .	174
Table 8.6	Impact Estimates of Self-employment on Months of Employment, Unemployment and Unemployment Compensation in Hungary . . . . .	175



## ACKNOWLEDGMENTS

Impetus for this project was provided by David Fretwell of the World Bank. The project originated and was largely completed during the period while David was assigned to the World Bank field office for Eastern Europe located in Budapest. He arranged for financing and participation from several disparate parties, and shepherded the effort from beginning to end.

This report was prepared in collaboration with the team for project design and management in Hungary which included: Gyorgy Lazar, Gyula Nagy and Judit Szekely.

Ambassador John Ferch committed the U.S. Department of Labor, Bureau of International Labor Affairs to the project. Stephen Marler and Ewa Springer of the Labor Department coordinated financing which was provided by the U.S. Agency for International Development.

At the W.E. Upjohn Institute for Employment Research computations were expertly performed by Kenneth Kline and Kristine Kracker, and clerical assistance was provided by Claire Black, Babette Schmitt, and Sue Berkebile.

Helpful comments on earlier drafts of this report were provided by seminar participants at the World Bank Human Development Week conference, the William Davidson Institute, the Czech Ministry of Labor and Social Policy, and the W.E. Upjohn Institute for Employment Research. In particular I would like to thank Mihail Rutkowski, Robert Bednarzik, Robert Holtzman, Marcelo Selowski, Jan Rutkowski, Joachim Wolff, Jacob Benus, Randall Eberts, and Kevin Hollenbeck.

Christopher J. O'Leary  
W.E. Upjohn Institute for Employment Research  
May 1998



# **Evaluating the Effectiveness of Active Labor Programs in Hungary**

Christopher J. O'Leary  
W. E. Upjohn Institute for Employment Research

## **EXECUTIVE SUMMARY**

This study of the effectiveness of active labor programs (ALPs) in Hungary relies on survey data gathered from randomly selected program participant and comparison group samples in a group of ten counties: Budapest, Baranya, Bekes, Borsod, Csongrad, Fejer, Hajdu-Bihar, Pest, Szabolcs, and Vas. This investigation of ALP effectiveness in Hungary was coordinated by the World Bank with studies of similar active labor programs operated in other transition economies, namely Poland, the Czech Republic, and Turkey. Funding for this study was provided to the W. E. Upjohn Institute for Employment Research by the U.S. Department of Labor, Bureau of International Labor Affairs for the U.S. Agency for International Development.

### **Background**

In a population of about 10 million, unemployment rose in Hungary from 23,000 in January 1990 to 705,000 in February 1993. During this three-year period, about a million jobs were lost. Part of the job loss (188,000) was absorbed by the retirement of workers. Meanwhile, the working age population grew by over 100,000. Since 1993, measured unemployment in Hungary has fallen. During the 1990s, the national population declined slightly and the measured size of the labor force fell dramatically. Starting in 1994, growth in real GDP began again. Consumer price inflation during the 1990s has ranged from 19 to 35 percent per year, being in the low end of that range in recent years. Consumer prices currently rise somewhat less than 20 percent per year. In April of 1998 the unemployment rate in Hungary stood at 9.8 percent. The unemployment rate would be as much as two percentage points higher were it not for the large number of participants in ALPs.

Hungary is composed of 20 administrative districts, which include 19 counties and the capital city of Budapest. These 20 districts are the political entities to which labor market support programs are provided through county labor centers and a network of 179 local labor centers. The Ministry of Labor is the leader in setting labor market support policy. National coordination for the delivery of employment services is provided by the National Labor Center.

This report provides net impact estimates on employment and earnings for the five main ALPs used in Hungary: retraining, employment service (ES), public service employment (PSE), wage subsidies, and self-employment assistance. The report also includes a subgroup analysis of program impacts. Additionally, estimates are given for the effect of ALP participation on receipt of unemployment compensation (UC).

## Employment Policy in Hungary

The menu of ALPs available in Hungary includes nearly all those available in countries with much longer histories of employment policy. Passive labor programs in Hungary include both UC with a 12 month maximum duration, and a means-tested unemployment assistance (UA) program providing an additional entitlement of 24 months of income support.

Total spending on ALPs and UC in Hungary for 1996 amounted to nearly 77.2 billion Hungarian forints (Ft) or around U.S.\$ 454.1 million. This level is about 1.03 percent of the Hungary's gross national product. In recent years the share of employment program expenditures devoted to ALPs has ranged from 21.8 to 25.5 percent. The remainder of public spending for employment programs goes to passive labor support through UC. About half a million people use Hungary's labor programs each year, with around 20 percent of them participating in an ALP.

Retraining provides short-term job skill training to promote readiness for job vacancies in the region. Retraining candidates may be either unemployed, expected to be unemployed, currently involved in PSE, or recent school graduates. Retraining participants receive a stipend which is 10 percent more than their UC benefit. The direct costs of retraining are also paid. In this evaluation we focus on retraining of the unemployed done either through individual plans or in groups through classes selected by the local or county labor center. Our samples of participants include recent school graduates.

The employment service is the central function of local labor offices. Local labor offices are one-stop shopping places for reemployment assistance. These offices act as a unified clearing house for referral to a variety of active and passive support. The ES offers a full range of placement services including job interview referral, counseling, skills assessment, job search training, resume preparation, and job clubs.

PSE is a short-term direct job creation program with employment on projects organized by government agencies including municipal governments. Direct employment costs for PSE including wages, work tools, working clothes, and transportation are subsidized up to 70 percent of the full amount with money from the Employment Fund, provided that the employer does not receive any net income from the activity.

The wage subsidy program is targeted toward people who are long-term unemployed. A wage subsidy of up to 50 percent is possible for up to one year. The payment is made directly to the employer and applies to total labor costs for hiring persons who were previously unemployed for more than six months (three months for school leavers), provided the employer has not laid off anyone involved in the same line of work in the previous six months. If workers hired through the subsidy are not retained after the subsidy ends for a period at least as long as the subsidy was paid, the employer must repay the Employment Fund the assistance provided.

Self-employment assistance is provided to a small fraction of persons who are eligible for UC. The assistance is provided in monthly payments equal to the regular UC, but may extend six months



beyond the basic one-year UC eligibility period. Support may also include reimbursement of up to half the cost of professional entrepreneurial counseling services and half the cost of training courses required for engaging in the entrepreneurial activity. Up to half the premium on loan insurance for funds borrowed to start the enterprise may be paid for one year.

### **Samples for Evaluation**

Sample sizes were set to be large enough to ensure the reliability of overall program impact estimates. Ideally, important demographic and regional subgroup impacts could also be measured using the samples. Program participant groups were drawn from the outflow of program participation occurring in the second quarter of 1996. There was random sampling from the outflow where sample sizes were large enough, with random draws made by birth date. For self-employment, which had a small number of participants, the population of all participants was drawn from the first three quarters of 1996. The comparison group was randomly selected, using birth dates, in the 10 counties from the inflow to the register during the second quarter of 1995. That was judged to be about the time that most people drawn for the participant samples had themselves registered as unemployed.

Surveys were conducted in April 1997. To spread the burden of conducting interviews, the samples were evenly distributed across the 10 counties and 80 local areas within these counties. Administration of the questionnaires for surveys was managed by experts employed by the county and local labor offices in the areas covered. Surveys were conducted with some subjects during their usual visits to labor centers and with the remainder during house-to-house visits by staff of local labor offices during their off work hours. This survey process means ALP impact estimates on reemployment rates may be biased downward since the unemployed are more likely to visit labor centers and the employed are less likely to be available at home during house-to-house visits.

Table E.1 lists the number of persons interviewed in the comparison and ALP groups. The table also shows that among the 5,881 ALP participants interviewed, 1,735 reported using some special service of the ES, and among the 3,338 persons in the comparison group, 1,438 used an ES service. The participant and comparison group samples were gathered with very good response rates. The overall response rate among ALP participants was 81.4 percent, while that for the comparison group was 75.6 percent.

	Sample size	Used some ES service	Used no ES service
Active Labor Program			
Individual Retraining	1,222	386	836
Group Retraining	1,321	566	755
Public Service Employment	1,140	479	661
Wage Subsidy	1,131	203	928
Self-employment	1,067	101	966
Total ALP Participants	5,881	1,735	4,146
Comparison Group	3,338	1,438	1,900

Table E.2 contrasts the composition of the comparison group and the ALP samples using categorical indicators of sample characteristics. In this table, asterisks

indicate that there is a statistically significant difference between the comparison group and the ALP group on the characteristic. A quick glance at the table reveals the large differences which exist for nearly every ALP on almost all characteristics.

In contrast to the comparison group, which was randomly drawn from the unemployment register, the individual retraining sample is more female, younger, and more educated; the group retraining sample is also more female, younger, and more educated; the PSE sample is more male, younger, and less educated; the wage subsidy sample is somewhat more educated; and the self-employment sample is more male, closer on average to prime working age, and more educated.

The wide ranging differences in sample composition suggest that there was non-random assignment of participants to ALPs. This means that ALP net impact estimates must be computed

**Table E.2 Contrasting the composition of the comparison group with the ALP samples<sup>a</sup>**

	Full Comparison Group	Individual Retraining	Group Retraining	Public Service Employment	Wage Subsidies	Self- Employment
MALE - Respondent is male	0.555	0.490**	0.476**	0.665**	0.561	0.619**
AGELT30 - Age # 30	0.415	0.662**	0.649**	0.329**	0.407	0.260**
AGE3044 - Age between 30 and 44	0.383	0.267**	0.277**	0.394	0.399	0.544**
AGEGE45 - Age is 45 or over	0.201	0.071**	0.074**	0.277**	0.194	0.196
EDELEM - 8 years of schooling	0.345	0.164**	0.246**	0.468**	0.264**	0.078**
EDVOC - Vocational	0.412	0.295**	0.244**	0.303**	0.425	0.388
EDGYM - General secondary	0.213	0.478**	0.453**	0.197	0.269**	0.427**
EDCOLL - Some higher education	0.030	0.063**	0.057**	0.032	0.042*	0.107**
BLUECOL - Blue collar occupation	0.814	0.604**	0.623**	0.819	0.771**	0.627**
LOST - Earlier lost job	0.671	0.586**	0.636**	0.348**	0.181**	0.264**
SCHOOL - Earlier school leaver	0.087	0.307**	0.279**	0.022**	0.024**	0.001**
OTHER - Earlier other	0.242	0.107**	0.085**	0.630**	0.796**	0.735**
LTU - Long-term unemployed	0.218	0.180**	0.213	0.483**	0.299**	0.052**
Sample Size	3214	1150	1254	1088	1091	1044

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

<sup>a</sup>Asterisks indicate whether the ALP sample is significantly different from the comparison group in the particular characteristic.

while controlling for systematic sample selection. In this report, correction in estimation is limited to adjustments based on observable characteristics. While the report presents impact estimates computed in a variety of ways, the estimates reviewed in this executive summary were all computed using an ordinary least squares regression model which controls for observable characteristics and for use of the ES.

When program managers are encouraged to achieve a high employment rate for program participants, a phenomenon called “creaming” frequently results; that is, program managers might select

mainly the most able applicants for participation. The result is high employment rates; however, many of the selected ALP participants already possessed the skills and abilities to get reemployed themselves. Comparing their success to all unemployed, the positive impact on reemployment is high, but comparing their success to others with similar characteristics, the program impacts are much smaller.

An earlier evaluation of retraining in Hungary found evidence of creaming in program assignment. Since that time, an extensive performance monitoring system has been implemented in Hungary. At the same time, program managers have been warned about the social cost of creaming in program assignment. The results reviewed in this executive summary include evidence of programs with strong creaming, others with mild creaming, and still others where the practice of creaming appears to have been reversed.

### ALP Impacts on Employment and Earnings

Net impact estimates of ALPs on employment and earnings outcomes are given in Table E.3. There are four employment outcomes and two earnings outcomes. They are

- EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment
- EMPLOYS1 - Ever reemployed in any job or self-employment
- EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date
- EMPLOYS2 - Employed in any job or self-employment on the survey date
- EARN1 - Average monthly earnings at the start of the first new job or self-employment
- EARN2 - Average monthly earnings from the job or self-employment on the survey date

Individual retraining resulted in 11 percentage points more people getting into regular non-subsidized employment and 9 percentage points more people being in regular employment on the survey date. There was also a 1,603 Ft gain in average monthly earnings (EARN1) at the start of reemployment, but this advantage disappeared by the survey date. The unadjusted impact estimates were not significantly different from the adjusted estimates highlighted here, suggesting no serious

**Table E.3 Summary of Net Impacts on Employment and Earnings for ALPs in Hungary**

	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
Active Labor Program						
Individual Retraining	0.11*	0.15**	0.09*	0.15**	1,603*	1,149
Group Retraining	0.09**	0.17**	0.07**	0.12**	1,805*	895
Employment Service	-0.02**	0.08**	-0.09**	0.00	556**	365
Public Service Employment	-0.26**	-0.07**	-0.21**	-0.06	742	1,604**
Wage Subsidy	-0.11**	-0.01**	-0.06**	-0.03**	1,836	-1120
Self-employment	0.14	0.17	0.16	0.19	-7057**	-4583**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

sample selection in program assignment. Individual retraining provided more of an advantage for those who had lost their earlier jobs, there were no distinct differences by gender, age, education, or occupation group. (A subgroup analysis of ALP impacts on the important outcome EMPLOY2, employed in a non-subsidized job or self-employment on the survey date, is provided in Table E.4.)

Group retraining resulted in 9 percentage points more people getting into regular non-subsidized employment and 7 percentage points more people being in regular employment on the survey date. There was a 1,805 Ft gain in average monthly earnings at the start of reemployment, but (like individual retraining) this advantage disappeared by the survey date. The unadjusted impact estimates were somewhat smaller than the adjusted impact estimates highlighted here, suggesting there may actually have been some reverse creaming; that is, targeting of group retraining to those who would have their reemployability raised the most. Group retraining provided a measurable advantage to those who had lost their earlier jobs or recently finished school, there were no distinct differences by gender, age, education, or occupation group.

Controlling for observable factors, including participation in any other ALP, use of the employment service had a negative effect on reemployment in a non-subsidized job. The net impacts were -2 percentage points for ever getting reemployed and -8 percentage points on being in a non-subsidized job on the survey date. Use of the ES did raise the chance of getting into any job (including perhaps a subsidized job) by 8 percentage points; unfortunately, this advantage disappeared by the survey date. Using the ES did raise average monthly reemployment earnings by 556 Ft. Among the five ALPs evaluated in this report, selection bias is the most serious problem in evaluating the ES impact. Use of the ES is both self chosen and self selected. Net impact estimates of the ES show somewhat more favorable effects than the unadjusted estimates, suggesting that successful job seekers who used the ES attribute some of their job finding success to the ES. The ES impacts across subgroups were significantly larger for females, younger workers, those with other than vocational secondary education, those from blue collar occupations, those who became voluntarily unemployed, not long-term unemployed, and those with no prior work experience. The most popular ES service is referral to job interviews.

PSE resulted in net impacts of -26 percentage points in getting into a non-subsidized job during the period observed, -7 percentage points in ever getting into any other job, -21 percentage points in being in a non-subsidized job on the survey date, but a 1,604 Ft gain in the rate of average monthly earnings at the survey date. These negative impacts are somewhat smaller than expected based on prior evidence about PSE in Hungary. The fact that the net impact estimates were generally larger negative suggests many of the program participants were job-ready at the time of program entry. The result is most probably due to insufficient labor demand. A subgroup analysis of PSE indicated large negative employment impacts for men and no impact on women; there were also large negative impacts

**Table E.4 Net Impact Estimates of Active Labor Programs by Subgroup on the outcome Employed in a Non-subsidized Job on the Survey Date (EMPLOY2)**

	Individual Retraining	Group Retraining	Employment Service	Public Service Employment	Wage Subsidy	Self- employ- ment
MALE - Respondent is male	0.086**	-0.021	-0.001##	-0.138***	0.037	0.339**
FEMALE - Respondent is female~	0.087**	0.023	0.080**	-0.042	0.076**	0.344**
AGELT30 - Age < 30	0.081**	0.008	0.048*	-0.111**	0.029	0.339**
AGE3044 - Age 30 to 44	0.076**	0.018	0.017	-0.112**	0.059*	0.320**#
AGEGE45 - Age is 45 or over~	0.126**	-0.067	0.043	-0.048	0.098**	0.389**
EDELEM - 8 years of schooling	0.086**	0.001	0.068**	-0.141***	0.089**	0.377**
EDVOC - Vocational	0.101**	-0.002	0.010	-0.090**	0.030	0.330**#
EDGYM - General secondary	0.066**	-0.011	0.040	-0.057	0.065	0.332**
EDCOLL - Some higher education~	0.098	0.084	-0.018	0.068	-0.049	0.273**
WHITECOL - White collar occupation	0.051	-0.037	0.045	-0.116**	0.059	0.325**
BLUECOL - Blue collar occupation~	0.098**	0.011	0.033*	-0.094**	0.053**	0.346**
LOST - Earlier lost job	0.144***	0.097***	0.032	0.017##	0.077**	0.436***
SCHOOL - Earlier school leaver	-0.077***	0.077***	0.113*	0.011##	0.128	0.676
OTHER - Earlier other~	0.087*	-0.383**	0.013	-0.320	0.088	0.130**
LTU - Long-term unemployed	0.084**	-0.041	0.041	-0.089**	0.084**	0.364**
NONLTU - Not unemployed long term~	0.087**	0.010	0.033*	-0.101**	0.045*	0.336**
LOWURATE - Low unemployment area	0.066**	0.016	0.051*	-0.129**	0.036	0.336**
MEDURATE - Med unemployment area	0.087**	-0.015	0.041	-0.093**	0.113***	0.288***
HIURATE - High unemployment area~	0.102**	0.002	0.018	-0.082**	0.012	0.394**
Baranya - County 2	0.093**	0.010	0.047	-0.119*	0.113**	0.157***
Bekes - County 4	0.073**	0.044##	0.018	-0.102*	0.053	0.325**
Borsod - County 5	0.033	0.020	-0.018	-0.076*	0.081**	0.431**#
Csongrad - County 6	0.083	0.002	0.042	-0.168**	0.138**	0.331**
Fejer - County 7	0.094**	0.107**	0.049	-0.096**	0.185**	-0.324**
Hajdu - County 9	0.088*	-0.113***	0.033	-0.045	-0.098*	0.311**
Pest - County 13	-0.012	-0.067	0.004	-0.135**	0.100	0.345**
Szabolcs - County 15	0.155**	0.073*	0.034	-0.133**	0.055	0.428**
Vas - County 18	0.176**	0.085	0.105*	-0.111	0.017	0.329**
Budapest - Capital city 1~	0.075	0.063	0.014	-0.113*	0.048	0.325**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

on those with eight or fewer years of schooling, but no impacts on those with general secondary or higher education; and there was actually a positive employment impact for those who lost their earlier job or recently finished schooling as compared to others.

The wage subsidy for long-term unemployed in Hungary is estimated to have a net impact on ever finding a non-subsidized job by -11 percentage points and on being in a non-subsidized job on the survey date -6 percentage points. Broadening the definition of reemployment to also include subsidized jobs after a wage subsidy, the net impact on ever getting into any job was -1 percentage point and the impact on being in any job on the survey date was -3 percentage points. For the wage subsidy, controlling for observable characteristics and the use of the ES was important in estimating net impacts.

There is strong evidence that employers were quite selective in choosing the best candidates for wage subsidies. The unadjusted impact estimates were large and positive. Together with the negative and significant net impact estimates, this suggests that many of workers whose wages were subsidized could have gained reemployment without public subsidy. A subgroup analysis indicated that the wage subsidy benefitted employment most among those in areas with moderate unemployment. The subgroup results also suggest that selectivity in wage subsidy hiring by employers was most influenced by educational attainment, with employers preferring job candidates with some higher education.

Self-employment assistance in Hungary is estimated to increase the probability of getting into a non-subsidized job or non-subsidized self-employment by 14 percentage points and to raise the chance of a similar outcome at the survey date by 16 percentage points. These estimates are not statistically significant but are suggestive of the tendencies. Employment gains apparently came at the expense of lower earnings. The self-employment impact on average monthly earnings was -7,057 Ft at the start of new jobs, and -4,583 Ft on the survey date in current jobs. The unadjusted impact estimates were significantly better than these, suggesting that many of those provided self-employment assistance would have gained reemployment without the assistance. However, it was also found that 17.6 percent of those receiving self-employment assistance hired at least one other worker for their enterprise. Indeed one successful loan recipient claims to have hired 12 workers. The mean number of workers hired by those who did hire someone was 1.75 employees. Furthermore, about half of all those hired were previously unemployed. A subgroup analysis indicated that self-employment assistance boosted reemployment rates most among those 45 years of age and older, those who had lost their earlier job, and those in high unemployment areas.

### **Impacts of Various Program Features**

The rich information gathered during the evaluation permitted examination of how various aspects of ALPs influenced program effectiveness. These aspects of ALPs included the duration of program participation, the type of program organizer, the job skill level involved, and the industry of the ALP organizer. To provide a summary of findings we examine the impacts of program features on being employed in a non-subsidized job on the survey date (EMPLOY2). Impact estimates are given in Table E.5.

For individual and group retraining it was possible to examine three aspects of retraining. The impact on employment was bigger for those who personally contributed to the direct cost of retraining. While the impact was not statistically significantly different from those who did not contribute, the impact appeared to be almost twice as large for those who did contribute. For those contributing, the net impacts were 10.4 and 12.3 percentage points for individual and group retraining participants respectively on being in a non-subsidized job on the survey date.

For group retraining a duration of between 3 and 12 months had statistically significantly greater impacts than other durations. While impacts were not significantly different across duration groups for individual training, durations 6 months or shorter appeared to have greater impacts.

**Table E.5 Impacts of Various Features of ALPs on the outcome “employed in a non-subsidized job on the survey date” (EMPLOY2)**

	Individual Retraining	Group Retraining	PSE	Wage Subsidy	Self-employment
<b>Contribution to Costs</b>					
Participant contributed	0.104**	0.123**			
No participant contribution	0.062	0.066**			
<b>Duration</b>					
Less than 1 month	0.115	0.019			
1 to less than 3 months	0.129**	-0.050			
3 to less than 6 months	0.102**	0.084**b			
6 to less than 12 months	0.069**	0.097**b			
12 or more months	0.084	-0.015			
<b>Organizer</b>					
Regional Center over 20 hrs	0.092	0.015			
Regional Center 20 or less	0.128	-0.005			
Other over 20 hours	0.073**	0.096**a			
Other 20 or less	0.105**	0.107**a			
<b>Job Skill Level</b>					
Non-manual			-0.166**	-0.042	
Manual unskilled			-0.237**a	-0.059	
Manual semi-skilled			-0.207**	-0.022	
Manual skilled			-0.160**b	-0.012	
<b>Industry</b>					
Agriculture				0.018	0.290**
Construction				-0.174**a	0.268**
Services			-0.207**	-0.047*b	0.190**ab
Other			-0.228**	0.028bc	0.280**c
<b>Type of Enterprise</b>					
Individual Enterprise					0.223**
Partnership or other					0.203**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

a Significantly different from the first category at the 90 percent confidence level in a two-tailed test.

b Significantly different from the second category at the 90 percent confidence level in a two-tailed test.

c Significantly different from the third category at the 90 percent confidence level in a two-tailed test.

In Hungary there is a national system of regional retraining centers which were set up at 10 locations around the country under a World Bank project. Group retraining provided outside these centers was found to be more effective in promoting regular employment. However, while only a small fraction of individual retraining participants surveyed chose these sites for their retraining, employment impacts of individual retraining outside the centers were not significantly different from impacts on those using such centers.

Since both PSE and wage subsidies involve on-the-job activity, the effect of the job skill level and the industry of the employer were examined. PSE participants in non-manual or skilled manual jobs

fared better than those in less skilled jobs. There was no appreciable difference in impacts on reemployment among PSE participants working in service industries compared to other industries.

For wage subsidy recipients there were no statistically significant differences in the impact on reemployment across skill level groups. By industry group, compared to work in other industries, wage subsidy recipients fared worst if they worked in construction and nearly as bad if they worked in services.

Self-employment in service industries was less likely to secure regular employment than self-employment in other industries including agriculture and construction. Employment stability was improved somewhat more by individual self-employment as compared to a partnership or other collaborative arrangement, however the advantage was not significantly significant.

### Impacts of ALPs on Unemployment Compensation

Net impacts of ALPs on UC are summarized in Table E.6. Participation in individual retraining was estimated to reduce UC by 0.68 months and decrease payments by 7,580 Ft. Net impacts for group retraining were slightly smaller with reductions of 0.50 months and 4,790 Ft. Use of the ES is estimated to have the net effect of increasing UC by 0.47 months and 6,490 Ft. Net impacts of PSE were not statistically different from zero but tended to be negative. The wage subsidy program had net impacts which were positive but small, being 0.04 months and 1,280 Ft. Finally, self-employment had the largest estimated net savings being 1.64 months and 21,072 Ft. However, this result for self-employment is likely due in large part to the relabeling of monthly payments from UC to self-employment assistance.

**Table E.6 Summary of Net Impacts on Unemployment Compensation for ALPs in Hungary**

Active Labor Program	UCMONTHS	UCPAY
Individual Retraining	-0.68**	-7580**
Group Retraining	-0.50**	-4790
Employment Service	0.47**	6490**
Public Service Employment	-0.19	-1579
Wage Subsidy	0.04**	1280**
Self-employment	-1.64**	-21072**

\*Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

### Benefits and Costs of ALPs

In 1996, per participant expenditures on retraining averaged 35,962 Ft. Individual retraining raised the net probability of being in a non-subsidized job by nine percentage points, while group retraining raised the probability by seven percentage points. Both types of retraining lowered UC benefit payments to participants. In 1996 currency units, the mean reduction was 7,580 Ft for individual retraining and 4,790 Ft for group retraining. There was no lasting impact of retraining on average monthly earnings.



We have no direct estimate of ES costs per participant in Hungary. ES use was estimated to lower the net probability of being in a non-subsidized job by nine percentage points. Use of the ES is also estimated to increase UC payments by 6,490 Ft. However, it should be noted that all observations in the sample made use of some aspects of ES assistance and the impact estimates are based on self-reported data. Furthermore, per participant costs of ES use are likely to be very small.

To operate PSE projects, it cost an average of 60,747 Ft per participant in 1996. PSE lowered the net probability of being in a non-subsidized job by 21 percentage points, although it did raise average monthly earnings by 1,604 Ft. PSE did not have a significant affect on UC benefit payments to program participants.

In 1996, per participant expenditures on wage subsidies for hiring the long-term unemployed averaged 88,971 Ft. The wage subsidy lowered the net probability of being in a non-subsidized job by 6 percentage points. Receipt of a wage subsidy was also associated with a higher level of UC benefit payments to participants. In 1996 currency units, the mean increase was 1,280 Ft. There was no significant impact of the wage subsidy on average monthly earnings.

Support payments to self-employment assistance recipients averaged 52,493 Ft in 1996. The self-employment assistance program did not have a significant affect on the net probability of being in a non-subsidized, but it did lower average monthly earnings by 4,583 Ft. Participants in self-employment also drew a net 21,072 Ft less in UC benefit payments.



# Evaluating the Effectiveness of Active Labor Programs in Hungary

## 1. Introduction

This study of the effectiveness of active labor programs (ALPs) in Hungary relies on survey data gathered from randomly selected program participant and comparison group samples in a group of ten counties.<sup>1</sup> Before proceeding with further details about the surveys, a brief overview of the context of employment policy and the variety of labor programs in Hungary is given. This investigation of ALP effectiveness in Hungary is being coordinated by the World Bank with studies of similar active labor programs operated in other transition economies, namely Poland, the Czech Republic, and Turkey. Funding for this study was provided to the W.E. Upjohn Institute for Employment Research by the U.S. Department of Labor, Bureau of International Labor Affairs for the U.S. Agency for International Development.

### 1.1 Economic context of employment policy

In a population of about 10 million, unemployment rose in Hungary from 23,000 in January 1990 to 705,000 in February 1993. During this three-year period, about a million jobs were lost. Part of the job loss (188,000) was absorbed by the retirement of workers. Meanwhile the working age population grew by over 100,000.<sup>2</sup> The evolution of unemployment since 1990 in Hungary is presented graphically in Figure 1.1. Since 1993, measured unemployment in Hungary has declined. In January of 1998, the unemployment rate in Hungary dipped below 8.5 percent, putting Hungary in the select group of countries with the lowest unemployment in Europe.

---

<sup>1</sup>There are 19 administrative districts in Hungary called megye, or counties; adding the capital city of Budapest makes 20 main administrative districts. These 20 are all referred to as “counties” in this report.

<sup>2</sup>See Kölló (1993).

Trends during the period 1989-96 in the Hungarian labor market and economy are summarized in Table 1.1. During the 1990s, the national population declined slightly and the measured size of the labor force fell dramatically. Starting in 1994, growth in real GDP began again. Consumer price inflation during the 1990s has ranged from 19 to 35 percent per year, usually being in the low end of that range in recent years. Consumer price inflation is currently about 20 percent per year.

## **1.2 Administration of employment policy**

Hungary is composed of 20 major administrative districts which include 19 counties (megye) and the capital city of Budapest. These 20 districts are the political entities to which labor market support programs are provided through a network of Labor Centers. Map 1.1 shows the regional distribution of unemployment around Hungary as of April 1997 divided into three categories: low (below 9 percent), medium (9 to 14 percent), and high (above 14 percent). Unemployment is relatively low in and around the capital city of Budapest and in the western parts of the country. Unemployment is relatively high in the northeastern and eastern regions.

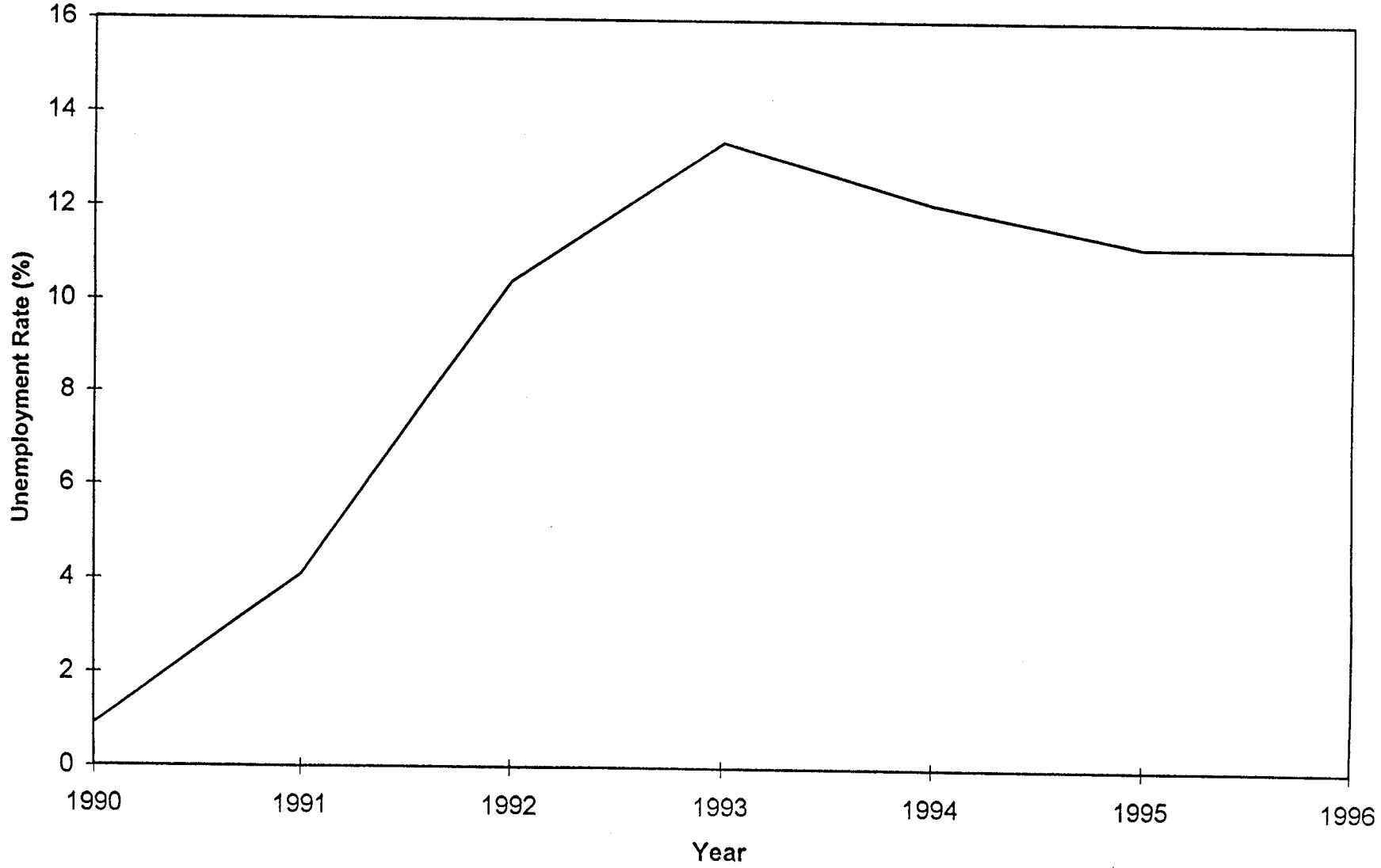
The Ministry of Labor is the leader in setting labor market support policy. However, services to job seekers are provided through a nationwide network of county labor centers and local labor offices. National coordination for the delivery of employment services is provided by the National Labor Center (Országos Munkaugyi Modszertani Központ - OMMK), which is located in Budapest. The OMMK provides methodological support to the counties and general information on labor market trends and labor program activity to policymakers in the Ministry and to the public. There are 20 County Labor Centers and 179 local labor centers where programs are delivered to job seekers.

## **1.3 Aims of this report**

The aims of this study are to produce reliable net impact estimates for the five main ALPs used in Hungary on employment and earnings and to identify particular regions and population subgroups

across which the program impacts differ. This report also examines the timing of response to ALPs and, to provide a further basis for cost-benefit analysis, estimates of ALPs impact on receipt of UC are provided.

Figure 1.1 Unemployment Rate in Hungary 1990-1996

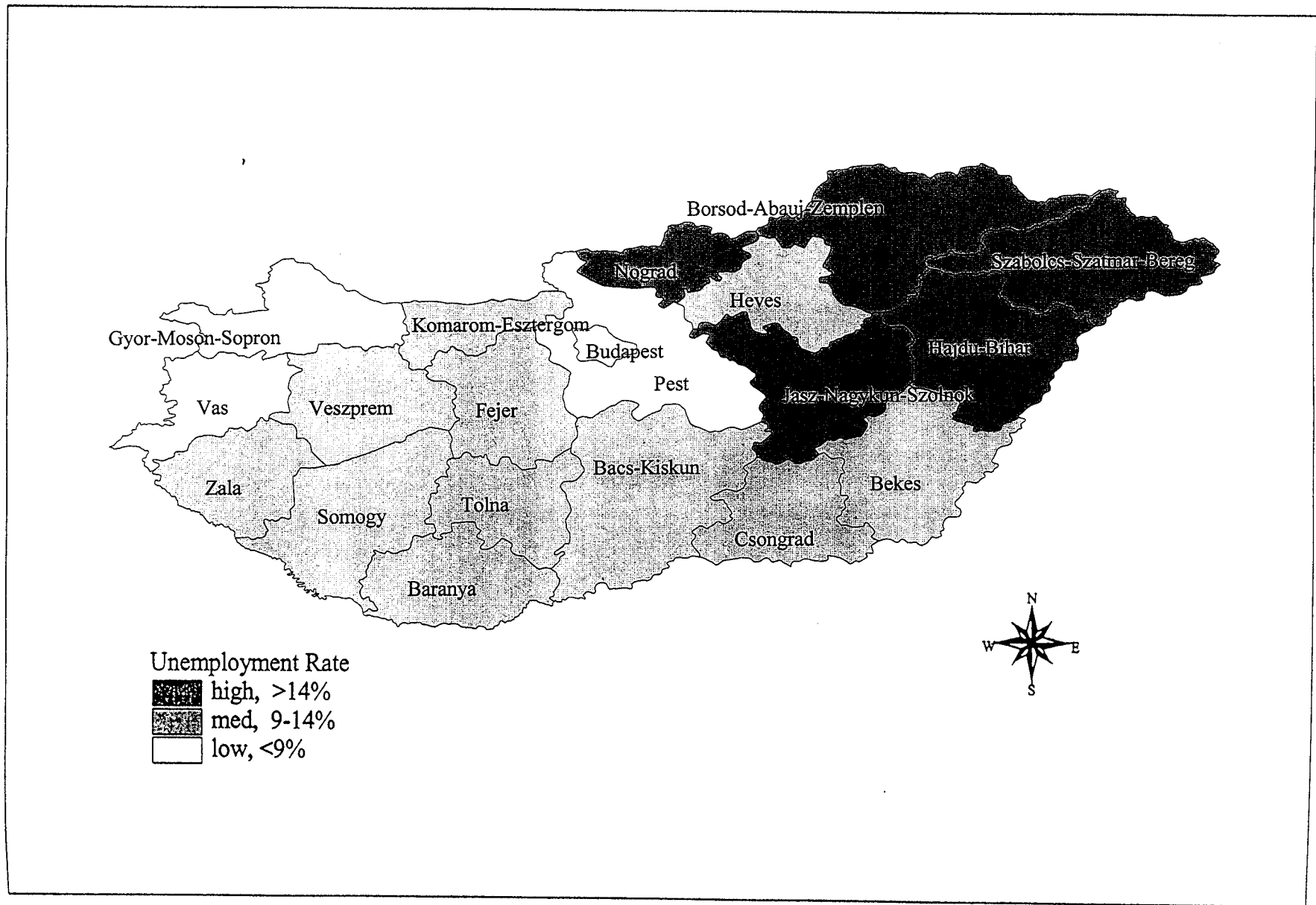


**Table 1.1 Labor Market and Economic Conditions in Hungary, 1990-1996**

Hungary	1990	1991	1992	1993	1994	1995	1996
Population (in thousands)	10355	10337	10310	10277	10246	10212	10174
Labor force (in thousands)	5520	5531	5353	5024	4705	4553	4474
Unemployment rate (percent)	0.9	4.1	10.4	13.4	12.1	11.2	11.2
GDP Index (previous year = 100)	96.5	88.1	96.1	99.2	102.9	101.5	101
Price Index (previous year = 100)	128.9	135	123	122.5	118.8	128.2	123.6

Source: Hungarian Central Statistical Office and Hungarian National Labor Center.

Map 1.1 Unemployment rate in counties of Hungary in April 1997





## **2. An Overview of Employment Policy**

Employment policy in Hungary is carried out through administration of both active and passive labor programs. The menu of ALPs available in Hungary includes nearly all those available in countries with much longer histories of employment policy. In Hungary, ALPs are financed from the Employment Fund, which is allocated a share of the general budget for the national government. Passive labor programs and administration of employment policy is financed from the Solidarity Fund, which receives money from employer and employee payroll taxes. A share of the Employment Fund is used to finance centralized ALPs. These centralized ALPs are managed from the Ministry of Labor in Budapest and mainly focused in areas of high unemployment. The present evaluation focuses on the five decentralized ALPs that are most widely used Hungary. These decentralized ALPs, which are managed by county labor centers, are retraining, public service employment (PSE), wage subsidy, self-employment assistance, and the employment service (ES). The programs are delivered in local labor centers, of which there are about 10 in each county.

Passive labor programs in Hungary include both unemployment compensation (UC), which is available for a finite duration to unemployed workers with sufficient recent work experience, and unemployment assistance (UA) which is a means-tested program of income support for job seekers who have exhausted their basic UC benefit entitlement.

### **2.1 Active labor programs**

Concise descriptions of services provided for the five most popular ALPs in Hungary are given in Table 2.1. As shown in the table, retraining of unemployed workers means additional short-term job skill training to make job seekers ready to fill job openings in the region. Candidates may be either unemployed, expected to be unemployed, currently involved in public service employment, or recent school graduates. Retraining participants receive a stipend which has a 10 percent premium over the UC benefit. The direct costs of retraining are also paid. In this evaluation we focus on retraining of the

unemployed done either through individual plans and agreements or in groups through classes specified by the local or county labor center. Our samples of participants do include recent school graduates.

The employment service is the central function of local labor offices. Local labor offices are one-stop shopping places for reemployment assistance. These offices act as a unified clearing house for referral to a variety of active and passive support. The ES offers a full range of placement services, including job interview referral, counseling, skills assessment, job search training, resume preparation, and job clubs.

Public service employment is a short-term direct job creation program with employment on projects organized by government agencies, including municipal governments. Direct employment costs for PSE, including wages, work tools, working clothes, and transportation, are subsidized up to 70 percent of the full amount with money from the Employment Fund, provided that the employer does not receive any net income from the activity.

The wage subsidy program is targeted toward people who are long-term unemployed. A wage subsidy of up to 50 percent is possible for up to one year. The payment is made directly to the employer and applies to total labor costs for hiring persons who were previously unemployed for more than 6 months (3 months for school leavers), provided the employer has not laid off anyone involved in the same line of work in the previous 6 months. If workers hired through the subsidy are not retained after the subsidy ends for a period at least as long as the subsidy was paid, the employer must repay the Employment Fund the assistance provided.

Self-employment assistance is provided to a small fraction of persons who are eligible for UC. The assistance is provided in monthly payments equal to the regular UC, but may extend 6 months beyond the basic one year UC eligibility period. Support may also include reimbursement of up to half the cost of professional entrepreneurial counseling services, and half the cost of training courses required for engaging in the entrepreneurial activity. Up to half the premium on loan insurance for funds borrowed to start the enterprise may be paid for one year.

## **2.2 Passive labor programs**

Unemployment compensation is available to unemployed workers depending on their work history over the previous four years. The maximum entitled duration of benefits is 12 months. The monthly benefit amount depends on previous earnings. During the first six months the benefit is 75 percent of prior earnings, and during the second six months the benefit is 60 percent of prior earnings. UC is paid from the Solidarity Fund, which is financed by a 3.9 percent employers tax and a 1.5 percent employee tax on total payrolls. Before 1996, there was also an unemployment benefit equal to the monthly unemployment assistance amount for recent school graduates. In 1995, there were an average of 185,000 UC and recent school graduates beneficiaries. UC is administered by the system of labor centers.

A monthly UA benefit is available to unemployed exhaustees of regular UC. Eligibility also depends on a means test. The maximum entitled duration of UA is 24 months. The monthly benefit amount is uniform; in June 1996 the amount stood at 7,780 Hungarian forints (Ft) per month. UA benefits are financed from general governmental revenues. Beneficiaries who exhaust eligibility for UA may requalify for up to 3 months of regular UC after six months work; if the UC is exhausted, they may again become entitled to a means tested two years of UA benefits. UA is administered by local government offices; it is not administered by labor centers.

## **2.3 Use of labor programs**

Total spending on ALPs and UC in Hungary over the past several years is presented Table 2.3. In 1996 total spending amounted to nearly 77.2 billion Ft, or around U. S. \$454.1 million (at the December 1996 exchange rate of \$1 = 170 Ft). Table 2.3.1 presents the information in share terms. In recent years, the share of employment program expenditures devoted to ALPs has ranged from 21.8 to 25.5 percent. The remainder of spending goes to passive labor support through UC. This share is an increase from the years 1992 and 1993, when up to 83.1 percent of spending on employment

programs went to passive support measures while unemployment was peaking in the early stages of transition to markets.

Table 2.4 reports that in recent years more than half a million people have been involved in Hungary's labor programs with around 100,000 involved in ALPs in each of the three years 1994 to 1996. Labor programs pending per participant is reported in Table 2.5. With the exception of retraining where a premium above UC is paid, the per participant amounts spent on ALPs is below that spent on UC. For 1996 average spending per participant in ALPs was about 73 percent of the average spent per UC recipient.

**Table 2.1 Active Labor Programs in Hungary**

---

Retraining	Occupational skill retraining may be provided to persons who are either unemployed, expected to become unemployed, or currently involved in public works. Unemployed recent school leavers may also qualify. Training support may include a supplement to earnings or a benefit in lieu of earnings equal to 110 percent of the UC otherwise payable, plus reimbursement of direct costs.
Employment service	The ES is the central function of local labor centers. The local labor centers are one-stop shopping places for reemployment assistance. These centers act as a unified clearing house for referral to a variety of active and passive support. The ES offers a full range of placement services including job interview referral, counseling, skills assessment, job search training, resume preparation and job clubs.
Public service employment	Workers hired for public maintenance and infrastructure projects or public social services may have direct costs of employment (wages, additional work tasks, work tools, working clothes, and transportation) subsidized by up to 70 percent from the Employment Fund provided that the employer does not receive any net income as a result of the activity.
Wage subsidy for hiring long-term unemployed	A wage subsidy of up to 50 percent is possible for up to one year. The payment is made directly to the employer and applies to total labor costs for hiring persons unemployed for more than 6 months (3 months for school leavers), provided the employer has not laid off anyone involved in the same line of work in the previous 6 months and after the assistance has ended, he further employs the unemployed persons at least as long as he received assistance.
Self-employment assistance	Self-employment assistance is possible for persons who are eligible for UC. The support may include up to 6 monthly payments of UC beyond the basic one year eligibility. Support may also include reimbursement of up to half the cost of professional entrepreneurial counseling services, and half the cost of training courses required for engaging in the entrepreneurial activity. Up to half the premium on loan insurance for funds borrowed to start the enterprise may be paid for one year.

---

**Table 2.2 Passive Labor Programs in Hungary**

---

Unemployment compensation	<p>Available to unemployed workers depending on work history over the previous four years. The maximum entitled duration of benefits is 12 months. The monthly benefit amount depends on previous earnings. During the first six months the benefit is 75 percent of prior earnings, and during the second six months the benefit is 60 percent of prior earnings. The unemployment benefit is paid for by a 3.9 percent tax which employers pay on total payrolls and a 1.5 percent tax paid by employees. Before 1996, there was also an unemployment benefit equal to monthly UA amount for recent school graduates. In 1995 there were an average of 185,000 UC and recent school graduates beneficiaries. UC is administered by the system of labor centers.</p>
Unemployment assistance	<p>A monthly benefit available to unemployed exhaustees of regular UC. Eligibility also depends on a means test. The maximum entitled duration is 24 months. The monthly benefit amount is uniform; in June 1996 the amount stood at 7780 Ft per month. UA benefits are financed from general governmental revenues. Beneficiaries who exhaust eligibility for UA may requalify for up to 3 months of regular UC after six months work, if the UC is exhausted, may again become entitled to a means-tested two years of UA benefits. UA is administered by local government offices; it is not administered by labor centers.</p>

---

**Table 2.3. Nominal Spending on ALP and PLP in Hungary, 1990 to 1996 (million Ft)**

Program	1990	1991	1992	1993	1994	1995	1996
Retraining	825	1237	4117	6562	7498	6571	5329
Public service employment	387	557	1617	3058	4445	4361	6734
Wage subsidies		13	315	1486	2351	2088	1965
Self-employment assistance		22	249	508	554	220	233
Other (ALPs)	3735	5891	6788	4691	2956	1703	2583
Total ALPs	4947	7720	13086	16305	17804	14943	16844
Unemployment compensation	2598	20548	62642	68289	42350	34859	37418
School leavers allowance				2237	3230	3707	2658
Unemployment allowance							9628
Pre- and early retirement pension	95	386	1480	3588	6505	10665	10609
Total PLPs	2693	20934	64122	75115	52085	49231	60313
Total ALPs and PLPs	7640	28654	77208	90419	69889	64174	77157
ALPs as a proportion of ALPs plus PLPs (UC+UA)	64.8	26.9	16.9	18.0	25.5	23.3	21.8
Price Index (previous year = 100%)	128.9	135	123	122.5	118.8	128.2	123.6

Source: Central Statistic Office, Ministry of Labor

ALP = Active Labor Program

PLP = Passive Labor Program

**Table 2.3.1. Spending in Share Terms on Active and Passive Labor Programs in Hungary, 1990-1996**

Hungary	1990	1991	1992	1993	1994	1995	1996
ALP and PLP spending (million Ft)	7,640	28,654	77,208	90,419	69,889	64,174	77,157
ALP share of spending	0.648	0.269	0.169	0.180	0.255	0.233	0.218
Retraining share	0.108	0.043	0.053	0.073	0.107	0.102	0.069
PSE share	0.051	0.019	0.021	0.034	0.064	0.068	0.087
Wage subsidies share		0.000	0.004	0.016	0.034	0.033	0.003
Self-employment share		0.001	0.003	0.006	0.008	0.003	0.003
Other ALP share	0.489	0.206	0.088	0.052	0.042	0.027	0.033
PLP share of spending	0.352	0.731	0.831	0.820	0.745	0.767	0.782
Price index (previous year = 100)	128.9	135.0	123.0	122.5	118.8	128.2	123.6

Source: National Labor Center, Budapest.



**Table 2.4. Average Number of Participants in Labor Programs in Hungary, 1990 to 1996**

Program	1990	1991	1992	1993	1994	1995	1996
Retraining					30662	24059	20829
Public service employment					27021	24371	34094
Wage subsidies					20422	14371	12268
Self-employment assistance					3668	1289	1378
Other (ALPs)					33022	31375	27746
Total ALPs	n.a.	n.a.	n.a.	n.a.	114795	95465	96315
Unemployment compensation	30302	174641	398265	382935	206046	158092	155682
School leavers allowance			14762	21962	24127	24701	16055
Unemployment allowance			18408	89328	190303	209982	211309
Pre- and early retirement pension					53489	61140	62649
Total PLPs	30302	174641	431435	494225	473965	453915	445695
Total ALPs and PLPs	30302	174641	431435	494225	588760	549380	542010
ALPs as a proportion of ALPs plus PLPs (UC+UA)	n.a.	n.a.	n.a.	n.a.	19.5	17.4	17.8

Source: National Labor Center

**Table 2.5. Nominal Spending on ALPs and PLPs per Participant in Hungary 1990 to 1996**  
(thousands of Ft per participant)

Program	1990	1991	1992	1993	1994	1995	1996
Retraining					245	273	256
Public service employment					165	179	198
Wage subsidies					115	145	160
Self-employment assistance					151	171	169
Other (ALPs)					90	54	93
Total ALPs					155	157	175
Unemployment compensation	86	118	157	178	206	220	240
School leavers allowance				102	134	150	166
Unemployment allowance							46
Pre- and early retirement pension					122	174	169
Total PLPs	89	120	149	150	110	108	135
Total ALPs and PLPs	252	164	179	183	119	117	142

Source: Central Statistical Office, Ministry of Labor

### **3. Sample Considerations**

#### **3.1 Sample size**

The samples were specified to be of sufficient size to ensure precision of desired impact estimates. The sample sizes were set based on considerations of power tests for observing effects of a size that would be of interest to policymakers; that is, the samples were set to be large enough to reject the null hypothesis of no effect with sufficient power to accept the alternative that an intervention is efficacious. Furthermore, the sample sizes were specified to be of sufficient size to provide reliable estimates of differential program effects on important demographic and regional subgroups. Table 3.1 lists the designed sample sizes to be drawn for each of the four ALPs studied and for the comparison group.

The main program outcome guiding sample size determination is the proportion employed on the survey date, and samples should be of sufficient size to detect program impacts of 5 percentage points or more where the difference is measured from 50 percent. These judgements are made on the basis of effect sizes estimated in earlier net impact analysis studies done in Hungary by Godfrey, Lázár, O’Leary (1993) and O’Leary (1997) and on the power tables given by Cohen (1988). Details about setting samples are reviewed in Appendix B under the heading “Sample Size Requirements for Power Tests of ALP Effects.”

Relatively large samples were specified for retraining and wage subsidy, because these ALPs each receive a large share of the ALP budget and because these programs treat participants in the greatest variety of different ways. Consequently, there are more patterns of response to sort out in the data, and the reliability of impact estimates is crucial to policymaking. The public service employment program was allocated a relatively small sample largely because of the modest and predictable results found in the earlier studies in Hungary. There was little prior knowledge about the likely impacts of

self-employment assistance. Since so few unemployed persons participate in self-employment, to capture the greatest measurable diversity of results the sample size was set to gather information on the largest possible proportion of program participants in the counties where interviews were conducted.

### **3.2 Site selection**

Samples were drawn and surveys were conducted in 10 Hungarian counties: Budapest, Baranya, Bekes, Borsod-Abaúj-Zemplén, Csongrad, Fejér, Hajdu-Bihar, Pest, Szabolcs, and Vas. Map 3.1 shows the geographic dispersion of these counties around the country. Five of the counties line up to cover the entire eastern border of the country, three cluster in the center of the country dominated by Budapest, one is in the southern-most reaches of the country and the other is in the economically prosperous western region. The 10 counties comprise half of the 20 counties in the country and they span the range of economic diversity.

Table 3.2 presents some comparative summary statistics about the 10 counties involved in the study. Together they encompass nearly two-thirds of the nation's population; they average somewhat lower unemployment than the nation as a whole; they are somewhat more urbanized than the country on average; and they have a slightly smaller proportion of employment in agriculture than the country as a whole.

To provide additional background for site selection and also to give a basis for later benefit-cost analysis, data on participation and spending in the 4 selected ALPs in the 10 counties surveyed is given in Tables 3.3 to 3.8. In Tables 3.3 to 3.5 spending, participants, and spending per participant is given for 1995; tables 3.6 to 3.8 repeat the same presentation for 1996 activity. With reference also to Table 2.3, it can be seen that in 1996 the 10 counties involved in the study spent 62.6 percent of the money spent nationwide on these ALPs. Comparing Table 3.8 with Table 2.5, it can be seen that

average spending across the 10 counties per participant on these 4 ALPs was substantially below the national average.

### **3.3 Sample selection**

Program participant groups were drawn from the outflow of program participation occurring in the second quarter (Q2) of 1996. There was random sampling from the outflow where sample sizes were large enough, with random draws made by birth date. For self-employment which had a small number of participants, the population of all participants was drawn from the first three quarters of 1996. To spread the burden of conducting interviews, the samples were evenly distributed across the counties so that about 10 percent for each program came from each county.

The comparison group was randomly selected, using birth dates, from the 10 counties from the inflow to the register during the second quarter of 1995. As for participant samples, the intention was to draw about the same size in each county so as to evenly spread the burden of the survey work; that is, about 10 percent of the total sample for each program was drawn in each county. It was judged that the second quarter of 1995 was about the time that most people drawn for the participant samples also flowed into the register.

### **3.4 Survey implementation**

Surveys were conducted in April 1997 in 10 counties and 80 local areas within these counties. This spread the burden of survey taking somewhat. The National Labor Center, working together with the 10 county labor centers involved, developed the sampling frame for selecting interview candidates. From the sampling frame, exact sample sizes for each of the four ALPs were determined together with the size for comparison groups.

Administration of the questionnaires for surveys was managed by experts employed by the county and local labor offices in the areas surveyed, and the surveys were conducted during usual visits to labor centers with subjects who had previously been selected and by house-to-house visits by staff of local labor offices during their off-work hours.

Because of the great distinctions identified by gross outcome analysis provided by the performance indicators monitoring system, retraining was divided into two categories, group and individual, for this study.<sup>3</sup> Sample design and evaluation was therefore planned for five participant groups.

### **3.5 Results of the survey effort**

Table 3.9.1 lists the number selected for interviews (including enough extra to allow for a modest non-response rate) and the actual number of respondents interviewed for each of the four ALPs in each of the 10 counties. While there were differing response rates across counties (as seen in Table 3.9.2), overall response rates for ALP participants averaged 81.4 percent, while that for the comparison group was 75.6 percent. Response rates at this level provide a high degree of reliability that properly designed samples accurately reflect population behavior. Table 3.9.3 shows that in terms of age and educational attainment, survey respondents looked much like non-respondents, particularly among participants; among the comparison groups, respondents tended to have slightly higher levels of formal education.

Table 3.10.1 lists the means of descriptive characteristics of the comparison group and each of the ALP participant groups: individual retraining, group retraining, PSE, wage subsidy, and self-employment. Definitions of the descriptive characteristics are given in Table 3.10.2; they include prior average monthly earnings, age, gender, educational attainment, main activity prior to registering as

---

<sup>3</sup>An overview of the performance management system for active labor programs in Hungary is given in O'Leary (1995).

unemployed, occupational category, and household characteristics. Differences between means of the characteristics for the comparison group and each of the ALP groups is presented in Table 3.10.3, where statistical significance of the differences is indicated by asterisks. A quick glance at Table 3.10.3, reveals many more statistically significant differences in characteristics than might be expected due to random factors if the various samples had been drawn from the same population. A similar conclusion can be reached by examining Table 3.10.4 which evaluates cross sample homogeneity using the indicator variables used later in this report to investigate subgroup program impacts.

Simply put, the samples for the ALP participant groups are different from the comparison group. This means that in order to compute program impacts which net out these differences, adjustment methods must be used in estimation.

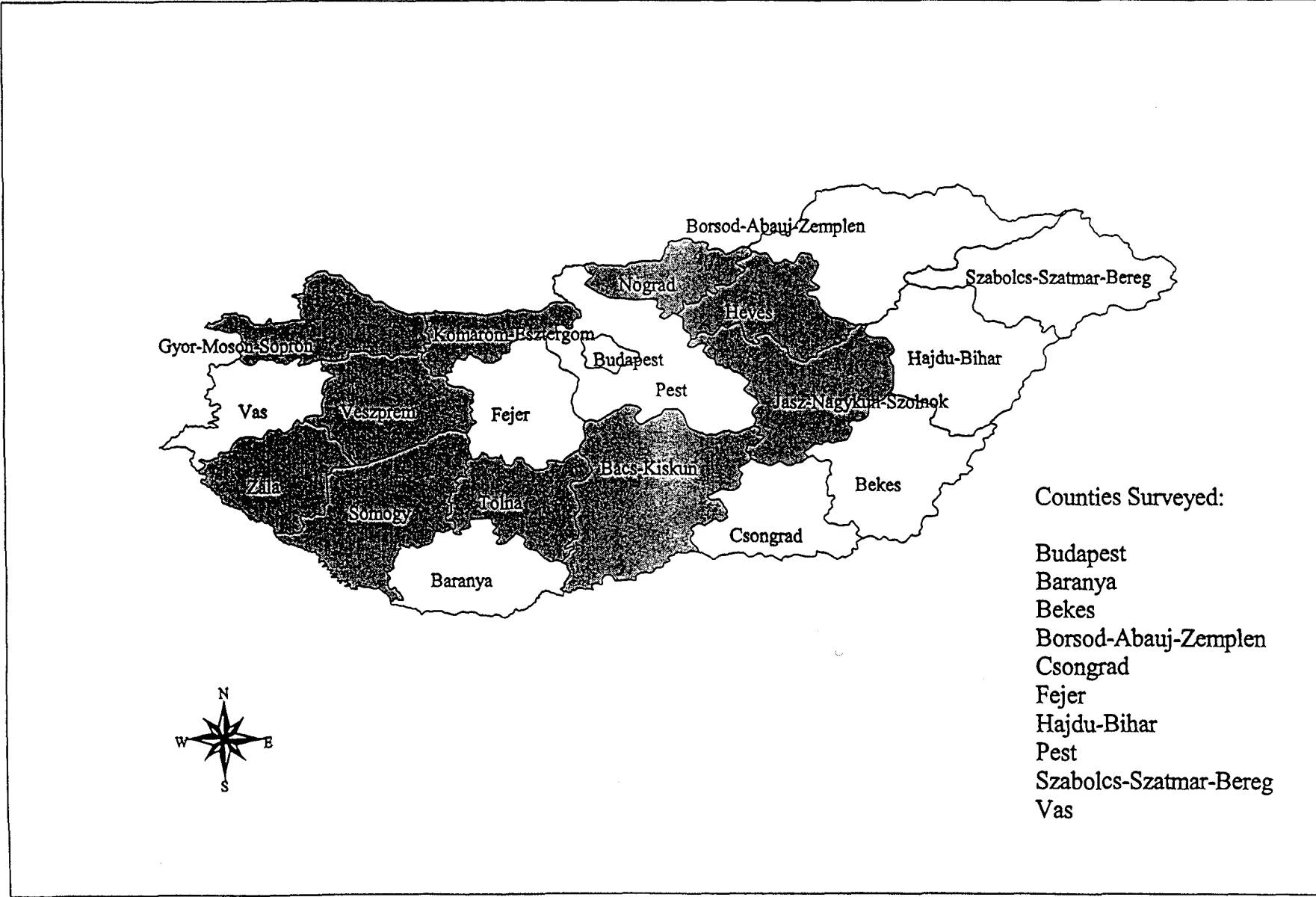
**Table 3.1 Design of the Sampling Process for Evaluating ALPs in Hungary**

	Participants	Comparison Group
Training	3000	
Wage subsidies	1500	
Public service employment	1100	
Self-employment	1400	
Totals	7000	4000

Note: There were 10 counties involved in the survey work: Budapest, Baranya, Bekes, Borsod-Abauj-Zemplen, Csongrad, Fejer, Hajdu-Bihar, Pest, Szabolcs-Szatmár-Bereg, and Vas. The burden of conducting surveys was evenly divided, with each county expected to survey 10 percent of each group.



Map 3.1 Counties Surveyed in Hungary



**Table 3.2 Comparative Statistics for Counties Surveyed in Hungary**

	Population from Census (1,000s)	Share of Hungary Population (%)	Population Density (per km <sup>2</sup> )	Unemployment Rate April, 1997 (%)	Employment in Agriculture in 1995 (% share)	Average Monthly Wage 1996 (Ft)
Budapest	1907	18.7	3632	4.9	0.6	60851
Baranya	409	4.0	93	13.6	10.2	43888
Bekes	403	3.9	71	13.8	12.1	40348
Borsod	746	7.3	103	19.7	5.6	41432
Csongrad	427	4.2	100	9.3	9.6	42794
Fejer	426	4.2	97	9.3	10.3	50666
Hajdu-Bihar	460	4.5	89	15.5	10.1	42458
Pest	985	9.6	154	7.4	7	45899
Szabolcs	572	5.6	96	19.9	6.7	39313
Vas	272	2.7	81	6.7	9.6	41623
Total/Mean	6606	64.7	137	10.2	5.3	49863
Hungary	10212	100.0	110	10.8	6.8	47577

Sources: National Labor Center and CSO, Budapest.

**Table 3.3 Number of Participants in the Four Main ALPs Within the 10 Selected Counties in 1995**

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	15077	2423	1057	414
Baranya	3203	6139	1165	351
Békés	3751	7113	2417	303
Borsod-Abaúj-Zemplén	5197	16324	4567	508
Csongrád	2276	2556	970	281
Fejér	2997	2722	1325	331
Hajdú-Bihar	3627	5771	1649	358
Pest	5331	7855	1645	372
Szabolcs-Szatmár-Bereg	3670	10421	3773	361
Vas	1636	1095	1430	335
Total	46765	62419	19998	3614

Source: National Labor Center

**Table 3.4 Money Allocated to the Four Main ALPs Within the 10 Selected Counties in 1995** (thousands of Ft)

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	1303130	325907	66313	19679
Baranya	119630	312002	70274	15032
Békés	159769	286587	183108	10942
Borsod-Abaúj-Zemplén	207315	874382	201232	24057
Csongrád	95861	248627	92129	11174
Fejér	103688	115040	159784	16024
Hajdú-Bihar	109834	274621	142753	12974
Pest	273369	302896	84698	14812
Szabolcs-Szatmár-Bereg	177156	500010	281212	15224
Vas	40112	66755	95052	12167
Total	2589864	3306827	1376555	152085

Source: National Labor Center

**Table 3.5 Cost per Participant of the Four Main ALPs Within the 10 Selected Counties in 1995 (Ft)**

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	86432	134506	62737	47534
Baranya	37349	50823	60321	42826
Békés	42594	40291	75758	36112
Borsod-Abaúj-Zemplén	39891	53564	44062	47356
Csongrád	42118	97272	94978	39765
Fejér	34597	42263	120592	48411
Hajdú-Bihar	30282	47586	86569	36240
Pest	51279	38561	51488	39817
Szabolcs-Szatmár-Bereg	48271	47981	74533	42172
Vas	24518	60963	66470	36319
Total	55380	52978	68835	42082

Source: National Labor Center

**Table 3.6 Number of Participants in the Four Main ALPs Within the 10 Selected Counties in 1996**

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	16862	7380	744	355
Baranya	2104	6007	831	170
Békés	3002	10728	2288	267
Borsod-Abaúj-Zemplén	5469	29511	3567	403
Csongrád	2073	5467	766	194
Fejér	2499	2954	1150	213
Hajdú-Bihar	3509	7414	1669	336
Pest	7079	8472	728	416
Szabolcs-Szatmár-Bereg	4037	12730	3159	295
Vas	1675	2130	909	257
Total	48309	92793	15811	2906

Source: National Labor Center

**Table 3.7 Money Allocated to the Four Main ALPs Within the 10 Selected Counties in 1996 (thousands of Ft)**

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	407114	728705	118832	21048
Baranya	88146	344204	56468	7988
Békés	92668	641720	184858	12968
Borsod-Abaúj-Zemplén	288704	1590084	331811	22854
Csongrád	53257	399635	79146	7529
Fejér	97724	199282	80522	10334
Hajdú-Bihar	169681	502586	125863	14574
Pest	323993	291847	38624	26224
Szabolcs-Szatmár-Bereg	157032	795403	326439	15827
Vas	58973	143438	64158	13198
Total	1737292	5636904	1406721	152544

Source: National Labor Center

**Table 3.8 Cost per Participant of the Four Main ALPs Within the 10 Selected Counties in 1996 (Ft)**

	Retraining	Public Service Employment	Wage Subsidy	Self-Employment Assistance
Budapest	24144	98741	159720	59290
Baranya	41894	57300	67952	46988
Békés	30869	59817	80795	48569
Borsod-Abaúj-Zemplén	52789	53881	93022	56710
Csongrád	25691	73100	103324	38809
Fejér	39105	67462	70019	48516
Hajdú-Bihar	48356	67789	75412	43375
Pest	45768	34448	53055	63038
Szabolcs-Szatmár-Bereg	38898	62483	103336	53651
Vas	35208	67342	70581	51354
Total	35962	60747	88971	52493

Source: National Labor Center



**Table 3.9.1 Sample Design and Survey Response in Hungary**

County	Group Training			Individual Training		
	Sample	Responses	Rate (%)	Sample	Responses	Rate (%)
Budapest	76	50	65.8	229	153	66.8
Baranya	159	133	83.6	175	138	78.9
Bekes	213	180	84.5	130	115	88.5
Borsod	161	107	66.5	109	88	80.7
Csongrad	221	155	70.1	182	117	64.3
Fejer	141	127	90.1	200	162	81.0
Hajdu	146	124	84.9	151	126	83.4
Pest	176	148	84.1	167	137	82.0
Szabolcs	210	193	91.9	113	101	89.4
Vas	119	104	87.4	99	85	85.9
Total	1546	1321	85.4	1555	1222	78.6
County	Wage Subsidy			Public Service Employment		
	Sample	Responses	Rate (%)	Sample	Responses	Rate (%)
Budapest	106	61	57.5	138	70	50.7
Baranya	199	114	57.3	128	101	78.9
Bekes	149	117	78.5	117	106	90.6
Borsod	248	212	85.5	178	157	88.2
Csongrad	133	110	82.7	115	96	83.5
Fejer	125	112	89.6	144	127	88.2
Hajdu	114	103	90.4	180	169	93.9
Pest	47	40	85.1	142	119	83.8
Szabolcs	176	154	87.5	150	143	95.3
Vas	141	108	76.6	64	52	81.3
Total	1438	1131	78.7	1356	1140	84.1
County	Self-employment			Comparison Group		
	Sample	Responses	Rate (%)	Sample	Responses	Rate (%)
Budapest	157	102	65.0	502	296	59.0
Baranya	89	77	86.5	400	312	78.0
Bekes	153	132	86.3	394	303	76.9
Borsod	180	162	90.0	520	434	83.5
Csongrad	100	80	80.0	353	245	69.4
Fejer	98	85	86.7	399	302	75.7
Hajdu	134	121	90.3	482	393	81.5
Pest	129	119	92.2	479	385	80.4
Szabolcs	102	92	90.2	499	422	84.6
Vas	115	97	84.3	387	246	63.6
Total	1257	1067	84.9	4415	3338	75.6

**Table 3.9.2 Sample Sizes and Survey Response Rates in Hungary**

County	ALPs Sample	ALPs Responses	Response Rate (%)	Comparison Sample	Comparison Responses	Response Rate (%)
Budapest	706	436	61.8	502	296	59.0
Baranya	750	563	75.1	400	312	78.0
Bekes	762	650	85.3	394	303	76.9
Borsod	876	726	82.9	520	434	83.5
Csongrad	751	558	74.3	353	245	69.4
Fejer	708	613	86.6	399	302	75.7
Hajdu	725	643	88.7	482	393	81.5
Pest	661	563	85.2	479	385	80.4
Szabolcs	751	683	90.9	499	422	84.6
Vas	538	446	82.9	387	246	63.6
Total	7228	5881	81.4	4415	3338	75.6

**Table 3.9.3 Comparison of Respondents and Non-Respondents Among the ALP Participant and Comparison Group Samples According to Their Composition by Age and Education in Percentage Terms**

**Combined participant groups:**

	<b>Age groups:</b>	<b>&lt; 20</b>	<b>20-29</b>	<b>30-39</b>	<b>40-49</b>	<b>50+</b>	<b>total</b>
Respondents		4.1	43.2	24.0	22.2	6.5	100.0
Non-respondents		4.2	43.7	23.2	22.1	6.8	100.0

	<b>Level of education:</b>	<b>max 8 classes</b>	<b>vocational school</b>	<b>secondary school</b>	<b>higher educ.</b>	<b>total</b>
Respondents		24.4	32.4	37.2	6.0	100.0
Non-respondents		29.5	28.2	36.3	5.9	100.0

**Combined comparison groups:**

	<b>Age groups:</b>	<b>&lt; 20</b>	<b>20-29</b>	<b>30-39</b>	<b>40-49</b>	<b>50+</b>	<b>total</b>
Respondents		3.1	38.6	24.0	24.6	9.8	100.0
Non-respondents		3.3	40.6	23.9	22.1	10.0	100.0

	<b>Level of education:</b>	<b>max 8 classes</b>	<b>vocational school</b>	<b>secondary school</b>	<b>higher educ.</b>	<b>total</b>
Respondents		34.8	41.1	21.2	2.9	100.0
Non-respondents		39.8	35.8	21.5	4.3	100.0

**Table 3.10.1 Means of Exogenous Characteristics for the Comparison Group and ALP Participants in Hungary**

Characteristic	Comparison Group	Individual Retraining	Group Retraining	Public Service Employment	Wage Subsidy	Self-employment
PRIORWAGE	15170	12064	11138	12646	12828	26838
AGE	33.91	27.83	27.93	36.20	33.79	36.44
MALE	0.56	0.49	0.48	0.66	0.56	0.62
EDELEM	0.35	0.16	0.24	0.47	0.26	0.08
EDVOC	0.41	0.29	0.24	0.30	0.43	0.38
EDGYM	0.21	0.49	0.46	0.20	0.27	0.43
EDCOLL	0.03	0.06	0.06	0.03	0.04	0.11
WASWORKING	0.22	0.06	0.02	0.63	0.80	0.74
WASUNEMP	0.67	0.58	0.63	0.35	0.18	0.26
WASSCHOOL	0.09	0.32	0.29	0.02	0.02	0.00
WASOTHER	0.02	0.04	0.07	0.00	0.00	0.00
BLUECOLLAR	0.81	0.60	0.62	0.82	0.77	0.63
MARRIED	0.62	0.41	0.40	0.59	0.60	0.82
KIDS_LE6	0.32	0.24	0.30	0.31	0.25	0.37
DEPENDENTS	0.78	0.72	0.80	0.87	0.82	0.86
Sample Size	3338	1222	1321	1140	1131	1067

**Table 3.10.2 Definitions of Descriptive Characteristics for ALP Participants and Comparison Group Members**

Variable	Description
PRIORWAGE	Average monthly earnings before unemployment
AGE	Age in years as of April 1, 1997
MALE	Gender: male=1, female=0
EDELEM	Education level: 8 or fewer years of formal schooling, 1=yes, 0=no
EDVOC	Education level: Secondary, 1=yes, 0=no
EDGYM	Education level: Vocational, 1=yes, 0=no
EDCOLL	Education level: Higher education, 1=yes, 0=no
WASWORKING	Earlier employment status: Employed, 1=yes, 0=no
WASUNEMP	Earlier employment status: Lost employment, 1=yes, 0=no
WASSCHOOL	Earlier employment status: School leaver, 1=yes, 0=no
WASOTHER	Earlier employment status: Other, 1=yes, 0=no
BLUECOLLAR	Occupation of wanted job, blue collar, 1=yes, 0=no
MARRIED	Spouse living in same household, 1=yes, 0=no
KIDS_LE6	Number of children in household age 0-6
DEPENDENTS	Number of children in household age 6+ plus other dependents

**Table 3.10.3 Unadjusted Differences from the Comparison Group Mean for ALPs in Hungary**

Characteristic	Comparison Group	Individual Retraining	Group Retraining	Wage Subsidy	Public Service Employment	Self-employment
PRIORWAGE	15170	-3107**	-4033**	-2342**	-2524**	11668**
AGE	33.91	-6.08**	-5.98**	-0.12	2.29**	2.53**
MALE	0.56	-0.07**	-0.08**	-0.00	0.10**	0.06**
EDELEM	0.35	-0.19**	-0.10**	-0.08**	0.12**	-0.27**
EDVOC	0.41	-0.12**	-0.17**	0.02	-0.11**	-0.03
EDGYM	0.21	0.27**	0.25**	0.05**	-0.01	0.22**
EDCOLL	0.03	0.03**	0.03**	0.01**	0.00	0.08**
WASWORKING	0.22	-0.16**	-0.20**	0.58**	0.41**	0.52**
WASUNEMP	0.67	-0.09**	-0.04**	-0.49**	-0.32**	-0.41**
WASSCHOOL	0.09	0.23**	0.20**	-0.07**	-0.07**	-0.09**
WASOTHER	0.02	0.02**	0.05**	-0.02**	-0.02**	-0.02**
BLUECOLLAR	0.81	-0.22**	-0.20**	-0.04**	0.01	-0.19**
MARRIED	0.62	-0.21**	-0.22**	-0.02	-0.03**	0.20**
KIDS_LE6	0.32	-0.09**	-0.02	-0.08**	-0.01	0.05**
DEPENDENTS	0.78	-0.05*	0.03	0.05	0.09**	0.08**
Sample Size	3338	1222	1321	1131	1140	1067

\*Difference significant at the 90 percent level of confidence in a two tailed test.

\*\*Difference significant at the 95 percent level of confidence in a two tailed test.

**Table 3.10.4 Proportions in Subgroup Categories for Various Samples**

	Full Comparison Group	Individual Retraining	Group Retraining	Public Service Employment	Wage Subsidies	Self- Employment
MALE - Respondent is male	0.555	0.490**	0.476**	0.665	0.561	0.619**
AGELT30 - Age ≤ 30	0.415	0.662**	0.649**	0.329	0.407	0.260**
AGE3044 - Age between 30 and 44	0.383	0.267**	0.277**	0.394	0.399	0.544**
AGEGE45 - Age is 45 or over	0.201	0.071**	0.074**	0.277	0.194	0.196
EDELEM - 8 years of schooling	0.345	0.164**	0.246**	0.468**	0.264**	0.078**
EDVOC - Vocational	0.412	0.295**	0.244**	0.303	0.425	0.388
EDGYM - General secondary	0.213	0.478**	0.453**	0.197	0.269**	0.427**
EDCOLL - Some higher education	0.030	0.063**	0.057**	0.032	0.042*	0.107**
BLUECOL - Blue collar occupation	0.814	0.604**	0.623**	0.819	0.771**	0.627**
LOST - Earlier lost job	0.671	0.586**	0.636**	0.348**	0.181**	0.264**
SCHOOL - Earlier school leaver	0.087	0.307**	0.279**	0.022**	0.024**	0.001**
OTHER - Earlier other	0.242	0.107**	0.085**	0.630**	0.796**	0.735**
LTU - Long-term unemployed	0.218	0.180**	0.213	0.483**	0.299**	0.052**
LOWURATE - Low unemployment area	0.269	0.299*	0.231**	0.212**	0.179**	0.297*
MEDURATE - Med unemployment area	0.351	0.442**	0.446**	0.380*	0.401**	0.352
HIURATE - High Unemployment area	0.380	0.259**	0.323**	0.408*	0.420**	0.351*
Baranya - County 2	0.096	0.115*	0.096	0.087	0.099	0.071**
Bekes - County 4	0.094	0.098	0.137**	0.097	0.106	0.125**
Borsod - County 5	0.130	0.073**	0.082**	0.131	0.194**	0.150
Csongrad - County 6	0.074	0.098**	0.117**	0.085	0.094**	0.077
Fejer - County 7	0.088	0.130**	0.095	0.111**	0.102	0.080
Hajdu - County 9	0.119	0.104	0.092**	0.147**	0.094**	0.112
Pest - County 13	0.111	0.111	0.114	0.107	0.037**	0.111
Szabolcs - County 15	0.130	0.082**	0.149	0.130	0.135	0.088**
Vas - County 18	0.071	0.065	0.080	0.046**	0.090*	0.092**
Budapest - Capital City 1	0.087	0.123**	0.037	0.060**	0.052**	0.094
Sample Size	3214	1150	1254	1088	1091	1044

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.





#### **4. Evaluation of Retraining**

Retraining of unemployed workers means additional short-term job skill training to make job seekers ready to fill job openings in the region. Candidates may be either unemployed, expected to be unemployed, currently involved in public service employment, or recent school graduates. Retraining participants receive a stipend which has a 10 percent premium over the unemployment compensation benefit. The direct costs of retraining are also paid.

In this evaluation, we focus on retraining of the unemployed done either through individual plans and agreements or in groups through classes specified by the local or county labor center. We first proceed through a systematic evaluation of individual retraining and then turn to an examination of group retraining.

In recent years retraining and PSE have received the largest share of spending on decentralized ALPs. As seen in Table 2.3.1, retraining had the largest share in years up until 1996, when PSE received about one-third more in funding than did retraining. Table 2.4 shows that retraining also ranks near the top in the number of program participants.

The exposition of impact estimates for individual and group retraining in Hungary presented in this chapter proceed in the following way: examination of the samples for analysis; a report on net impacts for the main employment and earnings measures; a subgroup analysis of retraining impacts on employment and earnings; a net impact evaluation of various features of retraining; the timing of response to retraining; and finally the impact on employment, unemployment, and unemployment compensation.

##### **4a.1 The samples for analysis of individual retraining**

The differences between the individual retraining participant sample and the comparison sample are fully revealed in Table 4a.1. Ignoring the county variables listed in the table, there are 42

descriptive characteristics listed for comparing the samples. The asterisks indicate that there are significant differences across the samples in 33 of the 42 characteristics; the samples are clearly different. In contrast to the comparison group, the individual retraining sample includes participants who had lower prior average monthly earnings, are younger, more likely to be female, more educated, more likely to have been a recent graduate, more likely to have been in a white collar occupation, and less likely to be married with dependents than the general population of registered unemployed.

#### **4a.2 Impact estimates of individual retraining on employment and earnings**

Impact estimates presented in this section focus on two main outcomes: employment and earnings. Various delineations of these are presented. Four measures of employment are examined—a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey—as well as two earnings variables indicating usual monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date. The six outcome variables are

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date.

Table 4a.2.1 presents impact estimates for the effect of individual retraining on the various measures of employment and earnings in Hungary. Estimates for the impact on each separate outcome measure were computed in five separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which are not adjusted for observable differences between the participant and comparison group samples. The

second set of results are net impact estimates which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>4</sup> The third set of results were computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results are net impact estimates which were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in Appendix B.<sup>5</sup> Essentially, the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics. The fifth estimation methodology employed is labeled in Table 4a.2.1 as “ES Interact.” That label refers to a multiple regression technique which estimates net impacts for the ALP while accounting for the fact that many ALP participants also made use of the services of the ES.

The most obvious overall result in Table 4a.2.1 is that the unadjusted impact estimates are very close to the adjusted results. This is at odds with results O’Leary (1997) found for earlier net impact estimates of retraining impacts, where the unadjusted impact estimates were far larger than the estimates adjusted for observable characteristics. Based on the ES interaction net impact estimates, individual retraining in Hungary is estimated to raise the probability of ever finding a non-subsidized job (EMPLOY1) by 11 percentage points. This is a large, statistically significant result. The estimated net impact of retraining on being in a non-subsidized job on the survey date (EMPLOY2) is 9 percentage points. The fact of continued employment through the survey date suggests that the effect of retraining is somewhat durable. While many features about the Hungarian labor market have changed since the earlier studies were done, it is possible that the convergence in gross and net impact estimates of program impact is due to changes in ALP management practices which have resulted since 1994 in Hungary, when nationwide implementation of an outcome based performance management system was

---

<sup>4</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

<sup>5</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 4a.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.

introduced (O’Leary 1995). The risk of “creaming” in ALP enrollment and measures to counteract it have also been discussed among employment policymakers in Hungary (O’Leary 1996).<sup>6</sup>

On the broader measures of reemployment in any job, including subsidized ones, the net impact estimates are again large and significant. The impact of individual retraining on ever getting into any job (EMPLOY1) is 15 percentage points, while the impact on being in any job on the survey date (EMPLOY2) is also 15 percentage points.

Retraining also had a net impact on average monthly earnings, with employed participants earning 1,603 Ft more in the average month than employed comparison group members on the first job (EARN1). However, the earnings advantage diminished by the survey date.

#### **4a.3 A subgroup analysis of individual retraining impacts**

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups (like those without a specialization or older unemployed persons.) Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously, that is, retraining impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

---

<sup>6</sup>Creaming refers to the practice of program administrators selecting the most qualified candidates for program participation so as to increase measured program success. The analogy is to milk where the richest part, the cream, floats to the top and can be skimmed off. Creaming is an issue in operating labor market programs because if only the most able people get reemployment assistance, then the benefit to society of the programs is not as great as it might be otherwise. Highly qualified program entrants have a good chance of becoming reemployed even without the services offered in the program, while for less qualified applicants the program services might be the only realistic path to employment.

Table 4a.3 presents net impact estimates of retraining by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation, whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to entering retraining), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

Individual retraining provides a statistically significantly larger net gain for females than males in ever getting into any new job. While not statistically significant, there is also a gain for females in ever getting into a new non-subsidized job. However the impact of individual retraining on being in a non-subsidized job on the survey date is identical across the genders, and individual retraining appears to provide a larger boost to earnings for males compared to females.

While there are no statistically significant differences in impacts across age groups, individual retraining appears to produce reemployment gains most for those in the older age group, aged 45 years and over. In terms of being in a non-subsidized job on the survey date, the net impact of individual retraining for the oldest group was 12.6 percentage points, while it was 8.1 percentage points for the youngest group (30 or under), and 7.6 percentage points for the middle age group (31 to 44). On the other hand, individual retraining boosted reemployment earnings more for younger participants than it did for the older participants. From Table 3.10.4 we can see that while the comparison group is quite balanced in terms of age, 66.2 percent of the participants in individual retraining were 30 years of age or less.

The only statistically significant difference across educational attainment groups for individual retraining was that the earnings impact on those with some higher education was much larger than that for those with a secondary vocational background. While those with a vocational education gained less compared to others in terms of earnings, they tended to do somewhat better than the other groups in terms of employment. In terms of being employed on the survey date in a non-subsidized job (EMPLOY2), the impact for the vocational schooling group was 10.1 percentage points, while it was

9.8, 8.6 and 6.6 percentage points for the college trained, elementary education, and general secondary education groups, respectively.

Two occupational categories were established for the subgroup analysis. The greatest benefit from retraining was experienced by those in the blue collar occupation group. However, only in one case, average monthly earnings on the survey date, was the larger impact for this group significantly different from that for the white collar occupation group. In terms of getting employed in a non-subsidized job, individual retraining boosted blue collar workers success by around twice as much as for white collar workers. In terms of being employed on the survey date, the impact for blue collar workers was 9.8 percentage points, while it was 5.1 percentage points for white collar workers.

In terms of reemployment, those who lost their prior job had statistically significant and larger gains from participating in individual retraining than did those who were separated from their job for other reasons. On the important outcome, employed in a non-subsidized job on the survey date (EMPLOY2), those who lost their prior job had individual retraining boost their reemployment success by 14.4 percentage points while it actually reduced the success of recent graduates by 7.7 percentage points and by 8.7 percentage points for those who were separated from their prior jobs for other reasons.

There were no statistically significant differences in impacts of individual retraining on long-term unemployed persons compared with those who were not long-term unemployed. The impact on employment in a non-subsidized job on the survey date was virtually identical at about 8.5 percentage points for each of the two groups. While not statistically significantly different, there did appear to be a larger net impact on reemployment earnings for those who had been long-term unemployed and participated in individual retraining.<sup>7</sup>

---

<sup>7</sup>Counties with low unemployment had rates of 9 percent or less in 1996; counties with high unemployment had rates of 15 percent or more. The other counties were coded as having medium levels of unemployment. These categories correspond to those given in Map 3.1.

In terms of the impact of individual retraining on getting into a non-subsidized job, there were no statistically significant differences across regions grouped by low, medium, or high unemployment rate, but there were some differences on earnings. Generally, individual retraining tended to boost reemployment more where unemployment was high, but individual retraining tended to boost earnings more where unemployment was low. In terms of being in a non-subsidized job on the survey date, the impacts were 6.6, 8.7, and 10.2 percentage points in low, medium, and high unemployment rate areas, respectively. While in terms of earnings on the current job, the impacts were 2,639, 621, and 338 Ft per month in low, medium, and high unemployment rate areas, respectively.

#### **4a.4 Net impacts of various individual retraining program features**

Since individual retraining provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of individual retraining yields different impacts on the outcome measures for employment and earnings. Table 4a.4 presents net impact estimates of individual contribution to retraining costs, the duration of individual retraining, the organizer and intensity of individual retraining, and the category of retraining. The methodology used to compute these impacts is summarized in Appendix B under the heading “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of Table 4a.4 restates the means of the outcome variables for the matched pairs comparison group, and the second row gives the net impact estimated from matched pairs methodology.

Individual contributions to retraining costs were determined prior to job search and are therefore exogenous to reemployment and reemployment earnings. The great majority (79.2 percent) of individual retraining participants contributed monetarily to retraining costs. The impacts on reemployment were larger for those who contributed financially to retraining, than for those who did not contribute. The difference between the groups was statistically significant for the outcome “ever reemployed in any job.” For being employed in a non-subsidized job on the survey date (EMPLOY2), those who contributed had their success boosted 10.4 percentage points, while those making no

contributions gained 6.2 percentage points. While not statistically significantly different, those who contributed also had larger gains in average monthly earnings on the survey date.

Five categories of individual retraining duration were examined: less than 1 month, 1 to less than 3 months, 3 to less than 6 months, 6 to less than 12 months, and 12 or more months. The only statistically significant differences across groups in the employment outcomes was for currently employed in any job (EMPLOYYS2), where those with 6 to 12 months retraining had a significantly smaller impact than those with less than 3 months of retraining. The greatest boost to employment and earnings on a non-subsidized job at the survey date was for individual retraining which was between 1 and 3 months in duration. It would appear that short-term skill retraining designed to fill gaps in occupational competencies has the greatest positive impact on employment and earnings.

In addition to investigating the effect of individual retraining duration with categorical variables, models which examine the intensity of individual retraining and the nature of the retraining provider were also estimated. Data was available for whether retraining was for more than 20 hours per week or not, and whether training was provided in one of Hungary's regional retraining centers. (There are about a dozen regional retraining centers situated around Hungary. Retraining may also take place on other government premises, in existing educational institutions, or at privately owned locations.) Across the four categories of retraining site and intensity, only one statistically significant difference resulted in the employment outcomes, and there were no differences in the earnings outcomes. Individual retraining of less than 20 hours per week outside regional retraining centers had a greater impact on being in any job on the survey date than did training with more hours per week outside the regional retraining centers. Such more effective retraining would include less than 20 hours per week in supported higher education. While not statistically significant, in terms of the impact on employment and earnings in a non-subsidized job, training at regional retraining centers involving less than 20 hours per week would appear to have some advantage over other modes.

Data were available about the category of individual retraining. There were five possibilities: listed in the national register of training; narrow in scope; language course; remedial education; and



other. The last category, other, included only 2.4 percent of all those in the individual retraining participants group, but it had large and positive employment and earnings impacts which were statistically significant and greater than impacts in almost any other category. Consistent negative employment impacts were found for language retraining. This surprising result may be due to the short-term period for follow-up after retraining. Language courses are popular with recent secondary school graduates who plan higher education and will not exhibit real employment effects for several years after the language course. The negligible effect observed for remedial education in reading and arithmetic is most certainly due to the minuscule sample size of 0.3 percent of participants. The main results for this category are that individual retraining which is narrow in scope or listed in the national register of training has a positive, sizeable, and significant effect on employment and earnings.

#### **4a.5 The timing of response to individual retraining**

Two tables presented in this section show the timing of exit from the unemployment register to reemployment. They are used to illustrate the pattern of the reemployment effects of individual retraining. Table 4a.5.1 compares exits from the unemployment register for retraining participants and a matched pairs comparison group for a maximum 39-month time period. For both groups, “month 1” is the first month after registering as unemployed. In the analysis presented here, exit from the unemployment register to reemployment is defined to occur when the first new job begins after having registered as unemployed during the reference spell of joblessness. Referring back to Table 3.9.1 for retraining, it can be seen that the initial risk sets are slightly smaller than the full sample size of 1,222 individual retraining participants and the equal number of matched pairs observations drawn from the comparison group. This is because for a small number of observations in the sample, the recorded date of the first new job is before the recorded start date of the unemployment spell.

Table 4a.5.1 shows how many people started new non-subsidized jobs from the individual retraining and matched pairs comparison group in each month since they registered as unemployed, the proportion who started jobs (the exit rate from unemployment to employment) and the difference between participant and comparison group members in the rate of exit. This last quantity is listed in the

right-most column and is also the retraining impact on the exit rate for a given month. Individual retraining participants were seen to exit at a higher rate in every month beginning with the 24th month after registering as unemployed. Furthermore, in all but one of these months the difference was statistically significant. The cumulative individual retraining impact on the exit rate for the groups examined is 9.21 percentage points, which is quite similar to the estimate of ever reemployed in a non-subsidized job (EMPLOY1) given in Table 4a.2.1 despite the somewhat tailored sample used to form the initial risk sets.

To sharpen the contrast in examining exits from unemployment to non-subsidized jobs, in Table 4.5.2 we compare exits from the same comparison risk set examined in Table 4.5.1 starting at the date of registering as unemployed with exits of retrainees starting at the time of completing retraining. The risk set for retrainees is limited to those who had a date for leaving the ALP before the date recorded for their first reemployment. As expected, the retraining impact on reemployment in a non-subsidized job is large and statistically significant immediately. The large positive effect gradually diminishes and becomes negative in the eleventh month.

#### **4a.6 Impact of individual retraining on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>8</sup> Responses to this question allowed independent estimates of the retraining impact on months in a non-subsidized job (EMMONTHS), months in any job (EMSMOTH), and months unemployed (UNMONTHS) since the most recent ES registration.

In contrasting the employment and unemployment months of individual retraining participant and comparison group members, it should be recalled that the former group spent the retraining period unavailable for reemployment or full-time job search and that differences in durations between these two groups will be influenced by this fact. This factor is less important for examining impacts on

---

<sup>8</sup>For retraining it was survey question 13 in record type A and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

outcomes summarized in Table 4a.2.1. Employment rates and usual monthly earnings are less affected by the retraining time out of the labor market. Estimates are presented using matched pairs, regression adjustment, and full interaction regression methods. There are no statistically significant differences in the results across the methods of estimation. As before, we focus on the ES interaction results, which are based on regression models. The estimates given in Table 4a.6 indicate that individual retraining participants spent 0.88 fewer months employed in a non-subsidized job, 0.30 fewer months employed in any job, and 2.93 fewer months unemployed than the comparison group during the observation period.

Self-reported data is also available to estimate the impact of individual retraining on months of unemployment compensation (UCMONTHS) and the amount of UC drawn.<sup>9</sup> Survey respondents were asked about their benefit receipt in each of the 16 months between January 1996 and April 1997.<sup>10</sup> Table 4a.6 shows that retraining participants drew 0.68 fewer months of UC and 7,580 Ft less in UC benefits than did members of the comparison group.

---

<sup>9</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data (directly from the UC register, which recorded the average UC for months compensated in a calendar year) provided point estimates virtually identical to those reported.

<sup>10</sup>For retraining, it was survey question 13.2 in record type A and for the comparison group it was survey question 11.2 in record type E (see Appendix A).

**Table 4a.1 Comparison Group and Individual Retraining Means and Differences on Exogenous Descriptive Characteristics**

	Comparison Group	Individual Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	15170	12063	-3107**	7.10	3338	1222
AGE	33.91	27.83	-6.08**	17.62	3338	1222
MALE	0.56	0.49	-0.07**	4.00	3338	1222
EDELEM	0.35	0.16	-0.19**	12.35	3338	1222
EDVOC	0.41	0.29	-0.12**	7.61	3338	1222
EDGYM	0.21	0.49	0.27**	18.89	3338	1222
EDCOLL	0.03	0.06	0.03**	5.25	3338	1222
EARLY1	0.22	0.06	-0.16**	12.38	3338	1222
EARLY2	0.67	-0.09	-0.09**	5.67	3338	1222
EARLY3	0.09	0.23	0.23**	19.61	3338	1222
EARLY4	0.02	0.02	0.02**	3.65	3338	1222
BLCOLL1	0.86	0.80	-0.06	1.28	332	72
WHCOLL1	0.14	0.19	0.06	1.28	332	72
BLCOLL2	0.81	0.60	-0.22**	15.44	3338	1222
WHCOLL2	0.19	0.40	0.22**	15.44	3338	1222
LEGIS1	0.03	0.03	0.00	0.50	2607	687
PROF1	0.02	0.04	0.04**	5.61	2607	687
TECH1	0.06	0.08	0.08**	6.62	2607	687
CLERK1	0.06	0.07	0.07**	6.59	2607	687
SERV1	0.13	0.03	0.03*	1.81	2607	687
SKILLAG1	0.03	-0.03	-0.03**	4.03	2607	687
CRAFT1	0.28	-0.12	-0.12**	6.17	2607	687
MACH1	0.12	0.01	0.01	0.53	2607	687
ELEM1	0.26	-0.08	-0.08**	4.62	2607	687
ARMED1	0.00	0.00	0.00	1.16	2607	687

Table 4a.1 (Continued)

	Comparison Group	Individual Retraining	Difference	t-statistic on Difference	Comparison Sample Size	Participant Sample Size
LEGIS2	0.02	0.02	0.00	0.38	3337	1215
PROF2	0.03	0.06	0.03**	4.77	3337	1215
TECH2	0.06	0.13	0.06**	7.10	3337	1215
CLERK2	0.08	0.20	0.12**	11.26	3337	1215
SERV2	0.12	0.15	0.03**	2.55	3337	1215
SKILLAG2	0.03	0.01	-0.01**	2.78	3337	1215
CRAFT2	0.29	0.19	-0.10**	6.68	3337	1215
MACH2	0.10	0.10	0.00	0.29	3337	1215
ELEM2	0.26	0.13	-0.14**	9.72	3337	1215
ARMED2	0.00	0.00	0.00	0.15	3337	1215
SPOUSE1	0.62	0.41	-0.21**	12.70	3214	1150
SPOUSE2	0.64	0.08	0.08**	3.42	1972	466
HHOTHER	0.46	0.44	0.44**	15.27	3338	1222
PENSION	0.32	-0.02	-0.02	0.94	3338	1222
KIDS06	0.32	-0.09	-0.09**	4.23	3338	1222
KIDS6	0.78	-0.05	-0.05*	1.82	3338	1222
HHEARN	38752	8120	8120**	6.92	3338	1222
COUNTY1	0.09	0.13	0.04**	3.67	3338	1222
COUNTY2	0.09	0.11	0.02*	1.95	3338	1222
COUNTY4	0.09	0.09	0.00	0.35	3338	1222
COUNTY5	0.13	0.07	-0.06**	5.47	3338	1222
COUNTY6	0.07	0.10	0.02**	2.47	3338	1222
COUNTY7	0.09	0.13	0.04**	4.17	3338	1222
COUNTY9	0.12	0.10	-0.01	1.38	3338	1222
COUNTY13	0.12	0.11	0.00	0.30	3338	1222
COUNTY15	0.13	0.08	-0.04**	4.12	3338	1222
COUNTY18	0.07	0.07	0.00	0.48	3338	1222

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 4a.1.1 Description of Variables in Table 4a.1**

Variable	Description
AVGEARN	Average monthly earnings before unemployment
AGE	Age in years as of April 1, 1997
MALE	Gender: male=1, female=0
EDELEM	Education level: Less than 8 classes, 1=yes, 0=no
EDVOC	Education level: Vocational, 1=yes, 0=no
EDGYM	Education level: Secondary, 1=yes, 0=no
EDCOLL	Education level: Higher education, 1=yes, 0=no
EARLY1	Earlier employment status: Employed, 1=yes, 0=no
EARLY2	Earlier employment status: Lost employment, 1=yes, 0=no
EARLY3	Earlier employment status: School leaver, 1=yes, 0=no
EARLY4	Earlier employment status: Other, 1=yes, 0=no
BLCOLL1	Prior job category blue collar, 1=yes, 0=no
WHCOLL1	Prior job category white collar, 1=yes, 0=no
BLCOLL2	Wanted job category blue collar, 1=yes, 0=no
WHCOLL2	Wanted job category white collar, 1=yes, 0=no
LEGIS1	Occupation of last job, legislators, managerial, 1=yes, 0=no
PROF1	Occupation of last job, professionals, 1=yes, 0=no
TECH1	Occupation of last job, technicians, 1=yes, 0=no
CLERK1	Occupation of last job, clerks, 1=yes, 0=no
SERV1	Occupation of last job, service workers, 1=yes, 0=no
SKILLAG1	Occupation of last job, skilled agricultural, 1=yes, 0=no
CRAFT1	Occupation of last job, craft workers, 1=yes, 0=no
MACH1	Occupation of last job, machine operators, 1=yes, 0=no
ELEM1	Occupation of last job, elementary, 1=yes, 0=no
ARMED1	Occupation of last job, armed forces, 1=yes, 0=no
LEGIS2	Occupation of wanted job, legislators, managerial, 1=yes, 0=no
PROF2	Occupation of wanted job, professionals, 1=yes, 0=no
TECH2	Occupation of wanted job, technicians, 1=yes, 0=no
CLERK2	Occupation of wanted job, clerks, 1=yes, 0=no
SERV2	Occupation of wanted job, service workers, 1=yes, 0=no
SKILLAG2	Occupation of wanted job, skilled agricultural, 1=yes, 0=no
CRAFT2	Occupation of wanted job, craft workers, 1=yes, 0=no
MACH2	Occupation of wanted job, machine operators, 1=yes, 0=no
ELEM2	Occupation of wanted job, elementary, 1=yes, 0=no
ARMED2	Occupation of wanted job, armed forces, 1=yes, 0=no
SPOUSE1	Spouse living in same household, 1=yes, 0=no
SPOUSE2	Spouse employed, 1=yes, 0=no
HHOTHER	Other household members (count)
PENSION	Pensioners in the household (count)
KIDS06	Number of children in household age 0-6
KIDS6	Number of children in household age 6+
HHEARN	Net monthly household earnings

Table 4a.1.1 (Continued)

---

Variable	Description
COUNTY1	County code 1, 1=yes, 0=no
COUNTY2	County code 2, 1=yes, 0=no
COUNTY4	County code 4, 1=yes, 0=no
COUNTY5	County code 5, 1=yes, 0=no
COUNTY6	County code 6, 1=yes, 0=no
COUNTY7	County code 7, 1=yes, 0=no
COUNTY9	County code 9, 1=yes, 0=no
COUNTY13	County code 13, 1=yes, 0=no
COUNTY15	County code 15, 1=yes, 0=no
COUNTY18	County code 18, 1=yes, 0=no

---

Note: These descriptions also apply to variables used throughout this report, including variables given in tables 4b.1, 6.1, 7.1, and 8.1.

**Table 4a.2.1 Individual Retraining Impact Estimates on Employment and Earnings**

	Control Group	Individual Retraining	Difference	t-statistic on Difference	Control Sample	Participant Sample
<b>Unadjusted</b>						
EMPLOY1	0.54	0.63	0.09**	5.20	3338	1222
EMPLOY1S1	0.55	0.67	0.11**	6.88	3338	1222
EMPLOY2	0.43	0.53	0.11**	6.36	3338	1222
EMPLOY2S2	0.44	0.59	0.15**	9.09	3338	1222
EARN1	18202	20253	2003**	4.97	1734	732
EARN2	22129	23538	1347**	2.88	1426	692
<b>Regression Adjusted</b>						
EMPLOY1	0.54		0.10**	5.88	3213	1143
EMPLOY1S1	0.55		0.14**	7.94	3213	1143
EMPLOY2	0.43		0.09**	5.40	3213	1143
EMPLOY2S2	0.44		0.14**	8.29	3213	1143
EARN1	18202		1649**	3.78	1681	682
EARN2	22129		1123**	2.32	1382	642
<b>Full Interaction Regression</b>						
EMPLOY1	0.54		0.09	0.35	3213	1143
EMPLOY1S1	0.55		0.13	0.72	3213	1143
EMPLOY2	0.43		0.09	0.17	3213	1143
EMPLOY2S2	0.44		0.13	0.74	3213	1143
EARN1	18202		1817	0.17	1681	682
EARN2	22129		1699	0.75	1382	642
<b>Matched Pairs</b>						
EMPLOY1	0.52	0.62	0.11**	5.27	1215	1215
EMPLOY1S1	0.53	0.67	0.13**	6.68	1215	1215
EMPLOY2	0.43	0.53	0.10**	5.14	1215	1215
EMPLOY2S2	0.44	0.59	0.15**	7.51	1215	1215
EARN1	18717	20253	1536**	2.23	612	727
EARN2	21771	23538	1767**	2.83	505	687
<b>ES Interact</b>						
EMPLOY1	0.54		0.11*	1.76		
EMPLOY1S1	0.55		0.15**	5.38		
EMPLOY2	0.43		0.09*	1.71		
EMPLOY2S2	0.44		0.15**	6.28		
EARN1	18202		1603*	1.82		
EARN2	22129		1149	0.06		
Sample	3338	1222				

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment.

EMPLOY1S1 - Ever reemployed in any job or self-employment.

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date.

EMPLOY2S2 - Employed in any job or self-employment on the survey date.

EARN1 - Average monthly earnings at the start of the first new job or self-employment.

EARN2 - Average monthly earnings from the job or self-employment on the survey date.



**Table 4a.2.2 Treatment and Comparison Group Differences for Exogenous Variables  
Matched Pair Analysis of Individual Retraining**

	Comparison Group	Individual Retraining	Difference	t-statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	12667	12076	-591	1.01	1215	1215
AGE	28.53	27.82	-0.71*	1.94	1215	1215
MALE	0.48	0.49	0.01	0.49	1215	1215
EDELEM	0.16	0.16	0.00	0.11	1215	1215
EDVOC	0.31	0.29	-0.03	1.51	1215	1215
EDGYM	0.46	0.49	0.03	1.30	1215	1215
EDCOLL	0.06	0.06	0.00	0.00	1215	1215
EARLY1	0.07	0.06	-0.01	1.05	1215	1215
EARLY2	0.60	0.58	-0.02	1.15	1215	1215
EARLY3	0.28	0.32	0.03*	1.77	1215	1215
EARLY4	0.04	0.04	0.00	0.10	1215	1215
BLCOLL1	0.75	0.82	0.07	0.94	64	71
WHCOLL1	0.25	0.18	-0.07	0.94	64	71
BLCOLL2	0.60	0.60	0.00	0.00	1215	1215
WHCOLL2	0.40	0.40	0.00	0.00	1215	1215
LEGIS1	0.04	0.03	0.00	0.45	772	687
PROF1	0.06	0.06	0.00	0.11	772	687
TECH1	0.12	0.14	0.02	1.24	772	687
CLERK1	0.10	0.13	0.03	1.55	772	687
SERV1	0.17	0.16	-0.01	0.44	772	687
SKILLAG1	0.02	0.01	-0.01**	2.29	772	687
CRAFT1	0.19	0.17	-0.02	1.19	772	687
MACH1	0.11	0.13	0.03	1.47	772	687
ELEM1	0.20	0.17	-0.03	1.23	772	687
ARMED1	0.00	0.00	0.00*	1.84	772	687
LEGIS2	0.02	0.02	0.00	0.00	1215	1215
PROF2	0.06	0.06	0.00	0.00	1215	1215
TECH2	0.13	0.13	0.00	0.06	1215	1215
CLERK2	0.20	0.20	0.00	0.15	1215	1215
SERV2	0.15	0.15	0.00	0.28	1215	1215
SKILLAG2	0.01	0.01	0.00	0.00	1215	1215
CRAFT2	0.19	0.19	0.00	0.26	1215	1215
MACH2	0.09	0.10	0.00	0.34	1215	1215
ELEM2	0.14	0.13	-0.01	0.54	1215	1215
ARMED2	0.00	0.00	0.00	0.00	1215	1215

Table 4a.2.2 (Continued)

	Comparison Group	Individual Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
SPOUSE1	0.51	0.41	-0.11**	5.17	1136	1143
SPOUSE2	0.74	0.73	-0.01	0.48	577	461
HHOTHER	0.65	0.89	0.24**	6.21	1215	1215
PENSION	0.35	0.31	-0.04	1.61	1215	1215
KIDS06	0.32	0.24	-0.08**	3.71	1215	1215
KIDS6	0.68	0.72	0.04	1.25	1215	1215
HHEARN	41879	46901	5022**	3.01	1215	1215
COUNTY1	0.12	0.13	0.00	0.18	1215	1215
COUNTY2	0.11	0.11	0.00	0.13	1215	1215
COUNTY4	0.09	0.09	0.00	0.21	1215	1215
COUNTY5	0.07	0.07	0.00	0.16	1215	1215
COUNTY6	0.10	0.10	0.00	0.00	1215	1215
COUNTY7	0.13	0.13	0.00	0.06	1215	1215
COUNTY9	0.10	0.10	0.00	0.00	1215	1215
COUNTY13	0.11	0.11	0.00	0.00	1215	1215
COUNTY15	0.09	0.08	0.00	0.29	1215	1215
COUNTY18	0.07	0.07	0.00	0.08	1215	1215

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 4a.2.2.1 Description of Variables in Table 4a.2.2**

Variable	Description
AVGEARN	Average monthly earnings before unemployment
AGE	Age in years as of April 1, 1997
MALE	Gender: male=1, female=0
EDELEM	Education level: Less than 8 classes, 1=yes, 0=no
EDVOC	Education level: Vocational, 1=yes, 0=no
EDGYM	Education level: Secondary, 1=yes, 0=no
EDCOLL	Education level: Higher education, 1=yes, 0=no
EARLY1	Earlier employment status: Employed, 1=yes, 0=no
EARLY2	Earlier employment status: Lost employment, 1=yes, 0=no
EARLY3	Earlier employment status: School leaver, 1=yes, 0=no
EARLY4	Earlier employment status: Other, 1=yes, 0=no
BLCOLL1	Prior job category blue collar, 1=yes, 0=no
WHCOLL1	Prior job category white collar, 1=yes, 0=no
BLCOLL2	Wanted job category blue collar, 1=yes, 0=no
WHCOLL2	Wanted job category white collar, 1=yes, 0=no
LEGIS1	Occupation of last job, legislators, managerial, 1=yes, 0=no
PROF1	Occupation of last job, professionals, 1=yes, 0=no
TECH1	Occupation of last job, technicians, 1=yes, 0=no
CLERK1	Occupation of last job, clerks, 1=yes, 0=no
SERV1	Occupation of last job, service workers, 1=yes, 0=no
SKILLAG1	Occupation of last job, skilled agricultural, 1=yes, 0=no
CRAFT1	Occupation of last job, craft workers, 1=yes, 0=no
MACH1	Occupation of last job, machine operators, 1=yes, 0=no
ELEM1	Occupation of last job, elementary, 1=yes, 0=no
ARMED1	Occupation of last job, armed forces, 1=yes, 0=no
LEGIS2	Occupation of wanted job, legislators, managerial, 1=yes, 0=no
PROF2	Occupation of wanted job, professionals, 1=yes, 0=no
TECH2	Occupation of wanted job, technicians, 1=yes, 0=no
CLERK2	Occupation of wanted job, clerks, 1=yes, 0=no
SERV2	Occupation of wanted job, service workers, 1=yes, 0=no
SKILLAG2	Occupation of wanted job, skilled agricultural, 1=yes, 0=no
CRAFT2	Occupation of wanted job, craft workers, 1=yes, 0=no
MACH2	Occupation of wanted job, machine operators, 1=yes, 0=no
ELEM2	Occupation of wanted job, elementary, 1=yes, 0=no
ARMED2	Occupation of wanted job, armed forces, 1=yes, 0=no
SPOUSE1	Spouse living in same household, 1=yes, 0=no
SPOUSE2	Spouse employed, 1=yes, 0=no
HHOTHER	Other household members (count)
PENSION	Pensioners in the household (count)
KIDS06	Number of children in household age 0-6
KIDS6	Number of children in household age 6+
HHEARN	Net monthly household earnings

Table 4a.2.2.1 (Continued)

---

Variable	Description
COUNTY1	County code 1, 1=yes, 0=no
COUNTY2	County code 2, 1=yes, 0=no
COUNTY4	County code 4, 1=yes, 0=no
COUNTY5	County code 5, 1=yes, 0=no
COUNTY6	County code 6, 1=yes, 0=no
COUNTY7	County code 7, 1=yes, 0=no
COUNTY9	County code 9, 1=yes, 0=no
COUNTY13	County code 13, 1=yes, 0=no
COUNTY15	County code 15, 1=yes, 0=no
COUNTY18	County code 18, 1=yes, 0=no

---

Note: This list also applies to variables used throughout this report. In particular it applies to variables in tables 4b.2.2, 6.2.2, 7.2.2 and 8.2.2.

**Table 4a.2.3 Control Variables for Regression Adjusted Impact Estimates of Hungarian Active Labor Programs**

Variable	Description
PRIORWAGE	Average monthly earnings before unemployment
AGE	Age in years as of April 1, 1997
MALE	Gender, male=1, female=0
EDELEM	Education level: Less than 8 classes, 1=yes, 0=no
EDVOC	Education level: Vocational, 1=yes, 0=no
EDGYM	Education level: Secondary, 1=yes, 0=no
EDCOLL	Education level: Higher education, 1=yes, 0=no (omitted category)
WASWORKING	Earlier employment status: Employed, 1=yes, 0=no (omitted category)
WASUNEMP	Earlier employment status: Lost employment, 1=yes, 0=no
WASSCHOOL	Earlier employment status: School leaver, 1=yes, 0=no
WASOTHER	Earlier employment status: Other, 1=yes, 0=no
SPECIAL	Special difficulties in finding a job, 1=yes, 0=no
LEGIS2	Occupation of wanted job, legislators, managerial, 1=yes, 0=no
PROF2	Occupation of wanted job, professionals, 1=yes, 0=no
TECH2	Occupation of wanted job, technicians, 1=yes, 0=no
CLERK2	Occupation of wanted job, clerks, 1=yes, 0=no
SERV2	Occupation of wanted job, service workers, 1=yes, 0=no
SKILLAG2	Occupation of wanted job, skilled agricultural, 1=yes, 0=no
CRAFT2	Occupation of wanted job, craft workers, 1=yes, 0=no
MACH2	Occupation of wanted job, machine operators, 1=yes, 0=no
ELEM2	Occupation of wanted job, elementary, 1=yes, 0=no (omitted category)
ARMED2	Occupation of wanted job, armed forces, 1=yes, 0=no
SPOUSE1	Spouse living in same household, 1=yes, 0=no
SPOUSE2	Spouse employed, 1=yes, 0=no
HHOTHER	Other household members (count)
PENSION	
KIDS06	Number of children in household age 0-6
KIDS6	Number of children in household age 6+ plus other dependents
DEPENDENTS	
HHEARN	Net monthly household earnings
COUNTY	Ten county indicator variables 1=yes, 0=no (Budapest was omitted)

**Table 4a.2.4 Exogenous Variables Used for Creating Matched Pairs Comparison Groups for Hungarian Active Labor Program Participant Samples**

Variable	Description
AGE	Age in years as of April 1, 1997
MALE	Gender, male=1, female=0
EDELEM	Education level: Less than 8 classes, 1=yes, 0=no
EDVOC	Education level: Vocational, 1=yes, 0=no
EDGYM	Education level: Secondary, 1=yes, 0=no
EDCOLL	Education level: Higher education, 1=yes, 0=no (omitted category)
WASWORKING	Earlier employment status: Employed, 1=yes, 0=no (omitted category)
WASUNEMP	Earlier employment status: Lost employment, 1=yes, 0=no
WASSCHOOL	Earlier employment status: School leaver, 1=yes, 0=no
WASOTHER	Earlier employment status: Other, 1=yes, 0=no
LEGIS2	Occupation of wanted job, legislators, managerial, 1=yes, 0=no
PROF2	Occupation of wanted job, professionals, 1=yes, 0=no
TECH2	Occupation of wanted job, technicians, 1=yes, 0=no
CLERK2	Occupation of wanted job, clerks, 1=yes, 0=no
SERV2	Occupation of wanted job, service workers, 1=yes, 0=no
SKILLAG2	Occupation of wanted job, skilled agricultural, 1=yes, 0=no
CRAFT2	Occupation of wanted job, craft workers, 1=yes, 0=no
MACH2	Occupation of wanted job, machine operators, 1=yes, 0=no
ELEM2	Occupation of wanted job, elementary, 1=yes, 0=no
ARMED2	Occupation of wanted job, armed forces, 1=yes, 0=no
COUNTY	Ten county indicator variables, 1=yes, 0=no

**Table 4a.3 Net Impact Estimates of Individual Retraining by Subgroup**

	EMPLOY1	EMPLOY1S1	EMPLOY2	EMPLOY2S2	EARN1	EARN2
MALE - Respondent is male	0.062**	0.092**#	0.086**	0.129**	1984***##	1455**
FEMALE - Respondent is female~	0.114**	0.149**	0.087**	0.136**	-272	646
AGELT30 - Age < 30	0.072**	0.115**	0.081**	0.138**	1234**	1098*
AGE3044 - Age between 30 and 44	0.088**	0.108**	0.076**	0.104**	601	1469*
AGEGE45 - Age is 45 or over~	0.123**	0.147**	0.126**	0.174**	819	215
EDELEM - 8 years of schooling	0.116**	0.141**	0.086**	0.130**	563	1155
EDVOC - Vocational	0.077**	0.123**	0.101**	0.141**	-340##	793
EDGYM - General secondary	0.069**	0.095**	0.066**	0.122**	2665**	1256
EDCOLL - Some higher education~	0.065	0.055	0.098	0.125	3942**	2091
WHITECOL - White collar occupation	0.043	0.098**	0.051	0.090**	-146	-547#
BLUECOL - Blue collar occupation~	0.099**	0.124**	0.098**	0.146**	1288**	1599**
LOST - Earlier lost job	0.144***##	0.170***##	0.144***##	0.197***##	1032*	754
SCHOOL - Earlier school leaver	0.134***##	0.139***##	-0.077***##	0.112***##	1083	3060**
OTHER - Earlier other~	-0.131**	-0.061	-0.087*	-0.058	557	721
LTU - Long-term unemployed	0.060	0.103**	0.084**	0.141**	1311	1610
NONLTU - Not unemployed long term~	0.093**	0.122**	0.087**	0.130**	845*	942*
LOWURATE - Low unemployment area	0.075**	0.091**	0.066**	0.087**#	2040***##	2639***##
MEDURATE - Med unemployment area	0.082**	0.113**	0.087**	0.139**	1638***##	621
HIURATE - High Unemployment area~	0.099**	0.144**	0.102**	0.162**	-682	338
Baranya - County 2	0.122**	0.138**	0.093*	0.155**	826	293#
Bekes - County 4	0.089**	0.089**	0.073	0.090**	2196*	3882**
Borsod - County 5	0.052	0.109*	0.033	0.126**	-351	-1234##
Csongrad - County 6	0.037	0.073	0.083	0.115**	-668	-2007##
Fejer - County 7	0.077	0.057	0.094**	0.098**	2457**	782#
Hajdu - County 9	0.123**	0.158**	0.088*	0.126**	-1154#	190##
Pest - County 13	-0.012	0.019	-0.012	0.007	4296**	4134**
Szabolcs - County 15	0.085	0.139**	0.155**	0.209**#	265	2572*
Vas - County 18	0.180**	0.220**#	0.176**	0.213**#	135	-94##
Budapest - Capital City 1~	0.092*	0.080	0.075	0.081*	2008	3984**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 4a.4 Regression Adjusted Impacts of Various Aspects of Individual Retraining**

	Participant Group Proportion	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
Matched Comparison Mean		0.52	0.53	0.43	0.44	18717	21771
Adjusted Retraining Impact		0.11**	0.13**	0.10**	0.15**	1536 **	1767**
Contribution to Costs							
Participant contributed	0.792	0.107**	0.153**	0.104**	0.155**	1585 **	1225**
No participant contribution	0.208	0.088**	0.082** <sup>a</sup>	0.062	0.108**	1892 **	714
Duration of Retraining							
Less than 1 month	0.020	0.242**	0.278**	0.115	0.283**	489	-1550
1 to less than 3 months	0.187	0.108**	0.148**	0.129**	0.193**	2061 **	2959** <sup>a</sup>
3 to less than 6 months	0.310	0.111**	0.151**	0.102**	0.147**	758	-423 <sup>b</sup>
6 to less than 12 months	0.430	0.085**	0.115** <sup>a</sup>	0.069**	0.111** <sup>ab</sup>	2080 ** <sup>c</sup>	1364 <sup>*c</sup>
12 or more months	0.053	0.095	0.115*	0.084	0.113	3188 **	1779
Organizer of Retraining							
Regional Center over 20 hrs	0.043	0.179**	0.205**	0.092	0.197**	1074	1533
Regional Center 20 or less	0.027	0.183**	0.226**	0.128	0.199**	778	1647
Other over 20 hours	0.333	0.094**	0.111**	0.073**	0.103**	1699 **	1649**
Other 20 or less	0.597	0.097**	0.143**	0.105**	0.162** <sup>c</sup>	1727 **	825
Category of Retraining							
In National Register	0.733	0.097**	0.139**	0.083**	0.135**	1341 **	423
Narrow scope	0.214	0.107**	0.129**	0.117**	0.170**	2404 **	2410** <sup>a</sup>
Language Course	0.026	-0.027	-0.001 <sup>a</sup>	-0.039 <sup>b</sup>	-0.021 <sup>ab</sup>	4801 **	9796** <sup>ab</sup>
Remedial Education	0.003	0.009	-0.018	-0.105	0.122	3542	5550 <sup>c</sup>
Other	0.024	0.322** <sup>abc</sup>	0.300** <sup>abc</sup>	0.323** <sup>abcd</sup>	0.300** <sup>ac</sup>	735	2530 <sup>c</sup>
Participant Sample Size	1222	1143	1143	1143	1143	682	642
Comparison Sample Size		3213	3213	3213	3213	1681	1382

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup>Statistically significantly different from the first category at the 90 percent level.

<sup>b</sup>Statistically significantly different from the second category at the 90 percent level.

<sup>c</sup>Statistically significantly different from the third category at the 90 percent level.

<sup>d</sup>Statistically significantly different from the fourth category at the 90 percent level.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date



**Table 4a.5.1 Individual Retraining Reemployment Hazards Measured from Start Date of Last Registration, Comparison Group is Matched Pairs**

Months until starting a job	Comparison group risk set	Comparison group starting a job	Comparison group exit rate	Individual retraining group risk set	Individual retraining group starting a job	Individual retraining group exit rate	Individual retraining program impact
1	1198	48	4.01	1204	1	0.08	-3.92**
2	1150	22	1.91	1203	9	0.75	-1.16**
3	1128	32	2.84	1194	7	0.59	-2.25**
4	1096	27	2.46	1187	7	0.59	-1.87**
5	1069	19	1.78	1180	15	1.27	-0.51
6	1050	28	2.67	1165	17	1.46	-1.21**
7	1022	20	1.96	1148	19	1.66	-0.30
8	1002	13	1.30	1129	27	2.39	1.09*
9	989	28	2.83	1102	36	3.27	0.44
10	961	27	2.81	1066	41	3.85	1.04
11	934	31	3.32	1025	39	3.80	0.49
12	903	48	5.32	986	44	4.46	-0.85
13	855	26	3.04	942	50	5.31	2.27**
14	829	42	5.07	892	34	3.81	-1.25
15	787	23	2.92	858	30	3.50	0.57
16	764	51	6.68	828	17	2.05	-4.62**
17	713	20	2.81	811	31	3.82	1.02
18	693	18	2.60	780	25	3.21	0.61
19	675	23	3.41	755	21	2.78	-0.63
20	652	6	0.92	734	26	3.54	2.62**
21	646	30	4.64	708	14	1.98	-2.67**
22	616	24	3.90	694	17	2.45	-1.45
23	592	21	3.55	677	16	2.36	-1.18
24	571	0	0.00	661	20	3.03	3.03**
25	571	0	0.00	641	16	2.50	2.50**
26	571	0	0.00	625	21	3.36	3.36**
27	571	0	0.00	604	18	2.98	2.98**
28	571	0	0.00	586	21	3.58	3.58**
29	571	0	0.00	565	28	4.96	4.96**
30	571	0	0.00	537	20	3.72	3.72**
31	571	0	0.00	517	12	2.32	2.32**
32	571	0	0.00	505	11	2.18	2.18**
33	571	0	0.00	494	9	1.82	1.82**
34	571	0	0.00	485	8	1.65	1.65**
35	571	0	0.00	477	5	1.05	1.05**
36	571	0	0.00	472	4	0.85	0.85**
37	571	0	0.00	468	6	1.28	1.28**
38	571	1	0.18	462	3	0.65	0.47
39	570	0	0.00	459	3	0.65	0.65*
Cumulative	1198	628	52.42	1204	742	61.63	9.21**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 4a.5.2 Individual Retraining Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed**

Months until starting a job	Comparison			Individual Retraining			
	Comparison group risk set	group starting a job	Comparison group exit rate	group risk set	group starting a job	group exit rate	program impact
1	1198	48	4.01	1147	233	20.31	16.31**
2	1150	22	1.91	914	89	9.74	7.82**
3	1128	32	2.84	825	84	10.18	7.34**
4	1096	27	2.46	741	74	9.99	7.52**
5	1069	19	1.78	667	47	7.05	5.27**
6	1050	28	2.67	620	31	5.00	2.33**
7	1022	20	1.96	589	24	4.07	2.12**
8	1002	13	1.30	565	27	4.78	3.48**
9	989	28	2.83	538	31	5.76	2.93**
10	961	27	2.81	507	21	4.14	1.33
11	934	31	3.32	486	13	2.67	-0.64
12	903	48	5.32	473	2	0.42	-4.89**
13	855	26	3.04	471	6	1.27	-1.77**
14	829	42	5.07	465	1	0.22	-4.85**
15	787	23	2.92	464	1	0.22	-2.71**
16	764	51	6.68	463	0	0.00	-6.68**
17	713	20	2.81	463	0	0.00	-2.81**
18	693	18	2.60	463	0	0.00	-2.60**
19	675	23	3.41	463	0	0.00	-3.41**
20	652	6	0.92	463	0	0.00	-0.92**
21	646	30	4.64	463	0	0.00	-4.64**
22	616	24	3.90	463	0	0.00	-3.90**
23	592	21	3.55	463	0	0.00	-3.55**
24	571	0	0.00	463	0	0.00	0.00
25	571	0	0.00	463	0	0.00	0.00
26	571	0	0.00	463	0	0.00	0.00
27	571	0	0.00	463	0	0.00	0.00
28	571	0	0.00	463	0	0.00	0.00
29	571	0	0.00	463	0	0.00	0.00
30	571	0	0.00	463	0	0.00	0.00
31	571	0	0.00	463	0	0.00	0.00
32	571	0	0.00	463	0	0.00	0.00
33	571	0	0.00	463	0	0.00	0.00
34	571	0	0.00	463	0	0.00	0.00
35	571	0	0.00	463	0	0.00	0.00
36	571	0	0.00	463	0	0.00	0.00
37	571	0	0.00	463	0	0.00	0.00
38	571	1	0.18	463	0	0.00	-0.18
39	570	0	0.00	463	0	0.00	0.00
Cumulative	1198	628	52.42	1147	684	59.63	7.21**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 4a.6 Impact Estimates of Individual Retraining on Months of Employment, Unemployment and Unemployment Compensation in Hungary (t-statistics in parentheses)**

	Matched Comparison Sample Mean	Individual Retraining Sample Mean	Matched Pairs Impact Estimate	Regression Adjusted Impact Estimate	Full Interaction Impact Estimate	ES Interaction Impact Estimate
EMMONTHS	5.14	4.74	-0.41* (1.83)	-0.84** (4.24)	-1.06 (0.56)	-0.88** (3.83)
EMSMONTH	5.22	5.28	0.06 (0.28)	-0.34* (1.73)	-0.54 (1.47)	-0.30 (0.14)
UNMONTHS	7.66	4.47	-3.19** (14.40)	-2.99** (14.21)	-2.81** (2.83)	-2.93** (10.16)
UCMONTHS	1.52	0.79	-0.73** (7.94)	-0.69** (7.83)	-0.68 (1.48)	-0.68** (5.07)
UCPAY	19374	10953	-8421** (-6.81)	-7681** (6.60)	-7612 (0.84)	-7580** (4.23)
Participant Sample Size		1215	1215	1143	1143	1143
Comparison Sample Size	1215		1215	3213	3213	3213

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration.

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS - Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.

#### **4b.1 The samples for analysis of group retraining**

The differences between the group retraining participant sample and the comparison sample are fully revealed in Table 4b.1. Ignoring the county variables in the table, there are 42 descriptive characteristics listed for comparing the samples. The asterisks indicate significant differences across the samples in 31 of the 42 characteristics; the samples are clearly different. In contrast to the comparison group, the group retraining sample includes participants who had lower prior average monthly earnings, are younger, more likely to be female, more educated, more likely to have been a recent graduate, more likely to have been in a white collar occupation, and less likely to be married than the general population of registered unemployed.

#### **4b.2 Impact estimates of group retraining on employment and earnings**

Impact estimates presented in this section focus on two main outcomes: employment and earnings. The same delineations of employment and earnings outcomes reviewed in section 4a.2 are examined in this section. Four measures of employment are examined: a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey. Average monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date are also examined. The six outcome variables are EMPLOY1, EMPLOY1S, EMPLOY2, EMPLOY2S, EARN1, and EARN2.

Table 4b.2.1 presents impact estimates for the effect of group retraining in Hungary on these various measures of employment and earnings. Estimates for the impact on each separate outcome measure were computed in five separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which are not adjusted for observable differences between the participant and comparison group samples. The

second set of results are net impact estimates which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>11</sup> The third set of results was computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results is net impact estimates that were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in Appendix B.<sup>12</sup> Essentially, the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics. The fifth estimation methodology employed is labeled “ES Interact” in Table 4b.2.1. That label refers to a multiple regression technique which estimates net impacts for the ALP while accounting for the fact that many ALP participants also made use of the services of the ES; this method is also described in Appendix B.

The most obvious overall result in Table 4b.2.1 is that the unadjusted impact estimates are quite different from the adjusted results. However the direction of the difference in the alternative estimates is surprising. O’Leary (1997) found for earlier net impact estimates of retraining impacts that the unadjusted impact estimates were far larger and more positive than the estimates adjusted for observable characteristics. In the present case, the regression-adjusted estimates are larger and more positive. Based on the ES interaction net impact estimates, group retraining in Hungary is estimated to raise the net probability of ever finding a non-subsidized job by 9 percentage points and to raise the probability of being in a non-subsidized job on the survey date by 7 percentage points. These are large and positive statistically significant results. The fact of continued employment through the survey date suggests that the effect of retraining is somewhat durable. While many features about the Hungarian labor market have changed since the earlier studies were done, it is possible that the switch in gross and

---

<sup>11</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

<sup>12</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 4b.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.

net estimates of program impact is due to changes in ALP management practices since 1994 in Hungary when nationwide implementation of an outcome-based performance management system was introduced (O’Leary 1995). The risk of “creaming” in ALP enrollment and measures to counteract it have also been discussed among employment policymakers in Hungary (O’Leary 1996).

On the broader measures of reemployment in any job, including subsidized ones, the net impact estimates are again large and significant. The impact on ever getting into any job of group retraining is 17 percentage points, while the impact on being in any job on the survey date is 12 percentage points.

Group retraining also raised average monthly earnings upon reemployment by 1,805 Ft, but the net gain disappeared by the survey date.

#### **4b.3 A subgroup analysis of group retraining impacts**

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups (like those without a specialization, or older unemployed persons). Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously; that is, retraining impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

Table 4b.3 presents net impact estimates of retraining by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation,

whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to entering retraining), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

Group retraining provides a statistically significant and larger net gain for females than males in being in any job on the survey date. While not statistically significantly different from males, there is also a larger gain for females in ever getting into a new non-subsidized job. There is no evidence that group retraining has a differential effect on earnings across genders.

While there are no statistically significant differences in impacts across age groups, group retraining appears to produce reemployment gains most for those in the middle age group, aged 30 to 44 years. In terms of being in any job on the survey date, the net impact of group retraining for the middle age group was 9.1 percentage points, while it was 6.1 percentage points for the youngest group (30 or under) and -0.4 percentage points for the older age group (45 and over). Group retraining had no statistically significant impacts on among any of the age subgroups.

There were statistically significant differences across educational attainment groups for group retraining on the outcome employed in any job on the survey date (EMPLOYYS2). The impact of 21.8 percentage points for those with some college training was about four times the size of the impacts for the other education groups. There were no statistically significant impacts on employment in a non-subsidized job for any of the education subgroups. The earnings impacts by education subgroups revealed no consistent pattern of response.

Two occupational categories were established for the subgroup analysis. Group retraining appeared to provide neither blue collar or white collar occupations a boost to reemployment in a non-subsidized job. While group retraining helped improve employment in any job, the advantage was to

white collar workers for ever getting such a job, but to blue collar workers in terms of being in a non-subsidized job on the survey date. The earnings impacts were dramatically different for the first new job, but the differences disappeared by the survey date.

In terms of reemployment, those who lost their prior job got statistically significant and larger gains from participating in group retraining than did those who were separated from their job for other reasons. On the important outcome EMPLOY2, those who lost their prior job had group retraining boost their reemployment success by 9.7 percentage points while it also boosted the success of recent graduates by 7.7 percentage points but reduced employment chances by 38.3 percentage points for those who were separated from their prior jobs for other reasons. Similar patterns emerged for other outcomes based on the reason for prior job separation.

The only statistically significant difference in impacts of group retraining on long-term unemployed persons relative to those who were not long-term unemployed was on EMPLOY2, where the impact for the long-term unemployed was 0.3 percentage points while for those who were not long-term unemployed the impact was 7.6 percentage points. Group retraining had no impact on either employment in a non-subsidized job or earnings for either of the duration of prior unemployment subgroups.

The impact of group retraining had no statistically significant differences in impacts on either employment or earnings across regions grouped by low, medium, or high unemployment rate.<sup>13</sup> There were no statistically significant impacts on employment in a non-subsidized job, and the impacts on ever being employed in any job were virtually the same across the three subgroups. For being employed in any job on the survey date (EMPLOY2), the high and low unemployment areas showed positive impacts, while there was no statistically significant impact in the middle unemployment rate group. The

---

<sup>13</sup>Counties with low unemployment had rates of 9 percent or less in 1996, counties with high unemployment had rates of 15 percent or more. The other counties were coded as having medium levels of unemployment. These categories correspond to those given in Map 3.1.



only statistically significant impact on earnings was on earnings in the first new job for the medium unemployment rate group. The impact was positive and large, but by the survey date this sole earnings impact had disappeared.

#### **4b.4 Net impacts of various group retraining program features**

Since group retraining provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of group retraining yield different impacts on the outcome measures for employment and earnings. Table 4b.4 presents net impact estimates of individual contribution to retraining costs, the duration of group retraining, the organizer and intensity of group retraining, and the category of retraining. The methodology used to compute these impacts is summarized in Appendix B under the heading, “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of Table 4b.4 restates the means of the outcome variables for the matched pairs comparison group and the second row gives the net impact estimated from matched pairs methodology.

Individual contributions to retraining costs were determined prior to job search and are therefore exogenous to reemployment and reemployment earnings. The great majority (94.6 percent) of group retraining participants did not contribute monetarily to retraining costs. While not statistically significantly different, the impacts on reemployment in a non-subsidized job were larger for those who contributed financially to retraining than for those who did not contribute. For EMPLOY2, those who contributed had their success boosted 12.3 percentage points, while those making no contributions gained 6.6 percentage points. The lack of statistical significance for this difference is most certainly due to the small sample size of contributors. There were no differences across the groups in the gains observed for employment in any job. While not statistically significantly different, those who did not contribute had larger gains in average monthly earnings.

Five categories of group retraining duration were examined: less than 1 month, 1 to less than 3 months, 3 to less than 6 months, 6 to less than 12 months, and 12 or more months. The pattern of impacts across the retraining duration groups differed between the outcomes employed in a non-subsidized job and employed in any job. For getting employed in a non-subsidized job and still being employed in a non-subsidized job on the survey date, group retraining between 3 and 12 months duration was best, while the effects for shorter or longer duration group retraining was negligible. For ever getting into any job, including subsidized ones, the shorter term retraining of fewer than three months appeared best, while for being in any job at the survey date there was not a clear indication about which duration of group retraining was best. The greatest boost to reemployment earnings was provided by group retraining lasting 6 to 12 months.

In addition to investigating the effect of group retraining duration with categorical variables, models which examine the intensity of group retraining and the nature of the retraining provider were also estimated. Data were available for whether retraining was for more than 20 hours per week or not, and whether training was provided in one of Hungary's regional retraining centers. There are about a dozen regional retraining centers situated around Hungary. Retraining may also take place on other government premises, in existing educational institutions, or at privately owned locations. The general result regarding promotion of reemployment is that group retraining done outside the regional retraining centers raises reemployment prospects more. In particular, the gain in reemployment in non-subsidized jobs on the survey date was statistically significant and about 10 percentage points for those trained outside the regional retraining centers, while it was nil for those retrained at the centers. This result was obtained controlling for the fact that the regional retraining centers are generally located in areas of high unemployment.<sup>14</sup> Also clear from the results on employment outcomes is that retraining of less than 20 hours per week at the regional retraining centers is the least effective. While not statistically significantly different from other categories, group retraining of more than 20 hours per week at the regional retraining centers did produce sizeable earnings gains.

---

<sup>14</sup>Results in Table 4b.4 are regression adjusted where the control variables include indicators for each of the counties where surveys were conducted.

Data was available about the category of group retraining. There were six possibilities: listed in the national register of training; narrow in scope; language course; job search training; remedial education; and other. Statistically significant results were only found for the first two categories, which also had the greatest proportion of participants. Both retraining listed in the national register of training and retraining which was narrow in scope resulted in statistically significant net gains in reemployment; however, the former also generated earnings gains while the latter did not. Although the results for other categories were not statistically significant, they do provide some useful insights. It would appear that remedial education actually reduced employment and earnings prospects, while job search training offers promise but should be examined more closely. Language training appears to have had positive but small impacts.

#### **4b.5 The timing of response to group retraining**

Two tables presented in this section show the timing of exit from the unemployment register to reemployment. They are used to illustrate the pattern of the reemployment effects of group retraining. Table 4b.5.1 compares exits from the unemployment register for retraining participants and a matched pairs comparison group for a maximum 39-month time period. For both groups in Table 4b.5.1 “month 1” is the first month after registering as unemployed. In the analysis presented here, exit from the unemployment register to reemployment is defined to occur when the first new job begins after having registered as unemployed during the reference spell of joblessness. Referring back to Table 3.9.1 for retraining, it can be seen that the initial risk sets are slightly smaller than the full sample size of 1,321 group retraining participants and the equal number of matched pairs observations drawn from the comparison group. This is because for a small number of observations in the sample, the recorded date of the first new job is before the recorded start date of the unemployment spell.

Table 4b.5.1 shows how many people started new non-subsidized jobs from the group retraining and matched pairs comparison group in each month since they registered as unemployed. It

also shows the proportion who started jobs (the exit rate from unemployment to employment) and the difference between participant and comparison group members in the rate of exit. This last quantity is listed in the right-most column and is also the retraining impact on the exit rate for a given month. Group retraining participants were seen to exit at a higher rate in every month beginning with the 23rd month after registering as unemployed. Furthermore, in all but two of these months the difference was statistically significant. The cumulative group retraining impact on the exit rate for the groups examined is 8.18 percentage points, which is quite similar to the estimate of EMPLOY1 given in Table 4b.2.1, despite the somewhat tailored sample used to form the initial risk sets.

To sharpen the contrast in examining exits from unemployment to non-subsidized jobs, in Table 4b.5.2 we compare exits from the same comparison risk set examined in Table 4b.5.1 starting at the date of registering as unemployed, with exits of retrainees starting at the time of completing retraining. The risk set for retrainees is limited to those who had a date for leaving the ALP before the date recorded for their first reemployment. As expected, the retraining impact on reemployment in a non-subsidized job is large and statistically significant immediately. The large positive effect gradually diminishes and becomes negative in the eleventh month.

#### **4b.6 Impact of group retraining on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>15</sup> Responses to this question allowed independent estimates of retraining impact on months in a non-subsidized job (EMMONTHS), months in any job (EMSMONTH), and months unemployed (UNMONTHS) since the most recent ES registration.

In contrasting the employment and unemployment months of group retraining participant and comparison group members, it should be recalled that the former group spent the retraining period

---

<sup>15</sup>For retraining it was survey question 13 in record type A and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

unavailable for reemployment or full-time job search and that differences in durations between these two groups will be influenced by this fact. This factor is less important for examining impacts on outcomes summarized in Table 4b.2.1. Employment rates and usual monthly earnings are less affected by the retraining time out of the labor market. Estimates are presented using matched pairs, regression adjustment, full interaction, and ES interaction regression methods. There are no statistically significant differences in the results across the alternative net impact estimates. As before, we focus on the ES interaction results. The estimates given in Table 4b.6 indicate that group retraining participants spent 0.67 fewer months employed in a non-subsidized job but only 0.03 fewer months employed in any job, and 2.85 fewer months unemployed than the comparison group during the observation period.

Self-reported data is also available to estimate the impact of group retraining on months of unemployment compensation (UCMONTHS) and the amount of UC drawn.<sup>16</sup> Survey respondents were asked about their benefit receipt in each of the 16 months between January 1996 and April 1997.<sup>17</sup> Table 4b.6 shows that retraining participants drew 0.50 fewer months of UC and 4,780 Ft less in UC benefits than did members of the comparison group.

---

<sup>16</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data directly from the UC register which recorded the average UC for months compensated in a calendar year provided point estimates virtually identical to those reported.

<sup>17</sup>For retraining it was survey question 13.2 in record type A and for the comparison group it was survey question 11.2 in record type E (see Appendix A).

**Table 4b.1 Group Retraining and Comparison Group Means and Differences on Exogenous Descriptive Characteristics**

	Comparison Group	Group Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	15170	11137	-4033**	9.58	3338	1321
AGE	33.91	27.93	-5.98**	17.93	3338	1321
MALE	0.56	0.48	-0.08**	5.18	3338	1321
EDELEM	0.35	0.25	-0.10**	6.91	3338	1321
EDVOC	0.41	0.24	-0.17**	11.07	3338	1321
EDGYM	0.21	0.46	0.25**	17.35	3338	
EDCOLL	0.03	0.06	0.03**	4.69	3338	1321
EARLY1	0.22	0.02	-0.20**	17.26	3338	1321
EARLY2	0.67	0.63	-0.04**	2.64	3338	1321
EARLY3	0.09	0.29	0.20**	17.61	3338	1321
EARLY4	0.02	0.07	0.05**	7.46	3338	1321
BLCOLL1	0.86	0.82	-0.04	1.12	332	124
WHCOLL1	0.14	0.18	0.04	1.12	332	124
BLCOLL2	0.81	0.62	-0.20**	14.44	3338	1321
WHCOLL2	0.19	0.38	0.20**	14.44	3338	1321
LEGIS1	0.03	0.03	0.00	0.57	2607	709
PROFF1	0.02	0.06	0.04**	5.25	2607	709
TECH1	0.06	0.11	0.05**	4.33	2607	709
CLERK1	0.06	0.13	0.07**	6.67	2607	709
SERV1	0.13	0.12	-0.01	0.75	2607	709
SKILLAG1	0.03	0.02	-0.02**	2.20	2607	709
CRAFT1	0.28	0.26	-0.03	1.38	2607	709
MACH1	0.12	0.07	-0.05**	3.86	2607	709
ELEM1	0.26	0.20	-0.06**	3.06	2607	709
ARMED1	0.00	0.00	0.00	0.28	2607	709
LEGIS2	0.02	0.02	0.00	0.31	3337	1316
PROFF2	0.03	0.05	0.03**	4.10	3337	1316
TECH2	0.06	0.12	0.05**	6.00	3337	1316
CLERK2	0.08	0.20	0.11**	11.16	3337	1316
SERV2	0.12	0.11	-0.02*	1.70	3337	1316
SKILLAG2	0.03	0.02	-0.01	1.47	3337	1316
CRAFT2	0.29	0.22	-0.07**	4.69	3337	1316
MACH2	0.10	0.06	-0.04**	4.47	3337	1316
ELEM2	0.26	0.21	-0.06**	4.24	3337	1316
ARMED2	0.00	0.00	0.00	1.17	3337	1316

Table 4b.1 (Continued)

	Comparison Group	Group Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
SPOUSE1	0.62	0.40	-0.22**	13.62	3214	1254
SPOUSE2	0.64	0.70	0.06**	2.33	1972	493
HHOTHER	0.46	0.77	0.32**	11.43	3338	1321
PENSION	0.32	0.37	0.05**	2.53	3338	1321
KIDS06	0.32	0.30	-0.02	1.05	3338	1321
KIDS6	0.78	0.80	0.03	0.92	3338	1321
HHEARN	38752	42504	3751**	3.33	3338	1321
COUNTY1	0.09	0.04	-0.05**	5.99	3338	1321
COUNTY2	0.09	0.10	0.01	0.76	3338	1321
COUNTY4	0.09	0.14	0.05**	4.60	3338	1321
COUNTY5	0.13	0.08	-0.05**	4.72	3338	1321
COUNTY6	0.07	0.12	0.04**	4.84	3338	1321
COUNTY7	0.09	0.10	0.01	0.60	3338	1321
COUNTY9	0.12	0.09	-0.02**	2.34	3338	1321
COUNTY13	0.12	0.11	0.00	0.32	3338	1321
COUNTY15	0.13	0.15	0.02*	1.79	3338	1321
COUNTY18	0.07	0.08	0.01	0.59	3338	1321

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 4b.2.1 Group Retraining Impact Estimates on Employment and Earnings**

HUNGARY	Control Group	Group Retraining	Impact	t-statistic on Impact	Comparison Sample	Participant Sample
Unadjusted						
EMPLOY1	0.54	0.56	0.02	1.21	3338	1321
EMPLOYS1	0.55	0.63	0.08**	5.20	3338	1321
EMPLOY2	0.43	0.45	0.02	1.25	3338	1321
EMPLOYS2	0.44	0.51	0.07**	4.38	3338	1321
EARN1	18202	20237	2035	3.50	1734	706
EARN2	22129	22224	95	0.21	1426	650
Regression Adjusted						
EMPLOY1	0.54		0.09**	5.46	3213	1249
EMPLOYS1	0.55		0.17**	10.06	3213	1249
EMPLOY2	0.43		0.07**	4.08	3213	1249
EMPLOYS2	0.44		0.12**	7.27	3213	1249
EARN1	18202		1788**	2.62	1681	672
EARN2	22129		846*	1.76	1382	622
Full Interaction Regression						
EMPLOY1	0.54		0.04**	2.41	3213	1249
EMPLOYS1	0.55		0.14**	2.10	3213	1249
EMPLOY2	0.43		0.00	3.01	3213	1249
EMPLOYS2	0.44		0.08**	3.24	3213	1249
EARN1	18202		507	1.06	1681	672
EARN2	22129		1067	0.62	1382	622
Matched Pairs						
EMPLOY1	0.48	0.56	0.08**	4.30	1316	1316
EMPLOYS1	0.48	0.64	0.15**	8.03	1316	1316
EMPLOY2	0.39	0.45	0.06**	3.17	1316	1316
EMPLOYS2	0.39	0.51	0.12**	6.11	1316	1316
EARN1	17812	20226	2413**	2.71	601	705
EARN2	21665	22254	590	1.01	487	649
ES Interact						
EMPLOY1	0.54		0.09**	2.83		
EMPLOYS1	0.55		0.17**	8.57		
EMPLOY2	0.43		0.07**	2.51		
EMPLOYS2	0.44		0.12**	6.79		
EARN1	18202		1805*	1.88		
EARN2	22129		895	0.53		
Sample	3338	1321				

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment.

EMPLOYS1 - Ever reemployed in any job or unemployment.

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date.

EMPLOYS2 - Employed in any job or self-employment on the survey date.

EARN1 - Average monthly earnings at the start of the first new job or self-employment.

EARN2 - Average monthly earnings from the job or self-employment on the survey date.



**Table 4b.2.2 Treatment and Comparison Group Differences for Exogenous Variables  
Matched Pair Analysis of Group Retraining**

	Comparison Group	Group Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	12435	11159	-1276**	2.31	1316	1316
AGE	29.59	27.90	-0.69*	1.96	1316	1316
MALE	0.48	0.47	-0.01	0.43	1316	1316
EDELEM	0.24	0.24	0.00	0.27	1316	1316
EDVOC	0.26	0.24	-0.02	1.35	1316	1316
EDGYM	0.44	0.46	0.02	0.90	1316	1316
EDCOLL	0.06	0.06	0.00	0.08	1316	1316
EARLY1	0.03	0.02	-0.02**	2.79	1316	1316
EARLY2	0.64	0.63	-0.16	0.85	1316	1316
EARLY3	0.26	0.29	0.03*	1.80	1316	1316
EARLY4	0.07	0.07	0.00	0.15	1316	1316
BLCOLL1	0.69	0.82	0.13**	2.31	100	123
WHCOLL1	0.31	0.18	-0.13**	2.31	100	123
BLCOLL2	0.63	0.62	-0.01	0.76	1316	1316
WHCOLL2	0.37	0.38	0.01	0.76	1316	1316
LEGIS1	0.03	0.03	0.00	0.23	809	709
PROF1	0.05	0.06	0.01	0.49	809	709
TECH1	0.12	0.11	-0.01	0.60	809	709
CLERK1	0.11	0.13	0.02	1.42	809	709
SERV1	0.15	0.12	-0.03	1.60	809	709
SKILLAG1	0.03	0.02	-0.02*	1.95	809	709
CRAFT1	0.22	0.26	0.03	1.57	809	709
MACH1	0.09	0.07	-0.02	1.13	809	709
ELEM1	0.19	0.20	0.01	0.36	809	709
ARMED1	0.00	0.00	0.00	1.07	809	709
LEGIS2	0.02	0.02	0.00	0.00	1316	1316
PROFF2	0.05	0.05	0.00	0.00	1316	1316
TECH2	0.12	0.12	0.00	0.12	1316	1316
CLERK2	0.19	0.20	0.01	0.34	1316	1316
SERV2	0.11	0.11	0.00	0.00	1316	1316
SKILLAG2	0.02	0.02	0.00	0.00	1316	1316
CRAFT2	0.22	0.22	-0.01	0.33	1316	1316
MACH2	0.05	0.06	0.00	0.17	1316	1316
ELEM2	0.21	0.21	0.00	0.24	1316	1316
ARMED2	0.00	0.00	0.00	0.00	1316	1316

Table 4b.2.2 (Continued)

	Comparison Group	Group Retraining	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
SPOUSE1	0.50	0.40	-0.10**	5.00	1251	1249
SPOUSE2	0.72	0.70	-0.02	0.85	610	490
HHOTHER	0.60	0.77	0.17**	4.79	1316	1316
PENSION	0.41	0.37	-0.04	1.43	1316	1316
KIDS06	0.33	0.30	-0.03	1.11	1316	1316
KIDS6	0.70	0.80	0.11**	2.88	1316	1316
HHEARN	41287	42564	1277	0.87	1316	1316
COUNTY1	0.04	0.04	0.00	0.10	1316	1316
COUNTY2	0.10	0.10	0.00	0.07	1316	1316
COUNTY4	0.13	0.14	0.00	0.23	1316	1316
COUNTY5	0.08	0.08	0.00	0.07	1316	1316
COUNTY6	0.12	0.12	0.00	0.00	1316	1316
COUNTY7	0.10	0.10	0.00	0.00	1316	1316
COUNTY9	0.09	0.09	0.00	0.13	1316	1316
COUNTY13	0.12	0.11	0.00	0.25	1316	1316
COUNTY15	0.15	0.15	0.00	0.17	1316	1316
COUNTY18	0.08	0.08	0.00	0.00	1316	1316

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 4b.3 Net Impact Estimates of Group Retraining by Subgroup**

	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
MALE - Respondent is male	-0.003	0.095**	-0.021	0.033#	1610*	313
FEMALE - Respondent is female~	0.030	0.112**	0.023	0.092**	975	883
AGELT30 - Age < 30	0.027#	0.074**	0.008	0.061**	1334	405
AGE3044 - Age between 30 and 44	0.036#	0.150**	0.018	0.091**	823	731
AGEGE45 - Age is 45 or over~	-0.079	0.088	-0.067	-0.004	2300	763
EDELEM - 8 years of schooling	0.017	0.166**	0.000	0.053#	-1268	177
EDVOC - Vocational	0.034	0.117**	-0.002	0.059*#	-931	1349##
EDGYM - General secondary	-0.021	0.020	-0.011	0.050##	6777**	524#
EDCOLL - Some higher education~	0.015	0.065	0.084	0.218**	4240	-3121
WHITECOL - White collar occupation	0.031	0.140**	-0.037	0.007	-5283***##	-317
BLUECOL - Blue collar occupation~	0.007	0.092**	0.011	0.077**	3393**	862
LOST - Earlier lost job	0.116***##	0.194***##	0.097***##	0.146***##	1295	1111*#
SCHOOL - Earlier school leaver	0.092***##	0.209***##	0.077***##	0.142***##	3240*	1825#
OTHER - Earlier other~	-0.390**	-0.274**	-0.383**	-0.282**	1	-2086##
LTU - Long-term unemployed	-0.017	0.089**	-0.041	0.003#	1024	1033
NONLTU - Not unemployed long term~	0.021	0.107**	0.010	0.076**	1393	454
LOWURATE - Low unemployment area	0.042	0.097**	0.016	0.055*	119	351
MEDURATE - Med unemployment area	-0.018	0.101**	-0.015	0.042	2213**	75
HIURATE - High Unemployment area~	0.024	0.109**	0.002	0.085**	1228	1266
Baranya - County 2	0.038	0.103**	0.010	0.069	110	-2321*
Bekes - County 4	0.039	0.095	0.044##	0.043	-1073##	-583
Borsod - County 5	-0.003	0.129**	0.020	0.121**	4136*#	2241
Csongrad - County 6	-0.042	0.059	0.002	0.065	-2631	-2016
Fejer - County 7	0.051	0.115**	0.107**	0.135**	786	648
Hajdu - County 9	-0.044	0.016	-0.113***##	-0.022	318	750
Pest - County 13	-0.051	0.010	-0.067	-0.021	-853	-345
Szabolcs - County 15	0.082*	0.150**	0.073*	0.137**	395	1273
Vas - County 18	0.129**	0.179**	0.085	0.134**	1700	1785
Budapest - Capital City 1~	0.053	0.091	0.063	0.053	-2333	-996

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 4b.4 Regression Adjusted Impacts of Various Aspects of Group Retraining**

	Participant Group Proportion	EMPLOY1	EMPLOY1S1	EMPLOY2	EMPLOY2S2	EARN1	EARN2
Matched Comparison Mean		0.48	0.48	0.39	0.39	17812	21665
Adjusted Retraining Impact		0.08**	0.15**	0.06**	0.12**	2413**	590
Contribution to Costs							
Participant contributed	0.054	0.159**	0.170**	0.123**	0.112*	-2416	-212
No participant contribution	0.946	0.089**	0.170**	0.066**	0.124**	2039**	9080
Duration of Retraining							
Less than 1 month	0.018	-0.057	0.216**	0.019	0.218**	-2591	-4602*
1 to less than 3 months	0.097	-0.066	0.237**	-0.050	0.020 <sup>a</sup>	-235	-2286 <sup>*a</sup>
3 to less than 6 months	0.406	0.125 <sup>**ab</sup>	0.160 <sup>**b</sup>	0.084 <sup>**b</sup>	0.129 <sup>**b</sup>	743	979 <sup>ab</sup>
6 to less than 12 months	0.445	0.118 <sup>**ab</sup>	0.163**	0.097 <sup>**b</sup>	0.145 <sup>**b</sup>	3682 <sup>**bc</sup>	1718 <sup>**b</sup>
12 or more months	0.034	0.018	0.105	-0.015	0.075	54	34
Organizer of Retraining							
Regional Center over 20 hours	0.303	0.066**	0.196**	0.015	0.085**	3014**	1547**
Regional Center 20 or less	0.026	0.000	0.010 <sup>a</sup>	-0.005	-0.018	3123	-1184
Other over 20 hours	0.579	0.107**	0.158 <sup>**b</sup>	0.096 <sup>**a</sup>	0.142 <sup>**a</sup>	1163	383
Other 20 or less	0.092	0.115**	0.185 <sup>**b</sup>	0.107 <sup>**a</sup>	0.168 <sup>**a</sup>	1408	1858*
Category of Retraining							
In National Register	0.727	0.107**	0.157**	0.067**	0.126**	2647**	1391**
Narrow scope	0.164	0.071**	0.281 <sup>**a</sup>	0.097**	0.156**	-625 <sup>a</sup>	-523 <sup>a</sup>
Language Course	0.070	0.051	0.041 <sup>ab</sup>	0.009	0.016 <sup>ab</sup>	154	-544
Job Search Training	0.002	0.115	0.107	-0.262	0.232	0	-11439
Remedial Education	0.017	-0.121 <sup>ab</sup>	-0.032 <sup>ab</sup>	-0.037	-0.046 <sup>b</sup>	-563 <sup>a</sup>	-1261
Other	0.021	0.102	0.082 <sup>b</sup>	0.142	0.128	-3527	-457
Participant Sample Size	1321	1249	1249	1249	1249	672	622
Comparison Sample Size		3213	3213	3213	3213	1681	1382

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup>Statistically significantly different from the first category at the 90 percent level.

<sup>b</sup>Statistically significantly different from the second category at the 90 percent level.

<sup>c</sup>Statistically significantly different from the third category at the 90 percent level.

<sup>d</sup>Statistically significantly different from the fourth category at the 90 percent level.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 4b.5.1 Group Retraining Reemployment Hazards Measured from Start Date of Last Registration, Comparison Group is Matched Pairs**

Months until starting a job	Comparison group risk set	Comparison group starting a job	Comparison group exit rate	Group retraining risk set	Group retraining starting a job	Group retraining group exit rate	Group retraining program impact
1	1306	50	3.83	1301	4	0.31	-3.52**
2	1256	12	0.96	1297	0	0.00	-0.96**
3	1244	32	2.57	1297	14	1.08	-1.49**
4	1212	28	2.31	1283	7	0.55	-1.76**
5	1184	13	1.10	1276	6	0.47	-0.63*
6	1171	21	1.79	1270	16	1.26	-0.53
7	1150	26	2.26	1254	6	0.48	-1.78**
8	1124	16	1.42	1248	22	1.76	0.34
9	1108	26	2.35	1226	23	1.88	-0.47
10	1082	28	2.59	1203	33	2.74	0.16
11	1054	48	4.55	1170	43	3.68	-0.88
12	1006	38	3.78	1127	46	4.08	0.30
13	968	25	2.58	1081	38	3.52	0.93
14	943	40	4.24	1043	45	4.31	0.07
15	903	27	2.99	998	29	2.91	-0.08
16	876	41	4.68	969	31	3.20	-1.48
17	835	31	3.71	938	28	2.99	-0.73
18	804	24	2.99	910	30	3.30	0.31
19	780	27	3.46	880	33	3.75	0.29
20	753	11	1.46	847	24	2.83	1.37*
21	742	25	3.37	823	11	1.34	-2.03**
22	717	27	3.77	812	22	2.71	-1.06
23	690	7	1.01	790	20	2.53	1.52**
24	683	1	0.15	770	17	2.21	2.06**
25	682	1	0.15	753	14	1.86	1.71**
26	681	0	0.00	739	8	1.08	1.08**
27	681	0	0.00	731	14	1.92	1.92**
28	681	1	0.15	717	20	2.79	2.64**
29	680	0	0.00	697	37	5.31	5.31**
30	680	0	0.00	660	20	3.03	3.03**
31	680	0	0.00	640	13	2.03	2.03**
32	680	1	0.15	627	15	2.39	2.25**
33	679	0	0.00	612	16	2.61	2.61**
34	679	0	0.00	596	5	0.84	0.84**
35	679	0	0.00	591	6	1.02	1.02**
36	679	0	0.00	585	10	1.71	1.71**
37	679	0	0.00	575	2	0.35	0.35
38	679	0	0.00	573	3	0.52	0.52*
39	679	0	0.00	570	0	0.00	0.00
Cumulative	1306	627	48.01	1301	731	56.19	8.18**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 4b.5.2 Group Retraining Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed**

Months until starting a job	Comparison			Group Retraining			
	Comparison group risk set	group starting a job	Comparison group exit rate	group risk set	group starting a job	group exit rate	program impact
1	1306	50	3.83	1309	257	19.63	15.80**
2	1256	12	0.96	1052	88	8.37	7.41**
3	1244	32	2.57	964	80	8.30	5.73**
4	1212	28	2.31	884	61	6.90	4.59**
5	1184	13	1.10	823	73	8.87	7.77**
6	1171	21	1.79	750	38	5.07	3.27**
7	1150	26	2.26	712	27	3.79	1.53*
8	1124	16	1.42	685	37	5.40	3.98**
9	1108	26	2.35	648	31	4.78	2.44**
10	1082	28	2.59	617	16	2.59	0.01
11	1054	48	4.55	601	12	2.00	-2.56**
12	1006	38	3.78	589	8	1.36	-2.42**
13	968	25	2.58	581	1	0.17	-2.41**
14	943	40	4.24	580	0	0.00	-4.24**
15	903	27	2.99	580	0	0.00	-2.99**
16	876	41	4.68	580	0	0.00	-4.68**
17	835	31	3.71	580	0	0.00	-3.71**
18	804	24	2.99	580	0	0.00	-2.99**
19	780	27	3.46	580	0	0.00	-3.46**
20	753	11	1.46	580	0	0.00	-1.46**
21	742	25	3.37	580	0	0.00	-3.37**
22	717	27	3.77	580	0	0.00	-3.77**
23	690	7	1.01	580	0	0.00	-1.01**
24	683	1	0.15	580	0	0.00	-0.15
25	682	1	0.15	580	0	0.00	-0.15
26	681	0	0.00	580	0	0.00	0.00
27	681	0	0.00	580	0	0.00	0.00
28	681	1	0.15	580	0	0.00	-0.15
29	680	0	0.00	580	0	0.00	0.00
30	680	0	0.00	580	0	0.00	0.00
31	680	0	0.00	580	0	0.00	0.00
32	680	1	0.15	580	0	0.00	-0.15
33	679	0	0.00	580	0	0.00	0.00
34	679	0	0.00	580	0	0.00	0.00
35	679	0	0.00	580	0	0.00	0.00
36	679	0	0.00	580	0	0.00	0.00
37	679	0	0.00	580	0	0.00	0.00
38	679	0	0.00	580	0	0.00	0.00
39	679	0	0.00	580	0	0.00	0.00
Cumulative	1306	627	48.01	1309	729	55.69	7.68**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 4b.6 Impact Estimates of Group Retraining on Months of Employment, Unemployment and Unemployment Compensation in Hungary (t-statistics in parentheses)**

	Matched Comparison Sample Mean	Group Retraining Sample Mean	Matched Pairs Impact Estimate	Regression Adjusted Impact Estimate	Full Interaction Impact Estimate	ES Interaction Impact Estimate
EMMONTHS	4.69	3.97	-0.71** (3.51)	-0.66** (3.44)	-1.81** (2.61)	-0.67** (2.61)
EMSMONTH	4.76	4.64	-0.12 (0.59)	-0.02 (0.14)	-0.97** (2.73)	-0.03 (1.54)
UNMONTHS	8.13	5.17	-2.97** (13.97)	-2.86** (14.06)	-2.02** (3.90)	-2.85** (11.87)
UCMONTHS	1.61	1.01	-0.60** (6.39)	-0.50** (5.78)	-0.43 (1.13)	-0.50** (3.49)
UCPAY	20408	14123	-6285** (5.02)	-4780** (4.13)	-4006 (0.47)	-4790** (2.31)
Participant Sample Size		1316	1316	1249	1249	1249
Comparison Sample Size	1316		1316	3213	3213	3213

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration.

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS - Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.





## 5. Evaluation of the Employment Service

The employment service (ES) is the central function of local labor centers. Local labor centers are one-stop-shopping places for reemployment assistance. These offices act as a unified clearing house for referral to a variety of active and passive support. The ES offers a full range of placement services, including job interview referral, counseling, skills assessment, job search training, resume preparation, and job clubs. The ES within the local labor center can therefore be considered an active labor program. To examine the effectiveness of the ES, we examine the impact of using these particular services.

Obviously, our entire samples of both ALP participants and comparison group members have registered as unemployed with the ES at a local labor center. When we investigate the effectiveness of the ES in this chapter, we mean the impact of the specialized ES assistance, which is something in addition to simply registering as unemployed.

To first examine if there are observable differences between those who choose to use ES assistance and those who do not use them, we compare users and non-users within the combined control groups. We focus on the control groups, as examination of them requires no accounting for use of other ALPs such as retraining or public service employment. As seen in Table 5.1, where users and non-users of ES assistance are compared on 42 observable characteristics, there are statistically significant differences between the two groups on 16 characteristics, which is many more than might be expected if the two groups were each randomly drawn by the same process from a single population.<sup>18</sup> Results in Table 5.1 suggest that ES users were somewhat younger, more likely to have had vocational education, more likely to have been previously employed, more likely to have been a blue collar worker, and less likely to be married. These differences suggest that some type of adjustment methodology is appropriate for estimating the net impacts of the ES on outcome of interest.

---

<sup>18</sup>Definitions for the variables listed in Table 5.1 are given in Table 4a.1.1.

## 5.1 The samples for analysis of the employment service

Table 5.1.1 shows how the number of observations in the two groups examined in Table 5.1 were set. Since information on use of ES assistance was not available directly from administrative data, the analysis in this chapter is based on self-reported data.<sup>19</sup> The main ES information used in this analysis is in the bottom panel of Table 5.1.1; it came in answer to the survey question, “Which services of the employment office did you use during your spell of registered unemployment?”<sup>20</sup> Within the comparison group, 1,438 said they use at least one type of ES assistance, while 1,900 said they used none. By far the most popular assistance was referral to a job interview. Responses to other survey questions are also summarized on Table 5.1.1 to provide further context for the evaluation of job search assistance. Among the comparison sample of 3,338, there were 2,866 who said they looked for regular work since registering as unemployed with the ES. The most popular method of job search was inquiry through friends and relatives. The second most popular method was scanning help-wanted advertisements. Use of the public employment service was third most popular, and this was closely followed by direct application for work at prospective employers.

The exposition of impact estimates for the ES in Hungary presented in this chapter proceeds with presentation of net impact estimates of the ES on the main employment and earnings outcome measures. Section 3 provides a subgroup analysis of ES impacts on employment and earnings. Section 4 reports net impacts on various services of the ES. Section 5 reports on the timing of response to ES assistance. Section 6 reports the estimated ES impact on employment, unemployment, and UC.

---

<sup>19</sup>In evaluating the ES we face a serious problem of selection bias. People choose whether or not to register as unemployed with the local labor office, and they also choose whether or not to use ES services once registered. Use of the ES is in no way an exogenous treatment. There should be an attempt to adjust for selection bias in evaluating the ES. In this chapter, adjustment is undertaken only through use of observable characteristics.

<sup>20</sup>This was question 4 in record type E (see Appendix A). Also summarized in Table 5.1.1 is information from questions 2 and 3 in record type E.

## 5.2 Impact estimates of the employment service on employment and earnings

Impact estimates presented in this section focus on two main outcomes: employment and earnings. The same delineations of employment and earnings outcomes reviewed in section 4a.2 are examined in this section. Four measures of employment are examined: a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey. Average monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date are also examined. The six outcome variables are EMPLOY1, EMPLOY1S, EMPLOY2, EMPLOY2S, EARN1 and EARN2.

Table 5.2.1 presents regression-adjusted net impact estimates for the effect of the ES on the various outcome measures of employment and earnings in Hungary computed on the comparison group sample. Estimates for the impact on each separate outcome measure were computed in four separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which were not adjusted for observable differences between the participant and comparison group samples. The second set of results are net impact estimates, which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>21</sup> The third set of results were computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results are net impact estimates which were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in Appendix B.<sup>22</sup> Essentially, the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics.

---

<sup>21</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

<sup>22</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 5.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.

The most obvious overall result in Table 5.2.1 is that the unadjusted impact estimates are somewhat larger than the adjusted results. The direction of change in impact estimates resulting from regression adjustment is not surprising. Use of ES assistance involves self-selection. Indeed, use of the ES assistance may be a very good proxy for motivation to become reemployed. In the unadjusted comparison, ES users are compared to the whole group of ES non-users in the comparison group. The adjusted comparisons compare ES users with the non-users who are otherwise most similar, so that adjusting for observable characteristics reduces the estimated employment and earnings impacts somewhat. The regression-adjusted net impact estimates suggest that ES assistance in Hungary improves the probability of getting a non-subsidized job (EMPLOY1) by 8.3 percentage points, and the probability of being in a non-subsidized job on the survey date (EMPLOY2) by 1.9 percentage points.

On the broader measures of reemployment in any job, including subsidized ones, the net impact estimates on employment are 10.6 percentage points for ever getting into work (EMPLOY1), and 3.2 percentage points for being in any job on the survey date (EMPLOY2). There are no statistically significant net impacts of ES assistance on either of the earnings outcome measures. The net impact estimates of ES assistance produced by the three adjustment methodologies all agree quite closely. Table 5.2.2 shows that there is close comparability between the matched pairs comparison group and the ES users.

Table 5.2.3 presents analysis of the net impacts of the ES on all six outcomes on the full combined sample of all ALP participants and comparison group members. Three sets of results are given so as to reveal the importance of controlling for both observable characteristics and the use of other ALPs. It turns out that the magnitude and direction of impact estimates are very similar across all three sets of estimates. The strongest results are in the bottom panel of Table 5.2.3 under the heading “ALP interaction.” These estimates were produced controlling for both observable characteristics and the use of other ALPs. The results suggest that use of ES assistance reduced the chance of ever getting back into a job (EMPLOY1) by 2.3 percentage points and also reduced the chance of being in a non-subsidized job on the survey date (EMPLOY2) by 8.7 percentage points, but it increased the chance of

ever getting into any job (EMPLOY1) by 8.0 percentage points. The results also suggest an increase in reemployment earnings (EARN1) of 556 Ft, which dissipated by the survey date.

Impacts of the ES on combined samples of ALP participants and comparison group members are presented on a program by program basis in Table 5.2.4. Across all the samples there is an estimated positive impact on EMPLOY1; the estimates are statistically significant for all except the individual retraining sample. There are also positive, and larger, impacts estimated for EMPLOY1, with the impacts for wage subsidy and self-employment being about half the size of the other estimates. The impact of ES use on EMPLOY2 is nil in both retraining groups and is negative for the three other samples. The impact on EMPLOY2 is positive for both retraining samples and for the PSE group, being about 5 percentage points for each; it is negative and 3.4 percentage points for both the wage subsidy and self-employment groups. The only statistically significant impacts on earnings are negative impacts on EARN1 for the wage subsidy and PSE groups, and negative impacts on EARN2 for individual retraining and PSE.

### **5.3 A subgroup analysis of employment service assistance impacts**

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously, that is, ES assistance impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

Table 5.3 presents net impact estimates of ES assistance by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation,

whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to using ES assistance), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

Females had statistically significant, and larger positive net impacts from ES assistance compared to males on all four employment outcome measures. However, with the exception of a positive impact on earnings in the job on the survey date for males, there were no statistically significant impacts of ES assistance on earnings in the gender subgroup analysis.

There are no statistically significant different impacts of ES assistance on the employment outcomes across any of the three age groups examined. The tendency is for the ES to benefit the older group and the younger group somewhat more than the middle age group in terms of gaining reemployment. Receipt of ES assistance had no statistically significant impact on either of the earnings outcome measures for any of the age subgroups.

There were no statistically significantly different impacts of ES assistance on any of the employment outcomes across the educational attainment groups. However, the group with the least schooling was the only group to enjoy positive and statistically significant net impacts on each of the four employment outcomes. The use of ES assistance appeared to raise the prospects of ever getting reemployed for all of the four subgroups, but it improved the chances of being employed on the survey date only for those with eight or fewer years of formal schooling. There were no statistically significant impacts of ES assistance for any of the education subgroups on either of the earnings outcomes.

Two occupational categories were established for the subgroup analysis. There were no statistically significant differences across the two main occupational groups in either the employment or earnings impacts of ES assistance. For both groups, ES assistance raised prospects of reemployment. The blue collar group enjoyed a larger impact on ever getting a job, but the white collar group had larger gains in measured by employment status on the survey date. There were no statistically

significant impacts of ES assistance for either of the occupation subgroups on either of the earnings outcomes.

In terms of reemployment, those who were recent school graduates benefitted more on all employment and earnings outcome measures than did either job losers or job leavers. Reemployment success for each of the three groups was improved by use of ES assistance. In terms of reemployment, there was a statistically significantly larger employment gain for recent school leavers compared to job leavers on three of the four employment outcomes. There were no statistically significant impacts for any of the subgroups defined by reason for job separation on either of the earnings outcomes.

There were no statistically significant differences in impacts of ES assistance on either the reemployment or earnings of long-term unemployed persons relative to those who were not long-term unemployed. The impact estimates on each outcome are nearly identical across the two groups. The use of ES assistance boosts the chance of ever getting reemployment in a non-subsidized job by about 12 percentage points for both groups, and it raises the odds of being in a non-subsidized job on the survey date by about 5.5 percentage points, though this last result is not statistically significant for those who were long-term unemployed. There were no statistically significant impacts for any of the subgroups defined by duration of prior unemployment on either of the earnings outcomes.

There were no statistically significant differences in impacts of ES assistance on either the reemployment or earnings across regions grouped by low, medium, or high unemployment rate. There were positive employment gains for all groups on all outcomes, but negligible impacts on earnings for all but those in low unemployment areas who registered a gain in their current job on the survey date. The employment gains for ever getting into a job are greatest for those in the high unemployment areas, but for employment status on the survey date there was no impact in high unemployment areas, while the low and medium unemployment areas registered positive net impacts of ES assistance.

## **5.4 Net impacts of various employment service features**

Since ES assistance provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of ES assistance yields different impacts on the outcome measures for employment and earnings. Table 5.4 presents net impact estimates by the type of ES assistance received. The methodology used to compute these impacts is summarized in Appendix B under the heading, “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of Table 5.4 restates the means of the outcome variables for the matched pairs comparison group and the second row gives the net impact estimated from matched pairs methodology.

Two categories of ES were examined: job interview referrals and other ES assistance. As seen in Table 5.1.1, job interview referral is the most popular form of ES assistance, and usage of the remaining categories is too thin within the comparison group to provide sufficient statistical leverage for estimating statistically significant results. Therefore, all categories of ES assistance except job interview referrals were grouped together for this analysis.

The results in Table 5.4 suggest that users of ES assistance are wise in preferring to use job interview referrals. It would appear that all the gains in reemployment resulting from ES assistance result from job interview referrals. The impacts for job interview referrals are positive, large, and have a statistically significant difference from those for other ES assistance on each of the four employment outcome measures. There were no statistically significant impacts of either category of ES assistance on either of the earnings outcome measures.

## **5.5 The timing of response to employment service assistance**

The table presented in this section shows how use of ES assistance affects the timing of exit from the unemployment register to reemployment. Table 5.5 compares exits from the unemployment register for ES assistance recipients and a matched pairs comparison group for a maximum 39-month time period. For both groups in Table 5.5, “month 1” is the first month after registering as unemployed.



In the analysis presented here, exit from the unemployment register to reemployment is defined to occur when the first new job begins after having registered as unemployed during the reference spell of joblessness. Referring back to Table 5.1.1 for ES assistance, it can be seen that the initial risk sets are slightly smaller than the full sample size of 1,365 ES assistance users within the comparison group. This is because for a small number of observations in the sample, the recorded date of the first new job is before the recorded start date of the unemployment spell.

Table 5.5 shows how many people started new non-subsidized jobs from among those in the comparison group who used ES assistance and a matched pairs comparison group drawn from non-users within the comparison group in each month since they registered as unemployed. Table 5.5 also shows the proportion who started jobs (the exit rate from unemployment to employment) and the difference between the ES users and comparison group members in the rate of exit. This last quantity is listed in the right-most column and is also the ES assistance impact on the exit rate for a given month. ES assistance recipients are seen to exit at a higher rate in 32 of the 39 months examined. However, the positive difference for ES users is statistically significant in only four months. Overall, the cumulative effect of the ES in promoting reemployment as reported in Table 5.5 is 7.29 percentage points, which accords quite closely with the matched pairs impact analysis reported in Table 5.2.1.

For the hazard analysis of retraining impacts done in the previous chapter, we also examined exits from the unemployment register for retrainees immediately after leaving training. Unfortunately, we have no data on exactly when the ES assistance was used, so we cannot conduct a similar hazard analysis. Such an analysis might have sharpened understanding of the process by which ES assistance helps reemployment.

## **5.6 Impact of employment service assistance on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>23</sup> Responses to this question allowed independent estimates of

---

<sup>23</sup>For example, for the retraining sample it was survey question 13 in record type A, and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

ES assistance impact on months in a non-subsidized job (EMMONTHS), months employed in any job (EMSMONTH), and months unemployed (UNMONTHS) since the most recent ES registration. There were also questions about months of unemployment compensation (UCMONTHS), and the amount of unemployment compensation drawn (UCPAY)<sup>24</sup> in each of the 16 months between January 1996 and April 1997.<sup>25</sup>

First focusing on the comparison group, Table 5.6 presents net impact estimates using matched pairs and regression adjustment as well as unadjusted differences. There are no statistically significant differences in the net impact estimates from matched pairs and regression adjustment methods. With the exception of the estimate on months of unemployment, use of ES assistance appears to have no statistically significant effect on the outcomes examined within the comparison group. The regression adjusted net impact on months of unemployment is 0.95.

Table 5.6.1 examines the effect of the ES on the same outcomes using the full combined sample of all ALP participants and comparison group members. In addition to unadjusted and regression adjusted, estimates produced by full regression interaction and ALP interaction methods are also presented.<sup>26</sup> Since results in the right-most column control for use of other ALPs as well as observable characteristics, those results are reviewed. Impact estimates on all outcomes are statistically significant, but all ES net impacts are unfavorable; months employed were reduced, months unemployed were increased, and UC payments were increased. Indeed months of UC went up 0.47 and UC pay increased by 6,490 Ft for the mean person in the full sample.

---

<sup>24</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data directly from the UC register which recorded the average UC for months compensated in a calendar year provided point estimates of ES impacts virtually identical to those reported.

<sup>25</sup>For example, for those in the retraining sample, receipt of UC was gathered by question 13.2 in record type A, while for the comparison group it was survey question 11.2 in record type E (see Appendix A).

<sup>26</sup>The estimation methods are reviewed in Appendix B.

Table 5.6.2 reports ES net impact estimates using the full comparison group with each ALP participant sample separately. The estimates were computed using the ALP interaction method, the same method as for results reported in the right-most column of Table 5.6.1. ES use left months of employment (EMMONTHS) unaffected for the retraining samples, but reduced EMMONTHS by 0.40, 0.32, and 0.47 for the wage subsidy, PSE, and self-employment samples, respectively. Similarly, ES use left UC payments (UCPAY) unchanged for the retraining groups, but UCPAY increased by 6,169, 2,695 and 2,562 Ft for the wage subsidy, PSE, and self-employment samples, respectively.

Taken together, these results suggest that the ES did not have strong independent positive effects on reemployment outcomes. However, it should be remembered that the ES is more than simply a job referral service. The ES in Hungary acts as a one-stop-shopping center for all forms of reemployment services and temporary income support for the unemployed. The administrative costs per person registered as unemployed are relatively small, and the large social value of services provided is hard to estimate with precision.

**Table 5.1 Comparison Group Exogenous Characteristics Based on Employment Service Use**

	Used no ES	Used ES	Difference	<i>t</i> -statistic on Difference	Used No ES Sample Size	Used ES Sample Size
AVGERN	15350	14933	-417	0.94	1900	1438
AGE	34.2	33.5	-0.7*	1.92	1900	1438
MALE	0.558	0.563	0.00	0.27	1900	1438
PRIMARY	0.355	0.338	-0.02	1.04	1900	1438
SECONDARY	0.388	0.440	0.05**	3.01	1900	1438
VOCATIONAL	0.221	0.201	-0.02	1.37	1900	1438
COL-UNIV	0.036	0.021	-0.01**	2.53	1900	1438
EARLY1	0.204	0.238	0.03**	2.37	1900	1438
EARLY2	0.682	0.648	-0.03**	2.06	1900	1438
EARLY3	0.087	0.095	0.01	0.72	1900	1438
EARLY4	0.027	0.019	-0.01	1.39	1900	1438
BLCOLL1	0.829	0.904	0.08**	2.02	175	157
WHCOLL1	0.171	0.096	-0.08**	2.02	175	157
BLCOLL2	0.794	0.840	0.05**	3.41	1900	1438
WHCOLL2	0.206	0.160	-0.05**	3.41	1900	1438
LEGIS1	0.033	0.022	-0.01*	1.67	1479	1128
PROF1	0.027	0.009	-0.02**	3.36	1479	1128
TECH1	0.067	0.057	-0.01	1.07	1479	1128
CLERK1	0.064	0.051	-0.01	1.41	1479	1128
SERV1	0.137	0.126	-0.01	0.80	1479	1128
SKILLAG1	0.041	0.027	-0.01*	1.94	1479	1128
CRAFT1	0.258	0.318	0.06**	3.37	1479	1128
MACH1	0.118	0.130	0.01	0.92	1479	1128
ELEM1	0.255	0.257	0.00	0.13	1479	1128
ARMED1	0.001	0.004	0.00*	1.66	1479	1128
LEGIS2	0.028	0.016	-0.01**	2.29	1899	1438
PROF2	0.037	0.020	-0.02**	2.82	1899	1438
TECH2	0.075	0.050	-0.03**	2.94	1899	1438
CLERK2	0.082	0.084	0.00	0.21	1899	1438
SERV2	0.126	0.120	-0.01	0.59	1899	1438
SKILLAG2	0.028	0.026	-0.00	0.48	1899	1438
CRAFT2	0.256	0.323	0.07**	4.25	1899	1438
MACH2	0.100	0.090	-0.01	0.94	1899	1438
ELEM2	0.263	0.266	0.00	0.20	1899	1438
ARMED2	0.003	0.004	0.00	0.48	1899	1438
SPOUSE1	0.636	0.598	-0.04**	2.15	1822	1392
SPOUSE2	0.633	0.655	0.02	0.99	1147	825
HHOTHER	0.453	0.458	0.01	0.21	1900	1438
PENSION	0.323	0.322	-0.00	0.06	1900	1438
KIDS06	0.347	0.291	-0.06**	2.61	1900	1438
KIDS6	0.765	0.788	0.02	0.71	1900	1438
HHEARN	39611	37618	1993	1.64	1900	1438

Table 5.1 (Continued)

	Used no ES	Used ES	Difference	<i>t</i> -statistic on Difference	Used No ES Sample Size	Used ES Sample Size
COUNTY1	0.097	0.077	-0.02**	2.03	1900	1438
COUNTY2	0.090	0.098	0.01	0.79	1900	1438
COUNTY4	0.066	0.124	0.06**	5.80	1900	1438
COUNTY5	0.156	0.095	-0.06**	5.21	1900	1438
COUNTY6	0.050	0.104	0.05**	5.99	1900	1438
COUNTY7	0.085	0.097	0.01	1.21	1900	1438
COUNTY9	0.119	0.116	-0.00	0.25	1900	1438
COUNTY13	0.116	0.114	-0.00	0.20	1900	1438
COUNTY15	0.154	0.090	-0.06**	5.47	1900	1438
COUNTY18	0.066	0.083	0.02*	1.88	1900	1438

\* Difference statistically significant at the 90 percent level in a two-tailed test

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 5.1.1 Methods of Job Search**

	Individual Retraining	Group Retraining	Public Service Employment	Wage Subsidy	Self- employment	Comparison Group
Sample size	1222	1321	1140	1131	1067	3338
Have you looked for a regular non-subsidized job since registering as unemployed?						
1 = yes	1017	1085	698	403	195	2866
2 = no	205	236	442	123	139	471
Job search method:						
1 - looked at ads	557	628	280	185	102	1542
2 - placed ads	52	53	5	14	8	81
3 - answered ads	192	196	31	37	42	286
4 - public employment office	308	458	269	174	38	1198
5 - private, union or non-profit placement agency	39	45	25	14	6	68
6 - friends, relatives	662	652	396	271	124	1848
7 - direct application	334	381	262	148	58	953
8 - other method	103	85	54	42	18	256
9 - no answer	5	5	8	5	0	20
Which services of the employment office did you use during your spell of registered unemployment?						
1 - job interview referral	287	439	374	124	54	1166
2 - counseling	16	25	26	9	7	75
3 - psychological counseling	0	1	0	1	1	9
4 - skills assessment	0	3	0	1	1	11
5 - job-search training	10	20	4	1	3	24
6 - job club	8	14	1	3	3	22
7 - other service	93	132	137	81	46	315
Used some ES service	386	566	479	203	101	1438
8- used no service	836	755	661	928	966	1900

**Table 5.2.1 Employment Service Impact Estimates on Employment and Earnings Among Persons in the Comparison Group**

Hungary	Used no ES service	Used some ES service	Impact	t-statistic on impact	Used no ES service sample	Used some ES service sample
Unadjusted						
EMPLOY1	0.489	0.604	0.115**	6.62	1900	1438
EMPLOY1S1	0.495	0.630	0.135**	7.83	1900	1438
EMPLOY2	0.406	0.455	0.048**	2.81	1900	1438
EMPLOY2S2	0.413	0.474	0.061**	3.53	1900	1438
EARN1	18675	17698	-977**	2.56	894	840
EARN2	22440	21777	-663	1.37	756	670
Regression Adjusted <sup>a</sup>						
EMPLOY1	0.496	0.603	0.083**	5.15	1821	1392
EMPLOY1S1	0.501	0.629	0.106**	6.62	1821	1392
EMPLOY2	0.411	0.454	0.019	1.18	1821	1392
EMPLOY2S2	0.417	0.473	0.032**	1.98	1821	1392
EARN1	18666	17672	-245	0.65	870	811
EARN2	22449	21755	407	0.92	734	648
Full Interaction						
EMPLOY1	0.496	0.603	0.084	0.63	1821	1392
EMPLOY1S1	0.501	0.629	0.108	0.85	1821	1392
EMPLOY2	0.411	0.454	0.019	0.14	1821	1392
EMPLOY2S2	0.417	0.473	0.032	0.52	1821	1392
EARN1	18666	17672	-244	0.50	870	811
EARN2	22449	21755	432	0.48	734	648
Matched Pairs <sup>b</sup>						
EMPLOY1	0.546		0.058**	3.14	1438	1438
EMPLOY1S1	0.547		0.083**	4.52	1438	1438
EMPLOY2	0.449		0.010	0.30	1438	1438
EMPLOY2S2	0.458		0.017	0.90	1438	1438
EARN1	18122		-424	1.23	760	760
EARN2	21740		37	0.08	647	647

\* Difference statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent confidence level in a two-tailed test.

<sup>a</sup> Control variables in regressions are those listed in Table 4a.2.3.

<sup>b</sup> Characteristics used for matching are those listed in Table 4a.2.4.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment.

EMPLOY1S1 - Ever reemployed in any job or self-employment.

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date.

EMPLOY2S2 - Employed in any job or self-employment on the survey date.

EARN1 - Average monthly earnings at the start of the first new job or self-employment.

EARN2 - Average monthly earnings from the job or self-employment on the survey date.

**Table 5.2.2 Exogenous Variable Differences for Comparison Group Members Who Used the Employment Service and the Matched Pair Comparison Group Members Who Did Not Use the ES**

	Comparison group who used the ES	Match pair group who did not use ES	Difference	<i>t</i> -statistic on difference	Used ES sample size	Did not use ES sample size
AVGEARN	14933	14837	96	0.21	1438	1438
AGE	33.5	33.2	0.27	0.69	1438	1438
MALE	0.563	0.605	-0.04**	2.31	1438	1438
EDELEM	0.338	0.343	-0.01	0.28	1438	1438
EDVOC	0.440	0.443	-0.00	0.15	1438	1438
EDGYM	0.201	0.193	0.01	0.52	1438	1438
EDCOLL	0.021	0.021	0.00	0.00	1438	1438
EARLY1	0.238	0.229	0.01	0.53	1438	1438
EARLY2	0.648	0.665	-0.02	0.94	1438	1438
EARLY3	0.095	0.087	0.01	0.71	1438	1438
EARLY4	0.019	0.019	0.00	0.14	1438	1438
BLCOLL1	0.904	0.761	0.14**	3.26	157	113
WHCOLL1	0.096	0.239	-0.14**	3.26	157	113
BLCOLL2	0.840	0.841	-0.00	0.10	1438	1438
WHCOLL2	0.160	0.159	0.00	0.10	1438	1438
LEGIS1	0.022	0.015	0.01	1.18	1128	1105
PROF1	0.009	0.016	-0.01	1.56	1128	1105
TECH1	0.057	0.061	-0.00	0.39	1128	1105
CLERK1	0.051	0.063	-0.01	1.31	1128	1105
SERV1	0.126	0.143	-0.02	1.19	1128	1105
SKILLAG1	0.027	0.035	-0.01	1.19	1128	1105
CRAFT1	0.318	0.292	0.03	1.33	1128	1105
MACH1	0.130	0.116	0.01	1.04	1128	1105
ELEM1	0.257	0.258	-0.00	0.05	1128	1105
ARMED1	0.004	0.000	0.00**	1.98	1128	1105
LEGIS2	0.016	0.016	0.00	0.00	1438	1438
PROF2	0.020	0.020	0.00	0.00	1438	1438
TECH2	0.050	0.051	-0.00	0.09	1438	1438
CLERK2	0.084	0.083	0.00	0.07	1438	1438
SERV2	0.120	0.120	0.00	0.00	1438	1438
SKILLAG2	0.026	0.026	0.00	0.00	1438	1438
CRAFT2	0.323	0.323	0.00	0.00	1438	1438
MACH2	0.090	0.090	0.00	0.00	1438	1438
ELEM2	0.266	0.266	0.00	0.00	1438	1438
ARMED2	0.004	0.004	0.00	0.00	1438	1438



Table 5.2.2 (Continued)

	Comparison group who used the ES	Match pair group who did not use ES	Difference	<i>t</i> -statistic on difference	Used ES sample size	Did not use ES sample size
SPOUSE1	0.598	0.614	-0.02	0.83	1392	1383
SPOUSE2	0.655	0.663	-0.01	0.35	825	839
HHOTHER	0.458	0.505	-0.05	1.57	1438	1438
PENSION	0.322	0.355	-0.03	1.40	1438	1438
KIDS06	0.291	0.366	0.07**	3.24	1438	1438
KIDS6	0.788	0.755	0.03	1.00	1438	1438
HHEARN	37618	39526	-1908**	1.97	1438	1438
COUNTY1	0.077	0.078	-0.00	0.07	1438	1438
COUNTY2	0.098	0.097	0.00	0.06	1438	1438
COUNTY4	0.124	0.123	0.00	0.06	1438	1438
COUNTY5	0.095	0.099	-0.00	0.38	1438	1438
COUNTY6	0.104	0.103	0.00	0.12	1438	1438
COUNTY7	0.097	0.095	0.00	0.25	1438	1438
COUNTY9	0.116	0.117	-0.00	0.06	1438	1438
COUNTY13	0.114	0.113	0.00	0.12	1438	1438
COUNTY15	0.090	0.091	-0.00	0.07	1438	1438
COUNTY18	0.083	0.084	-0.00	0.07	1438	1438

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 5.2.3 Employment Service Impact Estimates on Employment and Earnings Among the Full Sample of All ALP Participants and Comparison Group Members**

Hungary	Used no ES service	Used some ES service	Impact	t-statistic on impact	Used no ES service sample	Used some ES service sample
Unadjusted						
EMPLOY1	0.611	0.563	-0.048**	4.51	6046	3173
EMPLOYS1	0.646	0.680	0.034**	3.29	6046	3173
EMPLOY2	0.540	0.423	-0.118**	10.81	6046	3173
EMPLOYS2	0.565	0.518	-0.047**	4.30	6046	3173
EARN1	17866	18385	519	1.35	2960	1626
EARN2	21417	21405	-13	0.04	3364	1564
Regression Adjusted <sup>a</sup>						
EMPLOY1	0.615	0.563	-0.016	1.52	5778	3040
EMPLOYS1	0.648	0.683	0.070**	7.03	5778	3040
EMPLOY2	0.543	0.423	-0.081**	7.83	5778	3040
EMPLOYS2	0.568	0.520	-0.006	0.63	5778	3040
EARN1	17845	18257	563	1.43	2853	1558
EARN2	21459	21410	597*	1.92	3231	1503
ALP Interaction <sup>a</sup>						
EMPLOY1	0.615	0.563	-0.023**	6.34	5778	3.0403e+23
EMPLOYS1	0.648	0.683	0.080**	4.82	5778	
EMPLOY2	0.543	0.423	-0.087**	11.08	5778	
EMPLOYS2	0.568	0.520	0.002	1.38	5778	
EARN1	17845	18257	556**	2.25	2853	
EARN2	21459	21410	365	1.23	3231	

\* Difference statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent confidence level in a two-tailed test.

<sup>a</sup> Control variables in regressions are those listed in Table 4a.2.3.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 5.2.4 Employment Service Impact Estimates on Employment and Earnings in the Combined Samples of the Comparison Group with Each Group of ALP Participants Using an Interaction Model with Control Variables<sup>a</sup>**

Hungary	Used no ES service	Used some ES service	Impact	t-statistic on impact	Used no ES service sample	Used some ES service sample
<b>Individual Retraining</b>						
EMPLOY1	0.533	0.608	0.062	0.18	2600	1756
EMPLOY1S1	0.538	0.654	0.108**	4.08	2600	1756
EMPLOY2	0.450	0.462	0.004	1.37	2600	1756
EMPLOY2S2	0.460	0.508	0.047**	2.95	2600	1756
EARN1	19343	18043	-351	1.10	1330	1033
EARN2	23169	21777	-28*	1.94	1151	873
<b>Group Retraining</b>						
EMPLOY1	0.507	0.601	0.078**	2.20	2537	1925
EMPLOY1S1	0.518	0.664	0.130**	7.15	2537	1925
EMPLOY2	0.421	0.455	0.023	0.83	2537	1925
EMPLOY2S2	0.432	0.503	0.062**	4.79	2537	1925
EARN1	19164	18299	-602	0.62	1239	1114
EARN2	22497	21758	87	0.89	1061	943
<b>Wage Subsidy</b>						
EMPLOY1	0.581	0.586	0.009**	5.82	2716	1587
EMPLOY1S1	0.605	0.631	0.057**	2.69	2716	1587
EMPLOY2	0.504	0.439	-0.057**	7.93	2716	1587
EMPLOY2S2	0.514	0.464	-0.034**	6.49	2716	1587
EARN1	18941	17699	-756*	1.69	1002	857
EARN2	22022	21742	318	0.45	1376	719
<b>PSE</b>						
EMPLOY1	0.464	0.536	0.047**	2.35	2450	1850
EMPLOY1S1	0.496	0.642	0.124**	5.74	2450	1850
EMPLOY2	0.385	0.396	-0.013**	4.24	2450	1850
EMPLOY2S2	0.410	0.482	0.050**	3.12	2450	1850
EARN1	18945	17610	-856**	3.36	1097	959
EARN2	22151	21105	-304**	3.04	974	844
<b>Self-employment</b>						
EMPLOY1	0.644	0.619	0.042**	2.14	2759	1490
EMPLOY1S1	0.661	0.646	0.057**	2.40	2759	1490
EMPLOY2	0.574	0.467	-0.047**	5.79	2759	1490
EMPLOY2S2	0.591	0.489	-0.034**	5.59	2759	1490
EARN1	15999	17514	-508	0.64	1665	839
EARN2	20454	21779	675	1.64	1605	716

\* Difference statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent confidence level in a two-tailed test.

<sup>a</sup> Control variables in regressions are those listed in Table 4a.2.3.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 5.3 Employment Service Impacts by Subgroup for the Comparison Group**

	EMPLOY1	EMPLOY1S	EMPLOY2	EMPLOY2S	EARN1	EARN2
MALE - Respondent is male	0.070**##	0.091**#	-0.000##	0.008##	-222	1056*
FEMALE - Respondent is female~	0.137**	0.155**	0.080**	0.098**	-720	-239
AGELT30 - Age < 30	0.083**	0.104**	0.048*	0.057**	-504	272
AGE3044 - Age 30 to 44	0.103**	0.122**	0.017	0.027	-373	378
AGEGE45 - Age is 45 or over~	0.127**	0.147**	0.043	0.067*	-437	1143
EDELEM - 8 years of schooling	0.115**	0.135**	0.068**	0.075**	119	576
EDVOC - Vocational	0.063**	0.083**	0.010	0.024	-363	1098
EDGYM - General secondary	0.136**	0.156**	0.040	0.058	-1352	-691
EDCOLL - Some higher education~	0.162	0.170	-0.018	-0.018	-1593	-625
WHITECOL - White collar occupation	0.017#	0.035#	0.045	0.057	426	1753
BLUECOL - Blue collar occupation~	0.118**	0.139**	0.033*	0.045**	-640	196
LOST - Earlier lost job	0.101**	0.125**	0.032	0.045**	-290	784#
SCHOOL - Earlier school leaver	0.153**	0.180**	0.113*	0.144**#	283	1968
OTHER - Earlier other~	0.075**	0.081**	0.013	0.018	-1129	-889
LTU - Long-term unemployed	0.108**	0.135**	0.041	0.044	-811	1666
NONLTU - Not unemployed long term~	0.097**	0.115**	0.033*	0.048**	-339	160
LOWURATE - Low unemployment area	0.089**	0.086**	0.051*	0.044	421	1424*
MEDURATE - Med unemployment area	0.090**	0.120**	0.041	0.062**	-1135	218
HIURATE - High unemployment area~	0.116**	0.144**	0.018	0.037	-436	40
Baranya - County 2	0.134**	0.174**##	0.047	0.080	1127	1162
Bekes - County 4	0.035	0.036#	0.018	0.009	1220##	3431**
Borsod - County 5	0.082*	0.096**	-0.018	-0.021	-857	495
Csongrad - County 6	0.095	0.108*	0.042	0.060	-2131##	-1921##
Fejer - County 7	0.034	0.058	0.049	0.051	-794	-525#
Hajdu - County 9	0.078*	0.097**	0.033	0.051	758	-9#
Pest - County 13	-0.002	0.006	0.004	0.005	-203	-42#
Szabolcs - County 15	0.192**	0.254**##	0.034	0.080*	120	1285
Vas - County 18	0.217**##	0.212**##	0.105*	0.098*	1364	2177
Budapest - Capital city 1~	0.027	0.024	0.014	0.002	1698	3508**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment.

EMPLOY1S - Ever reemployed in any job or self-employment.

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date.

EMPLOY2S - Employed in any job or self-employment on the survey date.

EARN1 - Average monthly earnings at the start of the first new job or self-employment.

EARN2 - Average monthly earnings from the job or self-employment on the survey date.

**Table 5.4 Means and Net Impact Estimates of Alternative Employment Service Offerings on Employment and Earnings Based on a Matched Pairs Analysis Within the Comparison Group<sup>a</sup> (*t*-statistics in parentheses)**

	EMPLOY1	EMPLOY1S	EMPLOY2	EMPLOY2S	EARN1	EARN2
<b>Outcome means</b>						
Used no ES service	0.543	0.545	0.446	0.454	17722	21368
<b>Impacts</b>						
Used some ES service	0.075** (4.01)	0.097** (5.21)	0.021 (1.11)	0.032* (1.69)	19 (0.06)	437 (0.95)
Job interview referral	0.126**# # (6.57)	0.150**# # (7.90)	0.059**# # (3.04)	0.074**# # (3.78)	16 (0.05)	93 (0.20)
Other ES service	-0.059** (2.31)	-0.046* (1.80)	-0.063** (2.40)	-0.053** (2.03)	-195 (0.41)	388 (0.59)

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

## Difference from Other ES service statistically significant at the 95 percent confidence level in a two-tailed test.

# Difference from Other ES service statistically significant at the 90 percent confidence level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

<sup>a</sup> Characteristics used for matching are those listed in Table 4a.2.4.

**Table 5.5 Impact of Employment Service Use on the Timing of Reemployment Within the Pooled Comparison Group with ES Users Matched to ES Non-Users Within the Comparison Group**

Months until starting a job	Used no ES service risk set	Used no ES service started new job	Used no ES service exit rate	Used some ES service risk set	Used some ES service started new job	Used some ES service exit rate	Used some ES service impact
1	1412	108	7.65	1410	85	6.03	-1.62*
2	1304	64	4.91	1325	57	4.30	-0.61
3	1240	41	3.31	1236	51	4.02	0.72
4	1199	42	3.50	1217	56	4.60	1.10
5	1157	51	4.04	1161	34	2.93	-1.48*
6	1106	29	2.62	1127	36	3.19	0.57
7	1077	22	2.04	1091	32	2.93	0.89
8	1055	29	2.75	1059	35	3.31	0.56
9	1026	27	2.63	1024	25	2.44	-0.19
10	999	39	3.90	999	32	3.20	-0.70
11	960	39	4.06	967	45	4.65	0.59
12	921	45	4.89	922	55	5.97	1.08
13	876	24	2.74	867	32	3.69	0.95
14	852	29	3.40	835	37	4.43	1.03
15	823	29	3.52	798	36	4.51	0.99
16	794	27	3.40	762	42	5.51	2.11**
17	767	24	3.13	720	34	4.72	1.59
18	743	20	2.69	686	22	3.21	0.52
19	723	16	2.21	664	21	3.16	0.95
20	707	5	0.71	643	13	2.02	1.31**
21	702	18	2.56	630	23	3.65	1.09
22	684	23	3.36	607	17	2.80	-0.56
23	661	14	2.12	590	14	2.37	0.25
24	647	5	0.77	576	7	1.22	0.44
25	642	0	0.00	569	1	0.18	0.18
26	642	0	0.00	568	1	0.18	0.18
27	642	0	0.00	567	0	0.00	0.00
28	642	1	0.16	567	0	0.00	-0.16
29	641	0	0.00	567	1	0.18	0.18
30	641	0	0.00	566	0	0.00	0.00
31	641	0	0.00	566	1	0.18	0.18
32	641	1	0.16	565	0	0.00	-0.16
33	640	0	0.00	565	0	0.00	0.00
34	640	0	0.00	565	1	0.18	0.18
35	640	0	0.00	564	0	0.00	0.00
36	640	0	0.00	564	0	0.00	0.00
37	640	0	0.00	564	0	0.00	0.00
38	640	0	0.00	564	1	0.18	0.18
39	640	0	0.00	563	0	0.00	0.00
Cumulative	1412	772	54.67	1410	847	60.07	5.4

\*Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 5.6 Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in Hungary, Analysis Within the Comparison Group (*t*-statistics in parentheses)**

	Unadjusted Impact Estimates	Matched Pairs Impact Estimates	Regression Adjusted Impact Estimates
EMMONTHS	0.52** (2.26)	-0.21 (0.85)	0.04 (0.21)
EMSMONTH	0.67** (2.94)	-0.05 (0.21)	0.21 (1.06)
UNMONTHS	0.57** (2.50)	1.10** (4.61)	0.95** (4.53)
UCMONTHS	0.03 (0.37)	0.13 (1.37)	0.07 (0.79)
UCPAY	630 (0.53)	1627 (1.29)	943 (0.82)
Used ES Sample	1438	1438	1392
No ES Use Sample	1900	1438	1821

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration.

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS- Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.

**Table 5.6.1 Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in Hungary, Analysis on the Full Sample of all ALP Participants and Comparison Group Members (*t*-statistics in parentheses)**

	Unadjusted Impact Estimate	Regression Adjusted Impact Estimate <sup>a</sup>	Full Interaction Impact Estimate <sup>a</sup>	ALP Interaction Impact Estimate
EMMONTHS	-1.05** (8.56)	-0.56** (4.87)	-0.88** (9.90)	-1.28** (14.49)
EMSMONTH	-0.41** (3.42)	0.10 (0.86)	-0.09** (2.20)	-0.51** (7.52)
UNMONTHS	1.85** (15.40)	1.38** (12.22)	1.11** (8.69)	1.41** (12.69)
UCMONTHS	0.55** (11.01)	0.51** (10.27)	0.48** (10.74)	0.47** (11.08)
UCPAY	7407** (11.06)	6966** (10.36)	6616** (11.07)	6490** (11.38)
Used ES Sample	3173	3040	3040	3173
No ES Use Sample	6046	5778	5778	6046

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup> Control variables in regressions are those listed in Table 4a.2.3

EMMONTHS - Months in a non-subsidized job since most recent ES registration.

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS- Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.



**Table 5.6.2 Impact Estimates of Employment Service Use on Months of Employment, Unemployment and Unemployment Compensation in the Combined Samples of the Comparison Group with Each Group of ALP Participants (t-statistics in parentheses)<sup>a</sup>**

	Individual Retraining	Group Retraining	Wage Subsidy	PSE	Self-employment
EMMONTHS	-0.11 (1.53)	0.05 (0.08)	-0.40** (4.37)	-0.32** (4.76)	-0.47** (3.83)
EMSMONTH	0.30* (1.86)	0.47** (3.51)	-0.20** (3.62)	0.20 (0.08)	-0.32** (3.71)
UNMONTHS	0.80 (0.85)	0.60 (0.48)	1.22 (5.18)	0.81* (1.75)	1.21** (3.90)
UCMONTHS	0.08 (0.37)	0.10 (1.38)	0.45** (7.67)	0.20** (3.86)	0.19** (2.50)
UCPAY	1111 (0.48)	1409 (1.47)	6168** (8.02)	2695** (3.97)	2562** (2.55)
Used ES Sample	1756	1925	1587	1850	1490
No ES Use Sample	2600	2539	2716	2450	2759

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup> Control variables in regressions are those listed in Table 4a.2.3. Estimates were produced using the ALP interaction method.

EMMONTHS - Months in a non-subsidized job since most recent ES registration.

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS - Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.



## **6. Evaluation of Public Service Employment**

Public service employment (PSE) is a short-term direct job creation program with employment on projects organized by government agencies, including municipal governments. Direct employment costs for PSE (including wages, work tools, working clothes, and transportation) are subsidized up to 70 percent of the full amount with money from the Employment Fund, provided that the employer does not receive any net income from the activity.

In 1996, PSE received the largest share of spending on ALPs, having been second to retraining in the preceding years (Table 2.3.1). PSE also ranked first among ALPs in Hungary in the number of program participants (Table 2.4).

The exposition of impact estimates for PSE in Hungary presented in this chapter proceeds with a comparison of the observable characteristics of the PSE participant group and the comparison group. This is followed by a report on net impacts for the main employment and earnings measures. Section 3 of this chapter presents a subgroup analysis of PSE impacts on employment and earnings. Section 4 reports net impacts on various features of PSE. Section 5 reports on the timing of response to PSE. Section 6 reports on the impact on employment, unemployment, and unemployment compensation.

### **6.1 The samples for analysis of PSE**

The differences between the PSE participant sample and the comparison sample are fully revealed in Table 6.1. Ignoring the county variables in the table, there are 42 descriptive characteristics listed for comparing the samples. The asterisks indicate that there are significant differences across the samples in 25 of the 42 characteristics; the samples were clearly drawn from different populations. In contrast to the comparison group, the PSE sample includes participants who had lower prior average monthly earnings, are older, more likely to be male, less educated, more likely to have been employed prior to registering as unemployed, more likely to have been in a blue collar occupation, and less likely to be married than the general population of registered unemployed.

## 6.2 Impact estimates of PSE on employment and earnings

Impact estimates presented in this section focus on two main outcomes: employment and earnings. The same delineations of employment and earnings outcomes reviewed in section 4a.2 are examined in this section. Four measures of employment are examined: a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey. Average monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date are also examined. The six outcome variables are EMPLOY1, EMPLOY1S, EMPLOY2, EMPLOY2S, EARN1, and EARN2.

Table 6.2.1 presents impact estimates for the effect of PSE on the various measures of employment and earnings in Hungary. Estimates for the impact on each separate outcome measure were computed in five separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which were not adjusted for observable differences between the participant and comparison group samples. The second set of results are net impact estimates which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>27</sup> The third set of results were computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results are net impact estimates that were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in Appendix B.<sup>28</sup> Essentially, the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics. The fifth estimation methodology is labeled in Table 6.2.1 as “ES Interact.” That label refers to a multiple regression technique that estimates net impacts for the

---

<sup>27</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

<sup>28</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 6.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.

ALP while accounting for the fact that many ALP participants also made use of the services of the employment service; this method is also described in Appendix B.

The most obvious overall result in Table 6.2.1 is that the unadjusted impact estimates are generally quite different from the adjusted results. Furthermore, the direction of change in impact estimates resulting from the adjustment methodologies is surprising. O'Leary (1997) found for earlier net impact estimates of PSE impacts that the unadjusted estimates were quite similar to those adjusted for observable characteristics. In the present case, adjusting for observable characteristics reduces the estimated employment impact. Based on the ES interaction method, PSE in Hungary is estimated to reduce the net probability of ever finding a non-subsidized job by 26 percentage points and to lower the probability of being in a non-subsidized job on the survey date by 21 percentage points. These are large and statistically significant results. Many features about the Hungarian labor market have changed since the earlier studies were done. In particular it is possible that the composition of the unemployed population and the PSE participant populations have both changed. Individuals who are in both pools at this later stage of transition are apparently less job ready. Alternatively, the change in net impact estimates may be due to changes in ALP management practices since 1994 in Hungary, when nationwide implementation of an outcome-based performance management system was introduced (O'Leary 1995). The risk of "creaming" in ALP enrollment and measures to counteract it have also been discussed among employment policymakers in Hungary (O'Leary 1996).

On the broader measures of reemployment in any job, including subsidized ones, the net impact estimates are again large and significant. The impact on ever getting into any job of PSE is -7.0 percentage points, while the impact on being in any job on the survey date is -6.0 percentage points but is not statistically significant.

PSE has no effect on average monthly earnings upon reemployment in a non-subsidized job, but a negative impact of 1,604 Ft by the survey date.

### **6.3 A subgroup analysis of PSE impacts**

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously, that is, PSE impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

Table 6.3 presents net impact estimates of PSE by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation, whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to entering PSE), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

PSE causes less reduction in reemployment prospects for females than it does for males in terms of getting into a non-subsidized job. Also it improves prospects for reemployment in a subsidized job more for females than for males. The differences across the genders are statistically significant for all the employment outcomes, with females faring better on each measure. PSE also appears to negatively impact earnings for males while having no effect on female reemployment earnings.

Across the three age groups there are no statistically significant differences in impacts on employment in a non-subsidized job. For all groups, PSE participation impacts more on EMPLOY1 than it does on EMPLOY2. PSE participation generally raises the success in being reemployed in any job, and it boosts positive outcomes most for these measures for the age group including persons 45

years and over. PSE participation had no statistically significant difference in impact on earnings across the three age subgroups; the tendency was for earnings gains upon reemployment (EARN1) for those 30 and over, and earnings losses among all groups by the survey date (EARN2).

There were statistically significant differences across educational attainment groups for PSE on EMPLOY2. Those with the least education suffered most of the negative employment impact, while PSE participation did not affect reemployment success for the most educated. There were no statistically significant differences in impacts across groups on employment in any job, but the most educated and those with a general secondary education fared best. On the earnings impacts, the education subgroup benefitting the most was that with a general secondary background; this was true particularly by the survey date, when impacts for the other groups were negative or not statistically significant.

Two occupational categories were established for the subgroup analysis. There were no significant differences across the two main occupational groups in the employment impacts of PSE. For both groups, PSE participation lowered prospects of reemployment in a non-subsidized job (EMPLOY1) and raised prospects of reemployment in any job including government subsidized ones (EMPLOY1S). Generally, on each of the employment outcomes the blue collar group fared better. The earnings impacts were negligible with the exception of EARN2 for those from white collar occupations, who suffered a large and statistically significant negative impact.

In terms of reemployment, those who lost their prior job or were a school leaver had dramatically better and statistically significantly different employment impacts compared to those who were separated from their job for other reasons. On the important outcome EMPLOY2, those who lost their prior job had PSE boost their reemployment success by 1.7 percentage points; it also boosted the success of recent graduates by 1.1 percentage points, but it reduced employment chances by 32.0 percentage points for those who were separated from their prior jobs for other reasons. Similar patterns emerged for other outcomes by reason of prior job separation. PSE participation had a large negative impact on EARN2 for the “Other” job separation group and had no effect on earnings for those who either lost their job or were school leavers.

The only statistically significant differences in impacts of PSE on long-term unemployed persons relative to those who were not long-term unemployed were on EMPLOY1 and EARN1, where the impact for those not long-term unemployed was positive and significant for both measures, while the impact for the long-term unemployed was negative on both. On all six outcome measures, those who were not long-term unemployed prior to PSE participation fared better.

The only statistically significant difference in the impact of PSE on either employment or earnings across regions grouped by low, medium, or high unemployment rate was that the chances of ever getting reemployed in any job (EMPLOY1) is slightly reduced for those in areas with medium levels of unemployment.<sup>29</sup> There were no statistically significant differences across groups in impacts on employment in a non-subsidized job, and the impacts on employed in any job on the survey date (EMPLOY2) were virtually the same across the three subgroups. PSE had no statistically significant impacts on earnings for any of the subgroups, though the initial impact on earnings appeared to be positive, while the impacts on earnings at the survey date were negative.

#### **6.4 Net impacts of various PSE program features**

Since PSE provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of PSE yield different impacts on the outcome measures for employment and earnings. Table 6.4 presents net impact estimates of the skill level of the PSE job and the industry of the PSE job. The methodology used to compute these impacts is summarized in Appendix B under the heading, “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of Table 6.4 restates the means of the outcome variables for the matched pairs comparison group, and the second row gives the net impact estimated from matched pairs methodology.

Four categories of PSE job skill were examined: non-manual, manual unskilled, manual semi-skilled, and manual skilled. The impacts across the PSE job skill groups differed on the outcomes

---

<sup>29</sup>Counties with low unemployment had rates of 9 percent or less in 1996, counties with high unemployment had rates of 15 percent or more. The other counties were coded as having medium levels of unemployment. These categories correspond to those given in Map 3.1.



EMPLOY2, EMPLOY1, and EMPLOY2. For EMPLOY2, PSE manual unskilled and manual semi-skilled jobs provided the greatest hindrance to future success. For EMPLOY1 or EMPLOY2, a non-manual PSE job was the best skill level PSE job to have had. In terms of earnings impacts, PSE employment in manual unskilled jobs resulted in the largest reductions in both measures.

Data were available about the industry category of the PSE project operator. There were two main industry groups identified, services and other. There were no statistically significant differences in the impact of PSE participation on any of the outcomes. The tendency was for a PSE experience in the service industry to least hinder reemployment in any job, but this appears to be at a greater cost in terms of lower wages on employment at the survey date.

## **6.5 The timing of response to PSE**

Two tables presented in this section show the timing of exit from the unemployment register to reemployment and they are used to illustrate the pattern of the reemployment effects of PSE. Table 6.5.1 compares exits from the unemployment register for PSE participants and a matched pairs comparison group for a maximum 39-month time period. For both groups in Table 6.5.1 “month 1” is the first month after registering as unemployed. In the analysis presented here, exit from the unemployment register to reemployment is defined to occur when the first new job begins after having registered as unemployed during the reference spell of joblessness. Referring back to Table 3.9.1 for PSE, it can be seen that the initial risk sets are slightly smaller than the full sample size of 1,140 PSE participants and the equal number of matched pairs observations drawn from the comparison group. This is because for a small number of observations in the sample, the recorded date of the first new job is before the recorded start date of the unemployment spell.

Table 6.5.1 shows how many people started new non-subsidized jobs from the PSE and matched pairs comparison group in each month since they registered as unemployed. It also shows the proportion who started jobs (the exit rate from unemployment to employment) and the difference between participant and comparison group members in the rate of exit. This last quantity is listed in the right-most column and is also the PSE impact on the exit rate for a given month. PSE participants are

seen to exit at a higher rate in every month beginning with the 25rd month after registering as unemployed. Furthermore, in 10 of the last 15 months observed, the difference was statistically significant. The cumulative PSE impact on the exit rate for the groups examined is -38.23 percentage points which is quite similar to the estimate of EMPLOY1 given in Table 6.2.1, despite the somewhat tailored sample used to form the initial risk sets.

To sharpen the contrast in examining exits from unemployment to non-subsidized jobs, in Table 6.5.2 we compare exits from the same comparison risk set as in Table 6.5.1, starting at the date of registering as unemployed and with exits of retrainees starting at the time of completing PSE. The risk set for PSE participants is limited to those who had a date for leaving the ALP before the date recorded for their first reemployment. The PSE impact on reemployment in a non-subsidized job is large and statistically significant in the month of leaving PSE and then immediately becomes large and negative for the subsequent 24 months. It is clear that most of the transition from PSE to regular non-subsidized employment happens immediately after leaving PSE participation.

## **6.6 Impact of PSE on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>30</sup> Responses to this question allowed independent estimates of PSE impact on employed months (EMMONTHS and EMSMONTH) and unemployed months (UNMONTHS) since the most recent registration as unemployed.

In contrasting the employment and unemployment months of PSE participant and comparison group members, it should be recalled that the former group spent the PSE period unavailable for reemployment or full-time job search and that differences in durations between these two groups will be influenced by this fact. This factor is less important for examining impacts on the outcomes summarized in Table 6.2.1. Employment rates and usual monthly earnings are less affected by the PSE time out of the labor market. Estimates are presented using matched pairs, regression adjustment, and full

---

<sup>30</sup>For public service employment it was survey question 13 in record type A and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

interaction regression methods. There are no statistically significant differences in the results across the methods of estimation. As before, we focus on the ES interaction regression results. The estimates given in Table 6.6 indicate that PSE participants spent 5.18 fewer months employed in a non-subsidized job (EMMONTHS), but only 3.81 fewer months employed in any job (EMSMONTH), and 0.41 fewer months unemployed (UNMONTHS) than the comparison group during the observation period.

Self-reported data are also available to estimate the impact of PSE on months of unemployment compensation (UCMONTHS) and the amount of unemployment compensation drawn.<sup>31</sup> Survey respondents were asked about their benefit receipt in each of the 16 months between January 1996 and April 1997.<sup>32</sup> Table 6.6 shows that PSE impacts on UC were not statistically significant, but the point estimates indicated that participants drew 0.19 fewer months of UC and 1,579 Ft less in UC benefits than did members of the comparison group.

---

<sup>31</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data directly from the UC register which recorded the average UC for months compensated in a calendar year provided point estimates virtually identical to those reported.

<sup>32</sup>For public service employment it was survey question 13.2 in record type A and for the comparison group it was survey question 11.2 in record type E (see Appendix A).

**Table 6.1 Comparison Group and Public Service Employment Means and Differences on Exogenous Descriptive Characteristics**

	Comparison Group	Public Service Employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	15170	12646	-2524**	6.28	3338	1140
AGE	33.91	36.20	2.29**	6.14	3338	1140
MALE	0.56	0.66	0.10**	6.12	3338	1140
EDELEM	0.35	0.47	0.12**	7.29	3338	1140
EDVOC	0.41	-0.11	-0.11**	6.67	3338	1140
EDGYM	0.21	-0.01	-0.01	0.99	3338	1140
EDCOLL	0.03	0.00	0.00	0.68	3338	1140
EARLY1	0.22	0.63	0.41**	27.51	3338	1140
EARLY2	0.67	0.35	-0.32**	19.63	3338	1140
EARLY3	0.09	0.02	-0.07**	7.73	3338	1140
EARLY4	0.02	0.00	-0.02**	4.58	3338	1140
BLCOLL1	0.86	0.94	0.08**	2.98	332	238
WHCOLL1	0.14	0.06	-0.08**	2.98	332	238
BLCOLL2	0.81	0.82	0.00	0.16	3338	1140
WHCOLL2	0.19	0.18	-0.00	1.16	3338	1140
LEGIS1	0.03	0.01	-0.02**	2.61	2607	818
PROF1	0.02	0.02	0.00	0.51	2607	818
TECH1	0.06	0.06	0.00	0.11	2607	818
CLERK1	0.06	0.07	0.01	0.85	2607	818
SERV1	0.13	0.06	-0.07**	5.56	2607	818
SKILLAG1	0.03	0.04	0.01	0.94	2607	818
CRAFT1	0.28	0.12	-0.16**	9.13	2607	818
MACH1	0.12	0.05	-0.07**	5.98	2607	818
ELEM1	0.26	0.56	0.30**	16.39	2607	818
ARMED1	0.00	0.00	0.00	0.29	2607	818
LEGIS2	0.02	0.02	-0.01	1.42	3337	1139
PROF2	0.03	0.03	0.00	0.03	3337	1139
TECH2	0.06	0.06	-0.00	0.46	3337	1139
CLERK2	0.08	0.10	0.01	1.32	3337	1139
SERV2	0.12	0.05	-0.07**	6.66	3337	1139
SKILLAG2	0.03	0.03	0.01	0.91	3337	1139
CRAFT2	0.29	0.23	-0.06**	3.86	3337	1139
MACH2	0.10	0.07	-0.03**	2.81	3337	1139
ELEM2	0.26	0.41	0.15**	9.60	3337	1139
ARMED2	0.00	0.00	-0.00	0.49	3337	1139

Table 6.1 (Continued)

	Comparison Group	Public Service Employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
SPOUSE1	0.62	0.59	-0.03**	1.99	3214	1088
SPOUSE2	0.64	0.47	-0.17**	7.73	1972	629
HHOTHER	0.46	0.36	-0.10**	3.85	3338	1140
PENSION	0.32	0.31	-0.01	0.54	3338	1140
KIDS06	0.32	0.31	-0.01	0.59	3338	1140
KIDS6	0.78	0.87	0.09**	2.85	3338	1140
HHEARN	38752	32827	-5925**	5.34	3338	1140
COUNTY1	0.09	0.06	-0.03**	2.90	3338	1140
COUNTY2	0.09	0.09	-0.01	0.49	3338	1140
COUNTY4	0.09	0.09	0.00	0.22	3338	1140
COUNTY5	0.13	0.14	0.01	0.66	3338	1140
COUNTY6	0.07	0.08	0.01	1.19	3338	1140
COUNTY7	0.09	0.11	0.02**	2.07	3338	1140
COUNTY9	0.12	0.15	0.03**	2.69	3338	1140
COUNTY13	0.12	0.10	-0.01	1.01	3338	1140
COUNTY15	0.13	0.13	-0.00	0.09	3338	1140
COUNTY18	0.07	0.05	-0.03**	3.29	3338	1140

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 6.2.1 Public Service Employment Impact Estimates on Employment and Earnings**

HUNGARY	Control Group	Public Service Employment	Impact	t-statistic on impact	Comparison Sample	Participant Sample
Unadjusted						
EMPLOY1	0.54	0.35	-0.19**	11.08	3338	1140
EMPLOYS1	0.55	0.01	0.01	0.42	3338	1140
EMPLOY2	0.43	-0.16	-0.16**	9.70	3338	1140
EMPLOYS2	0.44	0.01	0.01	0.41	3338	1140
EARN1	18202	750	750**	1.68	1734	388
EARN2	22129	-1926	-1926**	4.10	1426	451
Regression Adjusted						
EMPLOY1	0.54		-0.26**	14.40	3213	1087
EMPLOYS1	0.55		-0.07**	3.97	3213	1087
EMPLOY2	0.43		-0.21**	11.86	3213	1087
EMPLOYS2	0.44		-0.06**	3.44	3213	1087
EARN1	18202		802**	1.80	1681	375
EARN2	22129		-1681**	3.70	1382	436
Matched Pairs						
EMPLOY1	0.72	0.35	-0.37**	18.98	1139	1139
EMPLOYS1	0.73	0.56	-0.17**	8.73	1139	1139
EMPLOY2	0.56	0.27	-0.29**	14.79	1139	1139
EMPLOYS2	0.56	0.43	-0.13**	6.34	1139	1139
EARN1	18226	18952	727**	1.66	796	388
EARN2	22657	20203	-2454**	4.87	620	451
ES Interact						
EMPLOY1	0.54		-0.26**	13.76		
EMPLOYS1	0.55		-0.07**	1.93		
EMPLOY2	0.43		-0.21**	11.78		
EMPLOYS2	0.44		-0.06	1.62		
EARN1	18202		742	1.02		
EARN2	22129		-1604**	4.78		
Sample	3338	1140				

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment.

EMPLOYS1 - Ever reemployed in any job or self-employment.

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date.

EMPLOYS2 - Employed in any job or self-employment on the survey date.

EARN1 - Average monthly earnings at the start of the first new job or self-employment.

EARN2 - Average monthly earnings from the job or self-employment on the survey date.

**Table 6.2.2 Treatment and Comparison Group Differences for Exogenous Variables  
Matched Pair Analysis of Public Service Employment**

	Comparison Group	Public Service Employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	16187	12643	-3544	8.26	1139	1139
AGE	35.37	36.19	0.83*	1.84	1139	1139
MALE	0.66	0.66	0.00	0.09	1139	1139
EDELEM	0.47	0.47	0.00	0.00	1139	1139
EDVOC	0.30	0.30	0.00	0.00	1139	1139
EDGYM	0.20	0.20	0.00	0.00	1139	1139
EDCOLL	0.03	0.03	0.00	0.00	1139	1139
EARLY1	0.59	0.63	0.04*	1.85	1139	1139
EARLY2	0.39	0.35	-0.04*	1.87	1139	1139
EARLY3	0.02	0.02	0.00	0.00	1139	1139
EARLY4	0.00	0.00	0.00	0.00	1139	1139
BLCOLL1	0.87	0.94	0.07**	2.37	148	237
WHCOLL1	0.13	0.06	-0.07**	2.37	148	237
BLCOLL2	0.81	0.82	0.01	0.48	1139	1139
WHCOLL2	0.19	0.18	-0.01	0.48	1139	1139
LEGIS1	0.02	0.01	-0.01	0.96	954	818
PROF1	0.02	0.02	-0.00	0.00	954	818
TECH1	0.03	0.06	0.03**	3.47	954	818
CLERK1	0.09	0.07	-0.03**	2.03	954	818
SERV1	0.06	0.06	-0.00	0.33	954	818
SKILLAG1	0.04	0.04	-0.00	0.26	954	818
CRAFT1	0.29	0.13	-0.16**	8.18	954	818
MACH1	0.14	0.05	-0.09**	6.48	954	818
ELEM1	0.30	0.55	0.25**	11.02	954	818
ARMED1	0.00	0.00	0.00	0.71	954	818
LEGIS2	0.02	0.02	0.00	0.00	1139	1139
PROF2	0.03	0.03	0.00	0.00	1139	1139
TECH2	0.06	0.06	0.00	0.00	1139	1139
CLERK2	0.09	0.10	0.00	0.07	1139	1139
SERV2	0.05	0.05	0.00	0.00	1139	1139
SKILLAG2	0.03	0.03	0.00	0.00	1139	1139
CRAFT2	0.23	0.23	-0.00	0.10	1139	1139
MACH2	0.07	0.07	0.00	0.00	1139	1139
ELEM2	0.41	0.41	0.00	0.04	1139	1139
ARMED2	0.00	0.00	0.00	0.00	1139	1139
SPOUSE1	0.64	0.59	-0.06**	2.87	1114	1087
SPOUSE2	0.61	0.47	-0.14**	5.31	713	628
HHOTHER	0.41	0.35	-0.06*	1.88	1139	1139
PENSION	0.26	0.31	0.05**	2.20	1139	1139
KIDS06	0.36	0.31	-0.05*	1.73	1139	1139
KIDS6	0.81	0.87	0.05	1.30	1139	1139
HHEARN	38576	32856	-5719**	4.68	1139	1139

Table 6.2.2 (Continued)

	Comparison Group	Public Service Employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
COUNTY1	0.06	0.06	0.00	0.09	1139	1139
COUNTY2	0.09	0.09	0.00	0.07	1139	1139
COUNTY4	0.09	0.09	0.00	0.00	1139	1139
COUNTY5	0.14	0.14	-0.00	0.06	1139	1139
COUNTY6	0.09	0.08	-0.00	0.15	1139	1139
COUNTY7	0.11	0.11	0.00	0.00	1139	1139
COUNTY9	0.15	0.15	0.00	0.00	1139	1139
COUNTY13	0.10	0.10	0.00	0.00	1139	1139
COUNTY15	0.12	0.13	0.00	0.06	1139	1139
COUNTY18	0.05	0.05	0.00	0.00	1139	1139

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.



**Table 6.3 Net Impact Estimates of Public Service Employment by Subgroup**

	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
MALE - Respondent is male	-0.174***##	0.009##	-0.138***##	0.005##	405	-1879***##
FEMALE - Respondent is female~	-0.091**	0.116**	-0.042	0.099**	964	23
AGELT30 - Age < 30	-0.138**	0.001##	-0.111**	-0.005##	-242	-1533*
AGE3044 - Age between 30 and 44	-0.153**	0.061***##	-0.112**	0.040##	1611**	-551
AGEGE45 - Age is 45 or over~	-0.116**	0.135**	-0.048	0.139**	508	-1220
EDELEM - 8 years of schooling	-0.176***#	0.024	-0.141***#	0.006	-1176##	-2537**
EDVOC - Vocational	-0.147**	0.030	-0.090**	0.033	1335	-1162
EDGYM - General secondary	-0.082*	0.140**	-0.057	0.118**	2108*	1873***##
EDCOLL - Some higher education~	0.020	0.125	0.068	0.154	4218*	-2444
WHITECOL - White collar occupation	-0.155**	0.016	-0.116**	0.018	-549	-3639***##
BLUECOL - Blue collar occupation~	-0.135**	0.062**	-0.094**	0.050**	908	-506
LOST - Earlier lost job	-0.010##	0.159***##	0.017##	0.131***##	369	-710
SCHOOL - Earlier school leaver	-0.005##	0.204***##	0.011##	0.146##	2248	1028
OTHER - Earlier other~	-0.391**	-0.160**	-0.320**	-0.127**	772	-2172**
LTU - Long-term unemployed	-0.171**	-0.021##	-0.089**	0.031	-640#	-1557*
NONLTU - Not unemployed long term~	-0.127**	0.083**	-0.101**	0.050**	1148*	-897
LOWURATE - Low unemployment area	-0.157**	0.125**	-0.129**	0.052	229	-1228
MEDURATE - Med unemployment area	-0.157**	-0.005#	-0.093**	0.033	1170	-829
HIURATE - High Unemployment area~	-0.111**	0.061**	-0.082**	0.049*	416	-1227
Baranya - County 2	-0.191**	-0.147**	-0.119**	-0.114**	1958	-1441
Bekes - County 4	-0.098*	0.005##	-0.102*	0.024##	844	-94
Borsod - County 5	-0.110**	-0.033	-0.076*	-0.029	-760	-2663*
Csongrad - County 6	-0.222**	-0.044	-0.168**	-0.054	1044	-2973*
Fejer - County 7	-0.184**	-0.040	-0.096**	0.046	2661**	-60
Hajdu - County 9	-0.038	0.049	-0.045	0.035	-525	-914
Pest - County 13	-0.196**	0.282***##	-0.135**	0.112**	-1061*	-2654**
Szabolcs - County 15	-0.197**	0.157***##	-0.133**	0.122**	2339	-395
Vas - County 18	-0.114	-0.028	-0.111	-0.016	-54	-307
Budapest - Capital City 1~	-0.104	-0.013	-0.113*	0.007	1045	-122

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 6.4 Regression Adjusted Impacts of Various Aspects of Public Service Employment**

	Participant						
	Group	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
Matched Comparison Mean	Participation	0.72	0.73	0.56	0.56	18226	22657
Adjusted Public Service Employment (PSE) Impact		-0.37**	-0.17**	-0.29**	-0.13**	727**	-2454**
PSE Job Skill Level							
Non-manual	0.156	-0.224**	0.005	-0.166**	0.045	2741**	-898
Manual unskilled	0.512	-0.278**	-0.127** <sup>a</sup>	-0.237** <sup>a</sup>	-0.104** <sup>a</sup>	-208 <sup>a</sup>	-2560**
Manual semi-skilled	0.189	-0.266**	-0.043 <sup>b</sup>	-0.207**	-0.069** <sup>a</sup>	608	-1585*
Manual skilled	0.143	-0.235**	-0.011 <sup>b</sup>	-0.160** <sup>b</sup>	-0.026 <sup>b</sup>	1405	-865
Industry of PSE Job							
Services	0.966	-0.261**	-0.068**	-0.207**	-0.059**	724	-1770**
Other	0.034	-0.247**	-0.190**	-0.228**	-0.150**	2893	2020
Participant Sample Size	1140	1087	1087	1087	1087	375	436
Comparison Sample Size		3213	3213	3213	3213	1681	1382

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup> - Statistically significantly different from the first category at the 90 percent level.

<sup>b</sup> - Statistically significantly different from the second category at the 90 percent level.

<sup>c</sup> - Statistically significantly different from the third category at the 90 percent level.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date.

**Table 6.5.1 Public Service Employment Summary of Reemployment Hazards Measured from Start Date of Last Registration**

Months until starting a job	Comparison group risk set	Comparison group starting a job	Comparison group exit rate	Public Service Employment			
				Group risk set	Group starting a job	Group exit rate	Program impact
1	1111	120	10.80	1116	9	0.81	-9.99**
2	991	69	6.96	1107	2	0.18	-6.78**
3	922	61	6.62	1105	5	0.45	-6.16**
4	861	82	9.52	1100	3	0.27	-9.25**
5	779	60	7.70	1097	4	0.36	-7.34**
6	719	56	7.79	1093	5	0.46	-7.33**
7	663	50	7.54	1088	3	0.28	-7.27**
8	613	48	7.83	1085	3	0.28	-7.55**
9	565	27	4.78	1082	5	0.46	-4.32**
10	538	22	4.09	1077	5	0.46	-3.62**
11	516	27	5.23	1072	2	0.19	-5.05**
12	489	13	2.66	1070	14	1.31	-1.35*
13	476	15	3.15	1056	19	1.80	-1.35
14	461	28	6.07	1037	18	1.74	-4.34**
15	433	19	4.39	1019	16	1.57	-2.82**
16	414	21	5.07	1003	18	1.79	-3.28**
17	393	12	3.05	985	13	1.32	-1.73**
18	381	10	2.62	972	13	1.34	-1.29*
19	371	8	2.16	959	10	1.04	-1.11
20	363	11	3.03	949	5	0.53	-2.50**
21	352	16	4.55	944	18	1.91	-2.64**
22	336	9	2.68	926	12	1.30	-1.38*
23	327	5	1.53	914	12	1.31	-0.22
24	322	7	2.17	902	6	0.67	-1.51**
25	315	2	0.63	896	13	1.45	0.82
26	313	0	0.00	883	13	1.47	1.47**
27	313	0	0.00	870	16	1.84	1.84**
28	313	1	0.32	854	17	1.99	1.67**
29	312	0	0.00	837	23	2.75	2.75**
30	312	0	0.00	814	6	0.74	0.74
31	312	0	0.00	808	14	1.73	1.73**
32	312	0	0.00	794	8	1.01	1.01*
33	312	0	0.00	786	15	1.91	1.91**
34	312	0	0.00	771	5	0.65	0.65
35	312	0	0.00	766	9	1.17	1.17*
36	312	0	0.00	757	8	1.06	1.06*
37	312	0	0.00	749	0	0.00	0.00*
38	312	0	0.00	749	4	0.53	0.53
39	312	0	0.00	745	5	0.67	0.67
Cumulative	1111	799	71.92	1116	376	33.69	-38.23**

\*Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 6.5.2 Public Service Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed**

Months until starting a job	Comparison			Public Works			
	Comparison group risk set	group starting a job	Comparison group exit rate	group risk set	group starting a job	group exit rate	program impact
1	1111	120	10.80	1133	172	15.18	4.38**
2	991	69	6.96	961	26	2.71	-4.26**
3	922	61	6.62	935	27	2.89	-3.73**
4	861	82	9.52	908	35	3.85	-5.67**
5	779	60	7.70	873	20	2.29	-5.41**
6	719	56	7.79	853	17	1.99	-5.80**
7	663	50	7.54	836	19	2.27	-5.27**
8	613	48	7.83	817	22	2.69	-5.14**
9	565	27	4.78	795	16	2.01	-2.77**
10	538	22	4.09	779	15	1.93	-2.16**
11	516	27	5.23	764	12	1.57	-3.66**
12	489	13	2.66	752	1	0.13	-2.53**
13	476	15	3.15	751	0	0.00	-3.15**
14	461	28	6.07	751	1	0.13	-5.94**
15	433	19	4.39	750	0	0.00	-4.39**
16	414	21	5.07	750	0	0.00	-5.07**
17	393	12	3.05	750	0	0.00	-3.05**
18	381	10	2.62	750	0	0.00	-2.62**
19	371	8	2.16	750	0	0.00	-2.16**
20	363	11	3.03	750	0	0.00	-3.03**
21	352	16	4.55	750	0	0.00	-4.55**
22	336	9	2.68	750	0	0.00	-2.68**
23	327	5	1.53	750	0	0.00	-1.53**
24	322	7	2.17	750	0	0.00	-2.17**
25	315	2	0.63	750	0	0.00	-0.63**
26	313	0	0.00	750	0	0.00	0.00
27	313	0	0.00	750	0	0.00	0.00
28	313	1	0.32	750	0	0.00	-0.32
29	312	0	0.00	750	0	0.00	0.00
30	312	0	0.00	750	0	0.00	0.00
31	312	0	0.00	750	0	0.00	0.00
32	312	0	0.00	750	0	0.00	0.00
33	312	0	0.00	750	0	0.00	0.00
34	312	0	0.00	750	0	0.00	0.00
35	312	0	0.00	750	0	0.00	0.00
36	312	0	0.00	750	0	0.00	0.00
37	312	0	0.00	750	0	0.00	0.00
38	312	0	0.00	750	0	0.00	0.00
39	312	0	0.00	750	0	0.00	0.00
Cumulative	1111	799	71.92	1133	383	33.80	-38.11**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 6.6 Impact Estimates of Public Service Employment (PSE) on Months of Employment, Unemployment and Unemployment Compensation in Hungary (t-statistics in parentheses)**

	Matched Comparison Sample Mean	PSE Sample Mean	Matched Pairs Impact Estimate	Regression Adjusted Impact Estimate	Full Interaction Impact Estimate	ES Interaction Impact Estimate
EMMONTHS	8.65	2.43	-6.22** (26.31)	-5.17** (24.93)	-3.69** (2.54)	-5.18** (20.57)
EMSMONTH	8.76	3.96	-4.80** (19.95)	-3.81** (18.31)	-2.30** (2.52)	-3.81** (13.32)
UNMONTHS	5.5	5.73	0.23 (1.02)	-0.43** (1.96)	-1.46 (1.37)	-0.41* (1.81)
UCMONTHS	1.64	1.24	-0.40** (4.20)	-0.20** (2.13)	-0.58** (3.26)	-0.19 (0.63)
UCPAY	21572	17246	-4325** (3.34)	-1565 (1.28)	-6407** (2.91)	-1579 (1.28)
Participant Sample Size		1139	1139	1087	1087	1087
Comparison Sample Size	1139		1139	3213	3213	3213

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration

EMSMONTH - Months in any job since most recent ES registration.

UNMONTHS - Months unemployed since most recent ES registration.

UCMONTHS - Months of unemployment compensation since most recent ES registration.

UCPAY - Amount of unemployment compensation since most recent ES registration.



## **7. Evaluation of the Wage Subsidy**

The wage subsidy program is targeted toward people who are long-term unemployed. A wage subsidy of up to 50 percent is possible for up to one year. The payment is made directly to the employer and applies to total labor costs for hiring persons who were previously unemployed for more than six months (three months for school leavers), provided the employer has not laid off anyone involved in the same line of work in the previous six months. If workers hired through the subsidy are not retained after the subsidy ends for a period at least as long as the subsidy was paid, the employer must repay the Employment Fund the assistance provided.

In recent years, wage subsidy has received a small share of spending among all ALPs. It was 3.4 percent in 1994, 3.3 percent in 1995, and fell to 0.3 percent of ALP spending in 1996 (Table 2.3). The number of wage subsidy participants fell to 12,268 in 1996 (Table 2.4). While the wage subsidy program is small, it still serves 10 times as many unemployed as the self-employment program.

The exposition of impact estimates for the wage subsidy in Hungary presented in this chapter proceeds with a comparison of the observable characteristics of the wage subsidy participant group and the comparison group. This is followed by a report on net impacts for the main employment and earnings measures. Section 3 of this chapter presents a subgroup analysis of the wage subsidy impacts on employment and earnings. Section 4 reports net impacts on various features of the wage subsidy. Section 5 reports on the timing of response to the wage subsidy. Section 6 reports on the impact on employment, unemployment, and unemployment compensation.

### **7.1 The samples for analysis of the wage subsidy**

The differences between the wage subsidy participant sample and the comparison sample are reviewed in Table 7.1. Ignoring the county variables in the table, there are 42 descriptive characteristics listed for comparing the samples. The asterisks indicate that there are significant differences across the samples in 22 of the 42 characteristics; the samples were clearly drawn from different populations. In contrast to the comparison group, the wage subsidy sample includes

participants who had lower prior average monthly earnings, were more educated, more likely to have been employed prior to registering as unemployed, and more likely to have been in a blue collar occupation.

## **7.2 Impact estimates of the wage subsidy on employment and earnings**

Impact estimates presented in this section focus on two main outcomes, employment and earnings. The same delineations of employment and earnings outcomes reviewed in section 4a.2 are examined in this section. Four measures of employment are examined: a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey. Average monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date are also examined. The six outcome variables are EMPLOY1, EMPLOY1S, EMPLOY2, EMPLOY2S, EARN1, and EARN2.

Table 7.2.1 presents impact estimates for the effect of the wage subsidy on the various measures of employment and earnings in Hungary. Estimates for the impact on each separate outcome measure were computed in five separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which were not adjusted for observable differences between the participant and comparison group samples. The second set of results are net impact estimates which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>33</sup> The third set of results were computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results are net impact estimates which were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in Appendix B.<sup>34</sup> Essentially

---

<sup>33</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

<sup>34</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 7.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.



the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics. The fifth estimation methodology employed is labeled in Table 7.2.1 as “ES Interact.” That label refers to a multiple regression technique which estimates net impacts for the ALP while accounting for the fact that many ALP participants also made use of the services of the employment service; this method is also described in Appendix B.

The most obvious overall result in Table 7.2.1 is that the unadjusted impact estimates are quite different from the adjusted results. The direction of change in impact estimates resulting from regression adjustment is not surprising. O’Leary (1997) found for earlier net impact estimates of retraining in Hungary that the unadjusted impact estimates were much larger than those adjusted for observable characteristics. In the present case, adjusting for observable characteristics reduces the estimated employment impact, meaning that there is some “creaming” taking place in selecting the best candidates to get the wage subsidy jobs. This creaming may be done by the program managers in local labor centers, but it is most likely influenced by the employers. Based on the ES interaction regression estimates, the wage subsidy in Hungary is estimated to reduce the net probability of ever finding a non-subsidized job (EMPLOY1) by 11 percentage points and to reduce the probability of being in a non-subsidized job on the survey date (EMPLOY2) by 6 percentage points.

On the broader measures of reemployment in any job (including subsidized ones), the net impact estimates on employment are small and insignificant. The impact on ever getting into any job after the wage subsidy is -1.0 percentage points, while the impact on being in any job on the survey date is -3.0 percentage points.

The wage subsidy had no significant affect on either earnings measure.

### 7.3 A subgroup analysis of the wage subsidy impacts

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously; that is, the wage subsidy impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

Table 7.3 presents net impact estimates of the wage subsidy by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation, whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to entering the wage subsidy), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

While females tend to benefit more, there are no statistically significant differences in the impact of the wage subsidy across the genders on employment outcomes. The impact of the wage subsidy on earnings in the first new job are positive but not different across the genders, while the impacts on earnings at the survey date are not statistically significant.

Across the three age groups, the only statistically significant impacts on employment in a non-subsidized job were observed for the employment status at the survey date (EMPLOY2), where those aged 30 and over enjoyed a positive advantage. The impact was 5.9 percentage points for those 30 to 44 and 9.8 percentage points for those 45 and over. There were positive and statistically significant impacts of the wage subsidy on employment in any job for all age groups (EMPLOY1 and

EMPLOY2), with the oldest age group again enjoying the largest gain. While the wage subsidy also appreciably boosted earnings on the first new non-subsidized job (EARN1) for those in the oldest group, the impacts for the other subgroups and earnings outcomes were not statistically significantly different from zero.

There were no statistically significant impacts of the wage subsidy on EMPLOY1 for any educational attainment groups. However, for EMPLOY2, the group with the least schooling had the largest positive impact. For the broader measures of EMPLOY1 and EMPLOY2, there is a similar pattern of effects, with the largest gain enjoyed by those with the least formal schooling and the positive impacts declining with more education. In fact, there was no impact of the wage subsidy on employment in any job for those with some college education. Among education subgroups, the only significant impact of the wage subsidy on earnings was a gain of 4,913 Ft per month in average earnings for those with vocational training on their first new job. However, this advantage had evaporated by the survey date.

Two occupational categories were established for the subgroup analysis. There were no significant differences across the two main occupational groups in either the employment or earnings impacts of the wage subsidy. For both groups, wage subsidy participation raised prospects of reemployment in any job. For the blue collar group there was a positive impact on EMPLOY2. Generally, on each of the outcomes examined, the blue collar group fared better. The earnings impacts were negligible with the exception of EARN1 for those from blue collar occupations, who enjoyed a sizeable and statistically significant gain.

In terms of reemployment, those who lost their prior job or were a school leaver had dramatically better and, in several instances, statistically significantly different employment impacts relative to those who were separated from their job for other reasons. On the important outcome EMPLOY2, those who lost their prior job had the wage subsidy boost their reemployment success by 7.7 percentage points. There was a positive but not statistically significant impact on the success of recent graduates, and clearly a zero impact on the employment of those who were separated from their prior jobs for other reasons. Similar patterns emerged for other employment outcomes based on the

reason for prior job separation. The only statistically significant impacts of the wage subsidy on average monthly earnings were for the group separated from their prior job for other reasons. For this group, the impact on average monthly earnings on the first new job was large and positive, while the impact was negative on earnings at the survey date.

The only statistically significant differences in impacts of the wage subsidy on long-term unemployed persons relative to those who were not long-term unemployed were on the earnings outcomes. There was no impact on EARN1 for the long-term unemployed, while the impact was positive and large for those who were not previously long-term unemployed. The impacts on EARN2 were not statistically significant, but it appears that the long-term unemployed had an advantage. There were no statistically significant differences across the groups in the impact on employment outcomes, but the long-term unemployed appear to have enjoyed larger positive impacts on each of the four reemployment measures.

The only clear result to emerge from analysis of the impact of the wage subsidy on employment and earnings across regions grouped by unemployment rate is that the wage subsidy boosts reemployment prospects least for those in high unemployment areas. The wage subsidy impacts are generally positive and significant on the employment measures in areas with low or medium unemployment rates, but usually negative or insignificant in high unemployment rate areas. The only positive and significant impact of the wage subsidy on earnings was a sizeable gain in EARN1 among those from high unemployment areas, but this advantage disappears by the survey date.

#### **7.4 Net impacts of various wage subsidy program features**

Since the wage subsidy provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of the wage subsidy yield different impacts on the outcome measures for employment and earnings. Table 7.4 presents net impact estimates of the skill level of the wage subsidy job and the industry of the wage subsidy job. The methodology used to compute these impacts is summarized in Appendix B under the heading, “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of

Table 7.4 restates the means of the outcome variables for the matched pairs comparison group and the second row gives the net impact estimated from matched pairs methodology.

Four categories of the wage subsidy job skill were examined: non-manual, manual unskilled, manual semi-skilled, and manual skilled. There were no statistically significant differences in impacts of the wage subsidy for job skill groups on any of the four employment outcomes. In fact, the only statistically significant impacts were observed for the outcome EMPLOY1. Each of these impacts was negative, with the largest being for those who did manual unskilled wage subsidy work. There was a statistically significant gain in EARN1 for those who did manual skilled wage subsidy work, but that gain turned negative by the survey date (EARN2). Impacts on EARN2 were also negative for all other skill groups, but there were no significant differences in the impacts.

Data were available about the industry category of the wage subsidy project operator. There were four main industry groups identified: agriculture, construction, services, and other. The largest negative impacts on employment outcomes was for those who had wage subsidized work in the construction industry. Employment impacts in construction were negative and significantly different from every other group for both employment outcomes measured as of the survey date. These employment impacts were only mildly negative in services; they were nil in agriculture, and the impacts were slightly positive in the other industries. The same general pattern emerged for the reemployment outcomes measured over the entire period since registration as unemployed. The only statistically significant impacts on earnings were for services. For earnings on the first new non-subsidized job there was a statistically significant gain of 3,083 Ft per month for those whose wage subsidy was in services, but a loss of 2,171 Ft per month at the survey date.

## **7.5 The timing of response to the wage subsidy**

Two tables presented in this section show the timing of exit from the unemployment register to reemployment and are used to illustrate the pattern of the reemployment effects of the wage subsidy. Table 7.5.1 compares exits from the unemployment register for the wage subsidy participants and a matched pairs comparison group for a maximum 39-month time period. For both groups in Table

7.5.1, “month 1” is the first month after registering as unemployed. In the analysis presented here, exit from the unemployment register to reemployment is defined to occur when the first new job begins after having registered as unemployed during the reference spell of joblessness. Referring back to Table 3.9.1 for the wage subsidy, it can be seen that the initial risk sets are slightly smaller than the full sample size of 1,131 wage subsidy participants and the equal number of matched pairs observations drawn from the comparison group. This is because for a small number of observations in the sample, the recorded date of the first new job is before the recorded start date of the unemployment spell.

Table 7.5.1 shows how many people started new non-subsidized jobs from the wage subsidy group and matched pairs comparison group in each month since they registered as unemployed. It also shows the proportion who started jobs (the exit rate from unemployment to employment) and the difference between participant and comparison group members in the rate of exit. This last quantity is listed in the right-most column and is also the wage subsidy impact on the exit rate for a given month. The wage subsidy participants exit at a higher rate in every month beginning with the 20th month after registering as unemployed. Furthermore, in 16 of the 20 months observed, the difference was statistically significant. The cumulative the wage subsidy impact on the exit rate for the groups examined is -10.31 percentage points, which is quite similar to the estimate of EMPLOY1 given in Table 7.2.1, despite the somewhat tailored sample used to form the initial risk sets.

To sharpen the contrast in examining exits from unemployment to non-subsidized jobs, in Table 7.5.2 we compare exits from the same comparison risk set examined in Table 7.5.1 starting at the date of registering as unemployed, with exits of retrainees starting at the time of completing the wage subsidy. The risk set for retrainees is limited to those who had a date for leaving the ALP before the date recorded for their first reemployment. The wage subsidy impact on reemployment in a non-subsidized job is huge and statistically significant in the month of leaving the wage subsidy, and it then immediately becomes large and negative for the subsequent 23 months. It is clear that the main

transition from the wage subsidy to regular non-subsidized employment happens immediately after the wage subsidy ends.

## **7.6 Impact of the wage subsidy on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>35</sup> Responses to this question allowed independent estimates of the wage subsidy impact on employed months (EMSMONTH) and unemployed months (UNMONTHS) since the most recent registration as unemployed.

In contrasting the employment and unemployment months of the wage subsidy participant and comparison group members, it should be recalled that the former group spent the wage subsidy period unavailable for reemployment or full-time job search and that differences in durations between these two groups will be influenced by this fact. This factor is less important for examining impacts on outcomes summarized in Table 7.2.1. Employment rates and usual monthly earnings are less affected by the wage subsidy time out of the labor market. Estimates are presented using matched pairs, regression adjustment, and full interaction regression methods. There are no statistically significant differences in the results across the methods of estimation. As before we focus on the ES interaction regression results. The estimates given in Table 7.6 indicate that the wage subsidy participants spent 4.18 fewer months employed in a non-subsidized job, 3.96 fewer months employed in any job, and 1.63 fewer months unemployed than the comparison group during the observation period.

Self-reported data are also available to estimate the impact of the wage subsidy on months of unemployment compensation (UCMONTHS) and the amount of UC drawn.<sup>36</sup> Survey respondents were asked about their benefit receipt in each of the 16 months between January 1996 and April

---

<sup>35</sup>For the wage subsidy it was survey question 13 in record type A and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

<sup>36</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data directly from the UC register which recorded the average UC for months compensated in a calendar year provided point estimates virtually identical to those reported.

1997.<sup>37</sup> Table 7.6 shows that wage subsidy did not have a statistically significant affect on participants' use of UC. However, the point estimates suggest that wage subsidy participants drew 0.04 fewer months of UC and 1,090 Ft less in UC benefits than did the comparison group.

---

<sup>37</sup>For the wage subsidy it was survey question 13.2 in record type A and for the comparison group it was survey question 11.2 in record type E (see Appendix A).



**Table 7.1 Comparison Group and Wage Subsidy Means and Differences on Exogenous Descriptive Characteristics**

	Comparison Group	Wage Subsidy	Difference	t-statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	15170	12828	-2342**	5.40	3338	1131
AGE	33.91	33.79	-0.12	0.32	3338	1131
MALE	0.56	0.56	0.00	0.07	3338	1131
EDELEM	0.35	0.26	-0.08**	5.24	3338	1131
EDVOC	0.41	0.43	0.02	1.02	3338	1131
EDGYM	0.21	0.27	0.05**	3.82	3338	1131
EDCOLL	0.03	0.04	0.01**	2.00	3338	1131
EARLY1	0.22	0.80	0.58**	41.17	3338	1131
EARLY2	0.67		-0.49**	31.60	3338	1131
EARLY3	0.09		-0.07**	7.57	3338	1131
EARLY4	0.02		-0.02**	5.24	3338	1131
BLCOLL1	0.86	0.93	0.07**	2.25	332	141
WHCOLL1	0.14		-0.07**	2.25	332	141
BLCOLL2	0.81	0.77	-0.04**	3.06	3338	1131
WHCOLL2	0.19	0.23	0.04**	3.06	3338	1131
LEGIS1	0.03	0.04	0.01	0.94	2607	681
PROF1	0.02		0.00	0.48	2607	681
TECH1	0.06		0.01	1.30	2607	681
CLERK1	0.06		0.02	1.50	2607	681
SERV1	0.13		-0.02	1.21	2607	681
SKILLAG1	0.03		0.01*	1.71	2607	681
CRAFT1	0.28		0.05**	2.65	2607	681
MACH1	0.12		0.01	0.40	2607	681
ELEM1	0.26		-0.09**	5.10	2607	681
ARMED1	0.00		0.00	0.25	2607	681
LEGIS2	0.02	0.03	0.01**	2.15	3337	1130
PROF2	0.03	0.03	0.00	0.70	3337	1130
TECH2	0.06	0.07	0.01	1.05	3337	1130
CLERK2	0.08	0.10	0.02*	1.66	3337	1130
SERV2	0.12	0.11	-0.02	1.39	3337	1130
SKILLAG2	0.03	0.03	0.00	0.13	3337	1130
CRAFT2	0.29	0.36	0.08**	4.96	3337	1130
MACH2	0.10	0.11	0.02	1.60	3337	1130
ELEM2	0.26	0.15	-0.11**	7.67	3337	1130
ARMED2	0.00	0.00	0.00	0.03	3337	1130
SPOUSE1	0.62	0.60	-0.02	1.12	3214	1091
SPOUSE2	0.64	0.65	0.00	0.20	1972	642
HHOTHER	0.46	0.53	0.07**	2.64	3338	1131
PENSION	0.32	0.34	0.02	0.95	3338	1131
KIDS06	0.32	0.24	-0.08**	3.72	3338	1131
KIDS6	0.78	0.82	0.05	1.48	3338	1131
HHEARN	38752	43151	4399**	3.78	3338	1131

Table 7.1 (Continued)

	Comparison Group	Wage Subsidy	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
COUNTY1	0.09	0.05	-0.03**	3.73	3338	1131
COUNTY2	0.09	0.10	0.01	0.73	3338	1131
COUNTY4	0.09	0.10	0.01	1.26	3338	1131
COUNTY5	0.13	0.19	0.06**	4.76	3338	1131
COUNTY6	7.00	0.10	0.02**	2.57	3338	1131
COUNTY7	0.09	0.10	0.01	0.86	3338	1131
COUNTY9	0.12	0.09	-0.03**	2.47	3338	1131
COUNTY13	0.12	0.04	-0.08**	7.98	3338	1131
COUNTY15	0.13	0.14	0.01	0.85	3338	1131
COUNTY18	0.07	0.10	0.02**	2.35	3338	1131

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 7.2.1 Wage Subsidy Impact Estimates on Employment and Earnings**

HUNGARY	Control Group	Wage Subsidy	Impact	t-statistic on impact	Comparison Sample	Participant Sample
Unadjusted						
EMPLOY1	0.54	0.71	0.17**	9.96	3338	1131
EMPLOYS1	0.55	0.24	0.24**	14.42	3338	1131
EMPLOY2	0.43	0.20	0.20**	11.90	3338	1131
EMPLOYS2	0.44	0.21	0.21**	12.60	3338	1131
EARN1	18202	2538	2538**	3.51	1734	182
EARN2	22129	-660	-660*	1.70	1426	743
Regression Adjusted						
EMPLOY1	0.54		-0.09**	4.68	3213	1090
EMPLOYS1	0.55		0.00	0.06	3213	1090
EMPLOY2	0.43		-0.02	1.12	3213	1090
EMPLOYS2	0.44		0.00	0.11	3213	1090
EARN1	18202		2070**	2.99	1681	178
EARN2	22129		-1235**	3.04	1382	713
Full Interaction Regression						
EMPLOY1	0.54		-0.00	0.66	3213	1090
EMPLOYS1	0.55		0.10	1.58	3213	1090
EMPLOY2	0.43		0.03	1.02	3213	1090
EMPLOYS2	0.44		0.07	0.88	3213	1090
EARN1	18202		1847**	2.76	1681	178
EARN2	22129		-801	1.06	1382	713
Matched Pairs						
EMPLOY1	0.81	0.71	-0.10**	5.57	1130	1130
EMPLOYS1	0.81	0.79	-0.02	1.32	1130	1130
EMPLOY2	0.65	0.63	-0.02	1.23	1130	1130
EMPLOYS2	0.66	0.65	-0.01	0.31	1130	1130
EARN1	18523	20740	2217**	2.69	881	182
EARN2	24170	21469	-2701**	5.76	709	743
ES Interact						
EMPLOY1	0.54		-0.11**	8.73		
EMPLOYS1	0.55		-0.01**	4.15		
EMPLOY2	0.43		-0.06**	7.51		
EMPLOYS2	0.44		-0.03**	5.91		
EARN1	18202		1836	0.28		
EARN2	22129		-1120	1.05		
Sample	3338	1131				

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 7.2.2 Treatment and Comparison Group Differences for Exogenous Variables  
Matched Pair Analysis of the Wage Subsidy**

	Comparison Group	Wage Subsidy	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	16661	12835	-3827**	7.03	1130	1130
AGE	33.86	33.79	-0.07	0.16	1130	1130
MALE	0.59	0.56	-0.03	1.45	1130	1130
EDELEM	0.27	0.26	0.00	0.24	1130	1130
EDVOC	0.43	0.43	0.00	0.09	1130	1130
EDGYM	0.26	0.27	0.01	0.33	1130	1130
EDCOLL	0.04	0.04	0.00	0.0	1130	1130
EARLY1	0.74	0.80	0.06**	3.17	1130	1130
EARLY2	0.24	0.18	-0.06**	3.44	1130	1130
EARLY3	0.02	0.02	0.00	0.43	1130	1130
EARLY4	0.00	0.00	0.00	0.00	1130	1130
BLCOLL1	0.86	0.94	0.09**	2.45	138	140
WHCOLL1	0.14	0.06	-0.09**	2.45	138	140
BLCOLL2	0.78	0.77	-0.01	0.40	1130	1130
WHCOLL2	0.22	0.23	0.01	0.40	1130	1130
LEGIS1	0.03	0.04	0.00	0.36	938	681
PROF1	0.03	0.02	0.00	0.46	938	681
TECH1	0.05	0.08	0.03**	2.18	938	681
CLERK1	0.09	0.07	-0.02	1.09	938	681
SERV1	0.12	0.11	0.00	0.04	938	681
SKILLAG1	0.02	0.05	0.03**	3.19	938	681
CRAFT1	0.36	0.34	-0.03	1.05	938	681
MACH1	0.15	0.13	-0.02	1.20	938	681
ELEM1	0.15	0.16	0.01	0.58	938	681
ARMED1	0.00	0.00	0.00	1.00	938	681
LEGIS2	0.03	0.03	0.00	0.00	1130	1130
PROF2	0.03	0.03	0.00	0.00	1130	1130
TECH2	0.07	0.07	0.00	0.08	1130	1130
CLERK2	0.10	0.10	0.00	0.07	1130	1130
SERV2	0.11	0.11	0.00	0.00	1130	1130
SKILLAG2	0.03	0.03	0.00	0.00	1130	1130
CRAFT2	0.36	0.36	0.00	0.04	1130	1130
MACH2	0.11	0.11	0.00	0.07	1130	1130
ELEM2	0.15	0.15	0.00	0.00	1130	1130
ARMED2	0.00	0.00	0.00	0.00	1130	1130
SPOUSE1	0.64	0.60	-0.04**	2.15	1100	1090
SPOUSE2	0.65	0.65	-0.01	0.31	688	641
HHOTHER	0.44	0.53	0.09**	2.63	1130	1130
PENSION	0.31	0.34	0.03	1.14	1130	1130
KIDS06	0.32	0.25	-0.07**	3.01	1130	1130
KIDS6	0.82	0.82	0.01	0.17	1130	1130
HHEARN	41507	43164	1657	1.39	1130	1130

Table 7.2.2 (Continued)

	Comparison Group	Wage Subsidy	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
COUNTY1	0.05	0.05	0.00	0.00	1130	1130
COUNTY2	0.10	0.10	0.00	0.21	1130	1130
COUNTY4	0.10	0.10	0.00	0.21	1130	1130
COUNTY5	0.18	0.19	0.00	0.16	1130	1130
COUNTY6	0.10	0.10	0.00	0.14	1130	1130
COUNTY7	0.10	0.10	0.00	0.00	1130	1130
COUNTY9	0.09	0.10	0.00	0.00	1130	1130
COUNTY13	0.04	0.04	0.00	0.24	1130	1130
COUNTY15	0.14	0.14	0.00	0.06	1130	1130
COUNTY18	0.10	0.10	0.00	0.21	1130	1130

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 7.3 Net Impact Estimates of the Wage Subsidy by Subgroup**

	EMPLOY1	EMPLOY1S1	EMPLOY2	EMPLOY2S2	EARN1	EARN2
MALE - Respondent is male	-0.006	0.071**	0.037	0.075**	1850*	-837#
FEMALE - Respondent is female~	0.034	0.121**	0.076**	0.105**	2297*	630
AGELT30 - Age < 30	-0.005	0.091**	0.029	0.067**	-639##	-655
AGE3044 - Age between 30 and 44	0.015	0.073**	0.059*	0.085**	1339##	491
AGEGE45 - Age is 45 or over~	0.039	0.138**	0.098**	0.139**	8989**	-532
EDELEM - 8 years of schooling	0.019	0.122**	0.089**	0.125**	-590	-127
EDVOC - Vocational	-0.002	0.080**	0.030	0.057*	4913**	142
EDGYM - General secondary	0.043	0.087**	0.065	0.106**	700	-482
EDCOLL - Some higher education~	-0.102	0.024	-0.049	-0.002	1194	-2900
WHITECOL - White collar occupation	0.046	0.148**	0.059	0.086*	1544	-1101
BLUECOL - Blue collar occupation~	0.003	0.080**	0.053**	0.089**	2172**	37
LOST - Earlier lost job	0.063***	0.148***	0.077**	0.133***	1605	131
SCHOOL - Earlier school leaver	0.064	0.157*	0.128	0.109	4086	3287#
OTHER - Earlier other~	-0.072**	0.004	0.008	0.020	2304**	-1285**
LTU - Long-term unemployed	0.328	0.121**	0.084**	0.117**	-400#	1108#
NONLTU - Not unemployed long term~	0.005	0.085**	0.045*	0.079**	2814**	-592
LOWURATE - Low unemployment area	0.076***	0.131**	0.036	0.086**	1499	-305
MEDURATE - Med unemployment area	0.044##	0.096**	0.113***	0.144***	496##	-69
HIURATE - High Unemployment area~	-0.058**	0.067**	0.012	0.038	3843**	-221
Baranya - County 2	0.051	0.120**	0.113**	0.161**	3737	690
Bekes - County 4	0.089	0.140**	0.053	0.131**	2028	-125
Borsod - County 5	0.083*	0.184**	0.081*	0.122**	6012**	481
Csongrad - County 6	0.088	0.163**	0.138**	0.154**	267	-3010**
Fejer - County 7	0.159**	0.185**	0.185**	0.197**	262	1834
Hajdu - County 9	-0.186***	-0.102***	-0.098*	-0.090***	1573	-1142
Pest - County 13	0.156**	0.195**	0.100	0.150*	-1819	-2404
Szabolcs - County 15	-0.086***	0.141**	0.055	0.073	787	-750
Vas - County 18	0.048	0.144**	0.017	0.042	3111	1284
Budapest - Capital City 1~	0.101	0.145**	0.048	0.130*	2353	-119

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 7.4 Regression Adjusted Impacts of Various Aspects of Wage Subsidies**

	Participant						
	Group	EMPLOY1	EMPLOYS1	EMPLOY2	EMPLOYS2	EARN1	EARN2
	Proportion						
Matched Comparison Mean		0.81	0.81	0.65	0.66	18523	24170
Adjusted Public Service Employment (PSE) Impact		-0.10**	-0.02	-0.02	-0.01	2271**	-2701**
Wage Subsidy Job Skill Level							
Non-manual	0.160	-0.082**	-0.002	-0.042	-0.011	2308	-1595**
Manual unskilled	0.129	-0.118**	-0.035	-0.059	-0.041	1191	-1518
Manual semi-skilled	0.278	-0.078**	0.028	-0.002	0.022	-125	-1155*
Manual skilled	0.433	-0.082**	-0.009	-0.012	0.008	3070** <sup>c</sup>	-1073**
Industry of Wage Subsidy Job							
Agriculture	0.095	-0.104**	0.011	0.018	0.040	3227	-961
Construction	0.075	-0.152**	-0.088*	-0.174** <sup>a</sup>	-0.167** <sup>a</sup>	-1096	3
Services	0.428	-0.082**	-0.007	-0.047* <sup>b</sup>	-0.019 <sup>b</sup>	3083**	-2171**
Other	0.401	-0.071**	0.020 <sup>b</sup>	0.028 <sup>bc</sup>	0.050** <sup>b</sup>	1304	-339 <sup>c</sup>
Participant Sample Size	1131	1090	1090	1090	1090	178	713
Comparison Sample Size		3213	3213	3213	3213	1681	1382

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup> - Statistically significantly different from the first category at the 90 percent level.

<sup>b</sup> - Statistically significantly different from the second category at the 90 percent level.

<sup>c</sup> - Statistically significantly different from the third category at the 90 percent level.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 7.5.1 Wage Subsidy Summary of Reemployment Hazards Measured from ALP  
Ending Date for ALP Group Comparison Group Hazards Measured from  
Start Date of Last Registration**

Months until starting a job	Comparison group risk set	Comparison group starting a job	Comparison group exit rate	Wage Subsidy			
				Group risk set	Group starting a job	Group exit rate	Program impact
1	1112	110	9.89	1080	2	0.19	-9.71**
2	1002	98	9.78	1078	0	0.00	-9.78**
3	904	76	8.41	1078	1	0.09	-8.31**
4	828	89	10.75	1077	3	0.28	-10.47**
5	739	85	11.50	1074	0	0.00	-11.50**
6	654	41	6.27	1074	1	0.09	-6.18**
7	613	70	11.42	1073	1	0.09	-11.33**
8	543	59	10.87	1072	1	0.09	-10.77**
9	484	48	9.92	1071	5	0.47	-9.45**
10	436	29	6.65	1066	10	0.94	-5.71**
11	407	16	3.93	1056	7	0.66	-3.27**
12	391	19	4.86	1049	22	2.10	-2.76**
13	372	27	7.26	1027	13	1.27	-5.99**
14	345	14	4.06	1014	22	2.17	-1.89*
15	331	29	8.76	992	22	2.22	-6.54**
16	302	3	0.99	970	22	2.27	1.27
17	299	18	6.02	948	53	5.59	-0.43
18	281	3	1.07	895	51	5.70	4.63**
19	278	20	7.19	844	33	3.91	-3.28**
20	258	10	3.88	811	36	4.44	0.56
21	248	8	3.23	775	26	3.35	0.13
22	240	7	2.92	749	46	6.14	3.22*
23	233	4	1.72	703	36	5.12	3.40**
24	229	5	2.18	667	46	6.90	4.71**
25	224	1	0.45	621	38	6.12	5.67**
26	223	0	0.00	583	32	5.49	5.49**
27	223	0	0.00	551	56	10.16	10.16**
28	223	0	0.00	495	31	6.26	6.26**
29	223	0	0.00	464	26	5.60	5.60**
30	223	0	0.00	438	28	6.39	6.39**
31	223	1	0.45	410	12	2.93	2.48**
32	222	0	0.00	398	19	4.77	4.77**
33	222	0	0.00	379	8	2.11	2.11**
34	222	0	0.00	371	17	4.58	4.58**
35	222	0	0.00	354	15	4.24	4.24**
36	222	0	0.00	339	5	1.47	1.47*
37	222	0	0.00	334	2	0.60	0.60
38	222	0	0.00	332	1	0.30	0.30
39	222	0	0.00	331	4	1.21	1.21*
Cumulative	1112	890	80.04	1080	753	69.72	-10.31**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.



**Table 7.5.2 Wage Subsidy Reemployment Hazards Measured from the Date of Ending ALP Participation and Matched Pairs Comparison Group Hazards Measured from the Date of Registration as Unemployed**

Months until starting a job	Comparison			Wage Subsidy			
	Comparison group risk set	group starting a job	Comparison group exit rate	group risk set	group starting a job	group exit rate	program impact
1	1112	110	9.89	1112	675	60.70	50.81**
2	1002	98	9.78	437	11	2.52	-7.26**
3	904	76	8.41	426	9	2.11	-6.29**
4	828	89	10.75	417	12	2.88	-7.87**
5	739	85	11.50	405	13	3.21	-8.29**
6	654	41	6.27	392	11	2.81	-3.46**
7	613	70	11.42	381	16	4.20	-7.22**
8	543	59	10.87	365	4	1.10	-9.77**
9	484	48	9.92	361	8	2.22	-7.70**
10	436	29	6.65	353	7	1.98	-4.67**
11	407	16	3.93	346	5	1.45	-2.49**
12	391	19	4.86	341	1	0.29	-4.57**
13	372	27	7.26	340	3	0.88	-6.38**
14	345	14	4.06	337	3	0.89	-3.17**
15	331	29	8.76	334	0	0.00	-8.76**
16	302	3	0.99	334	0	0.00	-0.99*
17	299	18	6.02	334	0	0.00	-6.02**
18	281	3	1.07	334	0	0.00	-1.07**
19	278	20	7.19	334	0	0.00	-3.88**
20	258	10	3.88	334	0	0.00	-3.23**
21	248	8	3.23	334	0	0.00	-2.92**
22	240	7	2.92	334	0	0.00	-1.72**
23	233	4	1.72	334	0	0.00	-2.18**
24	229	5	2.18	334	0	0.00	-0.45**
25	224	1	0.45	334	0	0.00	0.00
26	223	0	0.00	334	0	0.00	0.00
27	223	0	0.00	334	0	0.00	0.00
28	223	0	0.00	334	0	0.00	0.00
29	223	0	0.00	334	0	0.00	0.00
30	223	0	0.00	334	0	0.00	0.00
31	223	1	0.45	334	0	0.00	-0.45
32	222	0	0.00	334	0	0.00	0.00
33	222	0	0.00	334	0	0.00	0.00
34	222	0	0.00	334	0	0.00	0.00
35	222	0	0.00	334	0	0.00	0.00
36	222	0	0.00	334	0	0.00	0.00
37	222	0	0.00	334	0	0.00	0.00
38	222	0	0.00	334	0	0.00	0.00
39	222	0	0.00	334	0	0.00	0.00
Cumulative	1112	890	80.04	1112	778	69.96	-10.07**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\*Statistically significant at the 95 percent confidence level in a two-tailed test.

**Table 7.6 Impact Estimates of Wage Subsidies on Months of Employment, Unemployment and Unemployment Compensation in Hungary (t-statistics in parentheses)**

	Matched Comparison Sample Mean	Wage Subsidy Sample Mean	Matched Pairs Impact Estimate	Regression Adjusted Impact Estimate	Full Interaction Impact Estimate	ES Interaction Impact Estimate
EMMONTHS	10.2	6.38	-3.81** (15.94)	-3.88** (17.81)	-2.51* (1.69)	-4.18** (13.11)
EMSMONTH	10.25	6.57	-3.68** (15.55)	-3.72** (17.13)	-2.23* (1.84)	-3.96** (12.35)
UNMONTHS	4.15	2.39	-1.76** (8.94)	-2.08** (9.29)	-3.16** (3.01)	-1.63 (1.93)
UCMONTHS	1.28	1.11	-0.17* (1.72)	-0.22** (2.13)	-0.42** (10.18)	0.04** (4.82)
UCPAY	16976	15137	-1839 (1.35)	-2337* (1.71)	-4689** (9.97)	1280** (5.31)
Participant Sample Size		1130	1130	1090	1090	1090
Sample Size	1130		1130	3213	3213	3213

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration

EMSMONTH - Months in any job since most recent ES registration

UNMONTHS - Months unemployed since most recent ES registration

UCMONTHS - Months of unemployment compensation since most recent ES registration

UCPAY - Amount of unemployment compensation since most recent ES registration

## **8. Evaluation of Self-employment Assistance**

Self-employment assistance is provided to a small fraction of persons who are eligible for unemployment compensation. The assistance is provided in monthly payments equal to the regular UC but may extend 6 months beyond the basic one year UC eligibility period. Support may also include reimbursement of up to half the cost of professional entrepreneurial counseling services and half the cost of training courses required for engaging in the entrepreneurial activity. Up to half the premium on loan insurance for funds borrowed to start the enterprise may be paid for one year.

In recent years, self-employment assistance has received a small share of spending among all ALPs. It was 0.8 percent in 1994, 0.3 percent in 1995, and 0.3 percent of ALP spending in 1996 (Table 2.3). The number of self-employment assistance participants was only 1,378 in 1996 (Table 2.4). The self-employment assistance program serves only 10 percent of the number of unemployed who receive a wage subsidy.

The impact estimates for self-employment assistance in Hungary presented in this chapter proceeds with a comparison of the observable characteristics of self-employment assistance participant group and the comparison group. This is followed by a report on net impacts for the main employment and earnings measures. Section 3 of this chapter presents a subgroup analysis of self-employment assistance impacts on employment and earnings. Section 4 reports net impacts on various features of self-employment assistance. Section 5 reports on the timing of response to self-employment assistance. Section 6 reports on the impact on employment, unemployment, and unemployment compensation.

### **8.1 The samples for analysis of self-employment assistance**

The differences between self-employment assistance participant sample and the comparison sample are reviewed in Table 8.1. Ignoring the county variables in the table, there are 42 descriptive characteristics listed for comparing the samples. The asterisks indicate that there are significant differences across the samples in 36 of the 42 characteristics; the samples were clearly drawn from different populations. In contrast to the comparison group, the self-employment assistance sample

includes participants who had higher prior average monthly earnings, were older, more likely to be male, more educated, more likely to have been employed prior to registering as unemployed, more likely to have been in a white collar occupation, more likely to be married, and more likely to have dependents.

## **8.2 Impact estimates of self-employment assistance on employment and earnings**

Impact estimates presented in this section focus on two main outcomes, employment and earnings. The same delineations of employment and earnings outcomes reviewed in section 4a.2 are examined in this section. Four measures of employment are examined: a narrow definition involving only non-subsidized jobs and a broader definition permitting subsidized jobs as well, each considered over the entire period of observation and for the current status on the date of the survey. Average monthly earnings on the first new regular job after unemployment and earnings on the current job on the survey date are also examined. The six outcome variables are EMPLOY1, EMPLOY1S, EMPLOY2, EMPLOY2S, EARN1, and EARN2.

Table 8.2.1 presents impact estimates for the effect of self-employment assistance in Hungary on the various measures of employment and earnings. Estimates for the impact on each separate outcome measure were computed in five separate ways. Technical details of the estimation methodologies are presented in Appendix B to this report. The first set of results are gross impact estimates which were not adjusted for observable differences between the participant and comparison group samples. The second set of results are net impact estimates which were adjusted for observable differences using multivariate ordinary least squares regression.<sup>38</sup> The third set of results were computed by a generalized regression method which allows program impacts to vary by observable characteristics during estimation. The fourth set of results are net impact estimates which were computed as simple differences between the mean outcome of interest for the participant group and the mean outcome for a synthetic comparison group selected by a matched pair process described in

---

<sup>38</sup>The variables used to control for observable differences in characteristics between program participants and comparison group members in net impact regression models are listed in Table 4a.2.3.

Appendix B.<sup>39</sup> Essentially, the matched pair process selects for each participant that person in the comparison group who looks most similar in terms of the measurable characteristics. The fifth estimation methodology employed is labeled in Table 8.2.1 as “ES Interact.” That label refers to a multiple regression technique which estimates net impacts for the ALP while accounting for the fact that many ALP participants also made use of the services of the ES; this method is also described in Appendix B.

The most obvious overall result in Table 8.2.1 is that the unadjusted impact estimates are quite different from the adjusted results. The direction of change in impact estimates resulting from regression adjustment is not surprising. O’Leary (1997) found for earlier net impact estimates of retraining in Hungary that the unadjusted impact estimates were much larger than those adjusted for observable characteristics. In the present case, adjusting for observable characteristics also reduces the estimated employment impact, meaning that there is some “creaming” taking place in selecting the best candidates to get self-employment assistance. The net impact estimates computed by the ES interaction method suggest that self-employment assistance in Hungary does not affect the probability of returning to work. The lack of statistical significance in this case is probably due to the fact that less than 10 percent of self-employment assistance recipients used the ES to help in job search. While not significant, the impact estimates are quite similar to the regression-adjusted estimates. The estimates indicate a net gain from self-employment on EMPLOY1 of 14 percentage points, and an even larger gain on EMPLOY2 of 16 percentage points.

On the broader measures of reemployment in any job (including subsidized ones), the results suggest the net impact on employment is 17 percentage points for EMPLOY1 and 19 percentage points for EMPLOY2.

The cost of the significant employment gains by self-employment assistance recipients may partly be in terms of lower average monthly earnings. The point estimates are that average monthly

---

<sup>39</sup>The matching process resulted in a comparison group very similar to the program participant group as can be seen in Table 8.2.2. Descriptions of the comparison variables are given in Table 4a.2.2.1. The variables used to perform the matching process are listed in Table 4a.2.4.

earnings of self-employment assistance recipients (EARN1) fell by 7,057 Ft and remained 4,583 Ft per month below the adjusted comparison for EARN2.

A secondary impact of interest in considering benefits from self-employment assistance is how many others got employed in enterprises originally started with the aim of self-employment. Table 8.2.3 reports that 82.4 percent (813 of the 987 self-employment assistance recipients who responded to this question in the survey) hired no additional workers. However, 12.6 percent hired one employee, 2.2 percent hired two employees, 1.0 percent hired three employees, 0.8 percent hired four employees, and 0.9 percent hired five or more, with one of these claiming to have hired 12 employees. The mean number of workers hired was 0.31, and among the 174 self-employment loan recipients who hired employees, the mean number hired was 1.75.

A further investigation of hiring by those receiving self-employment assistance is given in Table 8.2.4, which investigates how many persons were hired who were previously unemployed. Table 8.2.4 shows that 91.8 percent (906 of the 987 self-employment assistance recipients who responded to this question in the survey) hired no additional workers who were unemployed at the time of hiring. However, 6.5 percent hired one such employee, 1.0 percent hired two, and 0.7 percent hired three or more employees who were unemployed at the time of hiring, with one of these claiming to have hired eight such employees. The mean number of unemployed workers hired was 0.12, and among the 81 self-employment loan recipients who hired employees, the mean number hired was 1.41.

### **8.3 A subgroup analysis of self-employment assistance impacts**

There are at least two reasons to examine treatment impacts by population subgroup. One is to provide information to policymakers who may consider targeting ALPs to certain groups like those without a specialization or older unemployed persons. Another is to identify any possible biases in the effects; a program that benefits only one gender or certain education level groups may not be considered good policy even if it is cost effective.

Subgroup impact estimates were computed simultaneously, that is, self-employment assistance impact estimates for females were computed while adjusting for the fact that registered unemployed females tend to have more schooling and are less likely to work in blue collar occupations than their male counterparts. Details of the subgroup estimation methodology are given in Appendix B to this report.

Table 8.3 presents net impact estimates of self-employment assistance by subgroup on the six outcome variables. Subgroups are defined by 29 categorical variables for gender, age, education, occupation, whether or not the person became voluntarily unemployed, whether or not the person was long-term unemployed (meaning registered unemployed at least 12 months prior to entering self-employment assistance), categories of prior work experience, whether unemployment in the county of residence is low, medium, or high, and indicators for each of the 10 counties.

Females tend to benefit more from self-employment assistance, and the impact on ever reemployed in a non-subsidized job is statistically significantly larger for females than for males. Self-employment assistance negatively impacts reemployment earnings for both genders, and there are no statistically significant differences across the two groups.

Across the three age groups self-employment assistance benefits the oldest group the most, and the difference is statistically significantly greater than the middle and younger age groups on three of the four employment outcomes. At the same time, it appears that the added employment benefit experienced by the older age group comes at the expense of statistically significantly lower average monthly earnings.

There were no statistically significant differences in impacts of self-employment assistance on any of the employment outcomes across the educational attainment groups; however, the tendency is for the group with the least schooling to have the largest positive net impact. There were statistically significant different impacts across the education subgroups of self-employment assistance on both earnings outcomes, with the negative impacts on earnings greatest for the highest educational attainment group and steadily declining from there.

Two occupational categories were established for the subgroup analysis. There were no significant differences across the two main occupational groups in either the employment or earnings impacts of self-employment assistance. For both groups, self-employment assistance participation raised prospects of reemployment but lowered reemployment earnings.

In terms of reemployment, those who lost their prior job had dramatically better and, for all outcomes, statistically significantly larger employment gains relative to those who were separated from their job for other reasons. The same tendency is true for the group of recent school graduates, but self-employment assistance impacts on reemployment outcomes for this group are not statistically significant. The impacts of self-employment assistance on average monthly earnings were statistically significant for both outcomes for all subgroups but were not statistically significant. In all comparisons, self-employment assistance had a negative impact on reemployment earnings.

There were no statistically significant differences in impacts of self-employment assistance on either the reemployment or earnings of long-term unemployed persons relative to those who were not long-term unemployed. The tendency is for the prior long-term unemployed to benefit somewhat more from self-employment assistance in terms of reemployment, but to also suffer somewhat more in terms of lower reemployment average monthly earnings.

The main result to emerge from analysis of the impact of self-employment assistance on employment and earnings across regions is that self-employment assistance boosts reemployment prospects the most for those in high unemployment areas. The employment gains for those in the high unemployment areas are statistically significantly greater than the gains experienced by those in the medium unemployment rate areas. Furthermore, the earnings costs suffered in reemployment by those receiving self-employment assistance are generally smaller than those for self-employment assistance recipients in low or medium unemployment areas.



## **8.4 Net impacts of various self-employment assistance program features**

Since self-employment assistance provided to unemployed job seekers is not homogenous, it is useful to investigate if variations in different observable dimensions of self-employment assistance yield different impacts on the outcome measures for employment and earnings. Table 8.4 presents net impact estimates by the type of self-employment enterprise established and by the industry of self-employment. The methodology used to compute these impacts is summarized in Appendix B under the heading, “Methodology for Estimation of Program Components.” To provide a reference for examining the impacts presented, the top row of Table 8.4 restates the means of the outcome variables for the matched pairs comparison group and the second row gives the net impact estimated from matched pairs methodology.

Two categories of self-employment enterprise type were examined: individual enterprise and partnership or other enterprise. There were no statistically significant differences in impacts of self-employment by type of enterprise on any of the employment outcomes. The tendency was for the individual enterprise form to be slightly more successful in ever getting into non-subsidized employment (EMPLOY1), while the partnership or other enterprise was more successful at achieving reemployment in any capacity (EMPLOY5). The partnership form also tended to suffer larger earnings losses from self-employment assistance than did the individual enterprise form; indeed, the negative impact on EARN1 was statistically significantly larger for the partnership or other type of enterprise.

Data were available about the industry category of the activity pursued by the self-employment assistance recipient. There were four main industry groups identified: agriculture, construction, services, and other. The tendency was for those in the service industry to have the smallest employment gains, while those in agriculture and fishing had the largest employment gains. In fact, for the outcomes EMPLOY2 and EMPLOY5, the impact for those in the service industry was statistically significantly smaller than for each of the three other industry groups. Also, the negative impact of self-employment assistance on the two average monthly earnings measures was greater for those in the service industry than for those in other industries, with three of the values being statistically significantly different.

## **8.5 Some timing aspects of self-employment loan assistance**

This section examines the survival of self-employment endeavors of self-employment assistance recipients. The duration of survival is examined two ways. First, in Table 8.5.1, an examination of the duration of self-employment enterprise survival is examined by month, counting from the end of subsidy receipt. This is the most meaningful measure of survival, as it is the non-subsidized kind. Table 8.5.2 presents a simple frequency distribution of the number of months in total that the self-employment enterprises survive, counting from the start of subsidy receipt. Note that subsidies may continue for up to 18 months. A third table is presented in this section analyzing timing aspects of self-employment assistance. Table 8.5.3 examines the timing of the flow into self-employment assistance after first registration as unemployed.

Table 8.5.1 presents a simple frequency distribution showing for the 930 self-employment assistance recipients responding to the survey how many continued in their self-employment activity in each month after assistance payments ended. As of the survey date, we see that 780 (83.9 percent of the 930 self-employment assistance recipients examined) are still self-employed. The 780 spells of continuing survival which we observe yield us truncated information on the duration of survival. Counting from the end of the subsidy, among the 780 spells of self-employment continuing, the mean duration of survival so far is 10.1 months, with a standard deviation of 2.7 months. The shortest continuing spell was 4 months and the longest 15 months at the survey date.

Table 8.5.2 presents a frequency distribution showing for the 968 self-employment assistance recipients responding to the survey how many continued in their self-employment activity in each month after assistance payments began. As of the survey date, we see that 780 (80.6 percent of the 968 self-employment assistance recipients examined) are still self-employed. The 780 spells of continuing survival which we observe yield us truncated information on the duration of survival. Counting from the beginning of the monthly subsidy payments, among the 780 spells of self-employment continuing on the survey date, the mean duration of survival so far is 14.9 months, with a standard deviation of 2.8 months. The shortest continuing spell was five months and the longest 22 months at the survey date.

Table 8.5.3 presents a frequency distribution showing, for the 1,043 self-employment assistance recipients responding to the survey, how many months it was from the date of registration as unemployed until self-employment assistance payments began for each self-employment assistance recipient. We see in the table that there is a steady inflow into self-employment assistance through the eleventh month which averages about 58 per month; two-thirds of those who would get self-employment assistance flowed into the program within the first 11 months. Over the entire 30-month period of inflow, the mean duration time until program entry is 10.5 months. As time on the unemployment register passes, the chances of getting self-employment assistance falls, since a condition for self-employment assistance eligibility is continuing eligibility for unemployment compensation payments, which have a maximum entitled duration of 12 months. Therefore, a reduction in UC payments in contrast to the comparison group should be expected for the self-employment assistance recipients. Indeed, there is a significant spike—a doubling in the rate of flow into the program—at the eleventh month after registration, which is just one month before UC benefit exhaustion.

## **8.6 Impact of self-employment assistance on unemployment compensation costs**

Survey respondents were asked about their labor market state in each of the 16 months between January 1996 and April 1997.<sup>40</sup> Responses to this question allowed independent estimates of self-employment assistance impact on employed months (EMSMONTH) and unemployed months (UNMONTHS) since the most recent registration as unemployed.

In contrasting the employment and unemployment months of self-employment assistance participant and comparison group members, it should be recalled that the former group spent the self-employment assistance period unavailable for reemployment or full-time job search and that differences in durations between these two groups will be influenced by this fact. This factor is less important for examining impacts on outcomes summarized in Table 8.2.1. Employment rates and usual monthly earnings are less affected by self-employment assistance time out of the labor market. Estimates are presented using matched pairs, regression adjustment, full interaction regression, and ES interaction

---

<sup>40</sup>For self-employment assistance it was survey question 13 in record type A and for the comparison group it was survey question 11.1 in record type E (see Appendix A).

regression methods. There are no statistically significant differences in the results across the methods of estimation. As before, we focus on the ES interaction regression results. The estimates given in Table 8.6 indicate that self-employment assistance participants spent 1.49 fewer months employed in a non-subsidized job, 1.06 fewer months employed in any job, and 3.84 fewer months unemployed than the comparison group during the observation period.

Self-reported data are also available to estimate the impact of self-employment assistance on months of unemployment compensation (UCMONTHS) and the amount of UC drawn.<sup>41</sup> Survey respondents were asked about their benefit receipt in each of the 16 months between January 1996 and April 1997.<sup>42</sup> Table 8.6 shows that self-employment assistance participants drew 1.64 fewer months of UC and 21,072 Ft less in unemployment compensation benefits than did members of the matched pairs comparison group.

---

<sup>41</sup>Amounts were imputed by assigning to each observation claiming benefit receipt in a month the average monthly UC benefit paid in that month in the respondent's county of residence. A second source of data directly from the UC register which recorded the average UC for months compensated in a calendar year provided point estimates virtually identical to those reported.

<sup>42</sup>For self-employment assistance it was survey question 13.2 in record type A and for the comparison group it was survey question 11.2 in record type E (see Appendix A).

**Table 8.1 Comparison Group and Self-employment Means and Differences on Exogenous Descriptive Characteristics**

	Comparison Group	Self-employment	Difference	t-statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	15170	26838	11668**	24.67	3338	1067
AGE	33.91	36.44	2.53**	7.04	3338	1067
MALE	0.56	0.62	0.06**	3.32	3338	1067
EDELEM	0.35	0.08	-0.27**	17.58	3338	1067
EDVOC	0.41	0.38	-0.03	1.54	3338	1067
EDGYM	0.21	0.43	0.22**	14.44	3338	1067
EDCOLL	0.03	0.11	0.08**	10.31	3338	1067
EARLY1	0.22	0.74	0.52**	35.01	3338	1067
EARLY2	0.67		-0.41**	24.89	3338	1067
EARLY3	0.09		-0.09**	10.18	3338	1067
EARLY4	0.02		-0.02**	4.62	3338	1067
BLCOLL1	0.86	0.68	-0.18**	3.78	332	73
WHCOLL1	0.14		0.18**	3.78	332	73
BLCOLL2	0.81	0.63	-0.19**	12.94	3338	1067
WHCOLL2	0.19	0.37	0.19**	12.94	3338	1067
LEGIS1	0.03	0.08	0.05**	6.46	2607	1046
PROF1	0.02		0.06**	8.31	2607	1046
TECH1	0.06		0.08**	7.71	2607	1046
CLERK1	0.06		0.03**	3.20	2607	1046
SERV1	0.13		0.04**	3.49	2607	1046
SKILLAG1	0.03		-0.03**	4.19	2607	1046
CRAFT1	0.28		-0.01	0.66	2607	1046
MACH1	0.12		-0.03**	2.22	2607	1046
ELEM1	0.26		-0.19**	13.47	2607	1046
ARMED1	0.00		0.00	0.00	2607	1046
LEGIS2	0.02	0.09	0.06**	9.46	3337	1059
PROF2	0.03	0.07	0.04**	6.01	3337	1059
TECH2	0.06	0.14	0.07**	7.36	3337	1059
CLERK2	0.08	0.10	0.02*	1.72	3337	1059
SERV2	0.12	0.14	0.01	0.99	3337	1059
SKILLAG2	0.03	0.01	-0.02**	2.99	3337	1059
CRAFT2	0.29	0.33	0.04**	2.75	3337	1059
MACH2	0.10	0.09	-0.01	0.79	3337	1059
ELEM2	0.26	0.04	-0.22**	15.94	3337	1059
ARMED2	0.00	0.00	0.00	0.37	3337	1059
SPOUSE1	0.62	0.82	0.20**	11.85	3214	1044
SPOUSE2	0.64		0.06**	3.07	1972	845
HHOTHER	0.46		-0.16**	6.11	3338	1067
PENSION	0.32		-0.11**	5.24	3338	1067
KIDS06	0.32		0.05**	2.36	3338	1067
KIDS6	0.78		0.08**	2.56	3338	1067
HHEARN	38752		6016**	5.05	3338	1067

Table 8.1 (Continued)

	Comparison Group	Self- employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
COUNTY1	0.09	0.10	0.01	0.69	3338	1067
COUNTY2	0.09	0.07	-0.02**	2.14	3338	1067
COUNTY4	0.09	0.12	0.03**	3.14	3338	1067
COUNTY5	0.13	0.15	0.02*	1.81	3338	1067
COUNTY6	0.07	0.07	0.00	0.17	3338	1067
COUNTY7	0.09	0.08	-0.01	1.09	3338	1067
COUNTY9	0.12	0.11	0.00	0.38	3338	1067
COUNTY13	0.12	0.11	0.00	0.34	3338	1067
COUNTY15	0.13	0.09	-0.04**	3.57	3338	1067
COUNTY18	0.07	0.09	0.02*	1.83	3338	1067

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 8.2.1 Self-employment Impact Estimates on Employment and Earnings**

HUNGARY	Comparison Sample	Self-employment	Impact	t-statistic on Impact	Comparison Sample	Participant Sample
Unadjusted						
EMPLOY1	0.54	0.93	0.39**	24.27	3338	1067
EMPLOYS1	0.55	0.96	0.41**	26.42	3338	1067
EMPLOY2	0.43	0.87	0.44**	27.06	3338	1067
EMPLOYS2	0.44	0.91	0.47**	29.15	3338	1067
EARN1	18202	13045	-5157**	13.84	1734	844
EARN2	22129	18856	-3273**	6.83	1426	966
Regression Adjusted						
EMPLOY1	0.54		0.15**	8.41	3213	1036
EMPLOYS1	0.55		0.19**	10.51	3213	1036
EMPLOY2	0.43		0.22**	11.94	3213	1036
EMPLOYS2	0.44		0.25**	13.89	3213	1036
EARN1	18202		-6218**	14.62	1681	823
EARN2	22129		-5070**	9.73	1382	939
Full Interaction Regression						
EMPLOY1	0.54		0.24	0.97	3213	1036
EMPLOYS1	0.55		0.27	1.32	3213	1036
EMPLOY2	0.43		0.30*	1.83	3213	1036
EMPLOYS2	0.44		0.34**	2.27	3213	1036
EARN1	18202		-4994*	1.72	1681	823
EARN2	22129		-4350	0.86	1382	939
Matched Pairs						
EMPLOY1	0.79	0.92	0.13**	8.88	1059	1059
EMPLOYS1	0.80	0.96	0.16**	12.06	1059	1059
EMPLOY2	0.65	0.87	0.21**	11.92	1059	1059
EMPLOYS2	0.66	0.91	0.25**	14.42	1059	1059
EARN1	19692	13088	-6604**	14.24	801	837
EARN2	24921	18923	-5998**	9.18	671	959
ES Interact						
EMPLOY1	0.54		0.14	0.46		
EMPLOYS2	0.55		0.17	0.36		
EMPLOY2	0.43		0.16	0.69		
EMPLOYS2	0.44		0.19	0.29		
EARN1	18202		-7057**	4.41		
EARN2	22129		-4583**	2.41		
Sample	3338	1067				

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOYS1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOYS2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 8.2.2 Treatment and Comparison Group Differences for Exogenous Variables  
Matched Pair Analysis of Self-employment**

	Comparison Group	Self- employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
AVGERN	20759	26935	6176**	9.11	1059	1059
AGE	35.70	36.46	0.80**	2.11	1059	1059
MALE	0.62	0.62	-0.01	0.27	1059	1059
EDELEM	0.08	0.08	-0.01	0.56	1059	1059
EDVOC	0.38	0.39	0.00	0.05	1059	1059
EDGYM	0.43	0.43	0.01	0.26	1059	1059
EDCOLL	0.11	0.11	0.00	0.00	1059	1059
EARLY1	0.66	0.74	0.07**	3.70	1059	1059
EARLY2	0.34	0.26	-0.07**	3.71	1059	1059
EARLY3	0.00	0.00	0.00	0.00	1059	1059
EARLY4	0.00	0.00	0.00	0.00	1059	1059
BLCOLL1	0.82	0.68	-0.14**	2.20	118	732
WHCOLL1	0.18	0.31	0.14**	2.20	118	73
BLCOLL2	0.63	0.62	-0.00	0.18	1059	1059
WHCOLL2	0.37	0.38	0.00	0.18	1059	1059
LEGIS1	0.07	0.08	0.00	0.32	948	1046
PROF1	0.06	0.08	0.02	1.58	948	1046
TECH1	0.11	0.14	0.03**	2.30	948	1046
CLERK1	0.09	0.09	-0.01	0.54	948	1046
SERV1	0.15	0.18	0.03	1.57	948	1046
SKILLAG1	0.01	0.00	-0.00	0.87	948	1046
CRAFT1	0.34	0.27	-0.06**	3.07	948	1046
MACH1	0.09	0.10	0.01	0.93	948	1046
ELEM1	0.08	0.06	-0.02	1.48	948	1046
ARMED1	0.00	0.02	-0.00	0.94	948	1046
LEGIS2	0.09	0.09	0.00	0.00	1059	1059
PROF2	0.07	0.07	-0.00	0.08	1059	1059
TECH2	0.13	0.14	0.00	0.19	1059	1059
CLERK2	0.09	0.10	0.00	0.15	1059	1059
SERV2	0.14	0.14	-0.00	0.19	1059	1059
SKILLAG2	0.01	0.01	0.00	0.00	1059	1059
CRAFT2	0.33	0.33	-0.00	0.05	1059	1059
MACH2	0.09	0.09	0.00	0.00	1059	1059
ELEM2	0.04	0.04	0.00	0.00	1059	1059
ARMED2	0.00	0.00	0.00	0.00	1059	1059
SPOUSE1	0.72	0.82	0.10**	5.34	1029	1036
SPOUSE2	0.70	0.70	-0.00	0.09	732	841
HHOTHER	0.28	0.29	0.02	0.69	1059	1059
PENSION	0.27	0.21	-0.06**	2.42	1059	1059
KIDS06	0.33	0.38	0.05*	1.90	1059	1059
KIDS6	0.79	0.86	0.07*	1.82	1059	1059
HHEARN	41396	44950	3554**	2.84	1059	1059



Table 8.2.2 (Continued)

	Comparison Group	Self- employment	Difference	<i>t</i> -statistic on Difference	Comparison Sample Size	Participant Sample Size
COUNTY1	0.10	0.10	-0.00	0.29	1059	1059
COUNTY2	0.07	0.07	-0.00	0.08	1059	1059
COUNTY4	0.12	0.12	0.00	0.27	1059	1059
COUNTY5	0.15	0.15	0.01	0.36	1059	1059
COUNTY6	0.07	0.07	0.00	0.08	1059	1059
COUNTY7	0.08	0.08	-0.00	0.08	1059	1059
COUNTY9	0.11	0.11	0.00	0.14	1059	1059
COUNTY13	0.12	0.11	-0.01	0.81	1059	1059
COUNTY15	0.08	0.09	0.01	0.47	1059	1059
COUNTY18	0.09	0.09	-0.00	0.08	1059	1059

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\*Difference statistically significant at the 95 percent level in a two-tailed test.

**Table 8.2.3 Frequency Distribution of Employees Working at Self-employment Enterprises on the Survey Date, Not Counting the Loan Recipient**

Employees	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	813	82.4	813	82.4
1	124	12.6	937	94.9
2	22	2.2	959	97.2
3	10	1.0	969	98.2
4	8	0.8	977	99.0
5	1	0.1	978	99.1
6	4	0.4	982	99.5
8	3	0.3	985	99.8
10	1	0.1	986	99.9
12	1	0.1	987	100.0

Frequency Missing = 80

**Table 8.2.4 Frequency Distribution of Employees Working at Self-employment Enterprises on the Survey Date who were Previously Unemployed, Not Counting the Loan Recipient**

Employees	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	906	91.8	906	91.8
1	64	6.5	970	98.3
2	10	1.0	980	99.3
3	4	0.4	984	99.7
4	1	0.1	985	99.8
6	1	0.1	986	99.9
8	1	0.1	987	100.0

Frequency Missing = 80

**Table 8.3 Net Impact Estimates of Self-employment by Subgroup**

	EMPLOY1	EMPLOY1S1	EMPLOY2	EMPLOY2S2	EARN1	EARN2
MALE - Respondent is male	0.259**#	0.290**	0.339**	0.371**	-6562**	-5999**
FEMALE - Respondent is female~	0.314**	0.336**	0.344**	0.362**	-6096**	-5165**
AGELT30 - Age < 30	0.278**	0.289***#	0.339**	0.353***#	-4943***#	-5157***#
AGE3044 - Age between 30 and 44	0.266**	0.297***#	0.320***#	0.348***#	-6361***#	-4304***#
AGEGE45 - Age is 45 or over~	0.325**	0.376**	0.389**	0.433**	-9038**	-9380**
EDELEM - 8 years of schooling	0.321**	0.334**	0.377**	0.395**	-4885***#	-5573***#
EDVOC - Vocational	0.269**	0.319**	0.330**	0.371**	-5922***#	-4514***#
EDGYM - General secondary	0.277**	0.289**	0.332**	0.348**	-7382***#	-6324***#
EDCOLL - Some higher education~	0.209**	0.207**	0.273**	0.273**	-12971**	-11727**
WHITECOL - White collar occupation	0.290**	0.329**	0.325**	0.362**	-6964**	-6004**
BLUECOL - Blue collar occupation~	0.280**	0.304**	0.346**	0.368**	-6181**	-5532**
LOST - Earlier lost job	0.385***#	0.415***#	0.436***#	0.462***#	-5331**	-4436**
SCHOOL - Earlier school leaver	0.610	0.578	0.676	0.641	-19385**	-1757*
OTHER - Earlier other~	0.062**	0.096**	0.130**	0.166**	-5624**	-5376**
LTU - Long-term unemployed	0.304**	0.344**	0.364**	0.416**	-7730**	-5495**
NONLTU - Not unemployed long term~	0.278**	0.302**	0.336**	0.356**	-6068**	-5673**
LOWURATE - Low unemployment area	0.296**	0.303**	0.336**	0.338***#	-7183**	-6385**
MEDURATE - Med unemployment area	0.230***#	0.259***#	0.288***#	0.311***#	-6690**	-4941**
HIURATE - High Unemployment area~	0.322**	0.363**	0.394**	0.440**	-5445**	-5751**
Baranya - County 2	0.102***#	0.211***#	0.157***#	0.253**	-5669**	-2365##
Bekes - County 4	0.319**	0.342**	0.325**	0.350**	-7779**	-7351***#
Borsod - County 5	0.398**	0.387**	0.431***#	0.439**	-5958**	-8640**
Csongrad - County 6	0.284**	0.279**	0.331**	0.321**	-9047**	-7842**
Fejer - County 7	0.265**	0.253**	0.324**	0.307**	-7812**	-9107**
Hajdu - County 9	0.219**	0.325**	0.311**	0.407**	-5039***#	-4210***#
Pest - County 13	0.301**	0.305**	0.345**	0.345**	-8270**	-6548**
Szabolcs - County 15	0.326**	0.374**	0.428**	0.479***#	-5256**	-3635***#
Vas - County 18	0.254**	0.245**	0.329**	0.309**	-5103**	-4841**
Budapest - Capital City 1~	0.325**	0.348**	0.325**	0.349**	-8049***#	-8006**

\* Statistically significant at the 90 percent confidence level in a two-tailed test.

\*\* Statistically significant at the 95 percent confidence level in a two-tailed test.

# Significantly different from the reference group at the 90 percent confidence level in a two-tailed test.

## Significantly different from the reference group at the 95 percent confidence level in a two-tailed test.

~ Reference group for subgroup differences; excluded in estimation.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY1S1 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY2S2 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 8.4 Regression Adjusted Impacts of Various Aspects of Self-employment**

	Participant Group Proportion	EMPLOY1	EMPLOY51	EMPLOY2	EMPLOY52	EARN1	EARN2
Matched Comparison Mean		0.79	0.8	0.65	0.66	19692	24921
Adjusted Self-employment employment impact		0.13**	0.16**	0.21**	0.25**	-6604**	-5998**
Type of Enterprise							
Individual enterprise	0.916	0.153**	0.184**	0.223**	0.252**	-6036**	-4928**
Partnership or other	0.084	0.139**	0.202**	0.203**	0.264**	-8049** <sub>a</sub>	-6727**
Industry of Enterprise							
Agriculture and fishing	0.104	0.199**	0.221**	0.290**	0.314**	-4403**	-4139**
Construction	0.090	0.170**	0.231**	0.268**	0.330**	-5459**	-3404**
Services	0.678	0.134**	0.168**	0.190** <sub>a</sub>	0.221** <sub>a</sub>	-6901** <sub>a</sub>	-5491** <sub>b</sub>
Other	0.128	0.183**	0.204**	0.280** <sub>c</sub>	0.301** <sub>c</sub>	-5259** <sub>c</sub>	-5224** <sub>c</sub>
Participant Sample Size	1067	1036	1036	1036	1036	823	939
Comparison Sample Size		3213	3213	3213	3213	1681	1382

\*Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

<sup>a</sup> - Statistically significantly different from the first category at the 90 percent level.

<sup>b</sup> - Statistically significantly different from the second category at the 90 percent level.

<sup>c</sup> - Statistically significantly different from the third category at the 90 percent level.

EMPLOY1 - Ever reemployed in a non-subsidized job or self-employment

EMPLOY51 - Ever reemployed in any job or self-employment

EMPLOY2 - Employed in a non-subsidized job or self-employment on the survey date

EMPLOY52 - Employed in any job or self-employment on the survey date

EARN1 - Average monthly earnings at the start of the first new job or self-employment

EARN2 - Average monthly earnings from the job or self-employment on the survey date

**Table 8.5.1 Frequency Distribution of the Duration in Months of Self-employment Enterprise Survival Counting from the End of Subsidy Receipt**

Months	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	0.2	2	0.2
2	9	1.0	11	1.2
3	12	1.3	23	2.5
4	12	1.3	35	3.8
5	19	2.0	54	5.8
6	23	2.5	77	8.3
7	19	2.0	96	10.3
8	5	0.5	101	10.9
9	12	1.3	113	12.2
10	8	0.9	121	13.0
11	7	0.8	128	13.8
12	9	1.0	137	14.7
13	7	0.8	144	15.5
14	3	0.3	147	15.8
15	3	0.3	150	16.1
Continuing	780	83.9	930	100.0

Frequency Missing = 137

**Table 8.5.2 Frequency Distribution of the Duration in Months of Self-employment  
Enterprise Survival Counting from the Start of Subsidy Receipt**

Months	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	4	0.4	4	0.4
1	8	0.8	12	1.2
2	20	2.1	32	3.3
3	2	0.2	34	3.5
4	5	0.5	39	4.0
6	7	0.7	46	4.8
7	9	0.9	55	5.7
8	11	1.1	66	6.8
9	14	1.4	80	8.3
10	17	1.8	97	10.0
11	13	1.3	110	11.4
12	17	1.8	127	13.1
13	14	1.4	141	14.6
14	15	1.5	156	16.1
15	10	1.0	166	17.1
16	4	0.4	170	17.6
17	7	0.7	177	18.3
18	4	0.4	181	18.7
19	4	0.4	185	19.1
20	1	0.1	186	19.2
21	2	0.2	188	19.4
Continuing	780	80.6	968	100.0

Frequency Missing = 99

**Table 8.5.3 Frequency Distribution of the Duration in Months of the Time from Registration as Unemployed until the Start of Self-employment Subsidy Receipt**

Months	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	27	2.6	27	2.6
1	49	4.7	76	7.3
2	66	6.3	142	13.6
3	89	8.5	231	22.1
4	54	5.2	285	27.3
5	54	5.2	339	32.5
6	48	4.6	387	37.1
7	57	5.5	444	42.6
8	58	5.6	502	48.1
9	45	4.3	547	52.4
10	48	4.6	595	57.0
11	95	9.1	690	66.2
12	56	5.4	746	71.5
13	17	1.6	763	73.2
14	14	1.3	777	74.5
15	17	1.6	794	76.1
16	16	1.5	810	77.7
17	17	1.6	827	79.3
18	16	1.5	843	80.8
19	15	1.4	858	82.3
20	11	1.1	869	83.3
21	26	2.5	895	85.8
22	13	1.2	908	87.1
23	24	2.3	932	89.4
24	25	2.4	957	91.8
25	19	1.8	976	93.6
26	26	2.5	1002	96.1
27	14	1.3	1016	97.4
28	12	1.2	1028	98.6
29	14	1.3	1042	99.9
30	1	0.1	1043	100.0

Frequency Missing = 24



**Table 8.6 Impact Estimates of Self-employment on Months of Employment, Unemployment and Unemployment Compensation in Hungary (t-statistics in parentheses)**

	Matched Comparison Sample Mean	Self-employment Sample Mean	Matched Pairs Impact Estimate	Regression Adjusted Impact Estimate	Full Interaction Impact Estimate	ES Interaction Impact Estimate
EMMONTHS	9.95	9.17	-0.77** (3.34)	-0.97** (4.39)	-0.18 (0.70)	-1.49** (5.26)
EMSMONTH	10.04	9.62	-0.42* (1.88)	-0.59** (2.71)	0.26 (0.44)	-1.06** (4.63)
UNMONTHS	4.76	0.62	-4.14** (21.77)	-4.47** (19.53)	-5.54** (2.39)	-3.84** (5.38)
UCMONTHS	1.65	0.15	-1.50** (17.88)	-1.79** (18.93)	-1.60** (8.61)	-1.64** (5.62)
UCPAY	21618	2093	-19525** (17.48)	-23106** (18.58)	-20399** (8.22)	-21072** (5.44)
Participant Sample Size		1059	1059	1036	1036	1036
Sample Size	1059		1059	3213	3213	3213

\* Difference statistically significant at the 90 percent level in a two-tailed test.

\*\* Difference statistically significant at the 95 percent level in a two-tailed test.

EMMONTHS - Months in a non-subsidized job since most recent ES registration

EMSMONTH - Months in any job since most recent ES registration

UNMONTHS - Months unemployed since most recent ES registration

UCMONTHS - Months of unemployment compensation since most recent ES registration

UCPAY - Amount of unemployment compensation since most recent ES registration.



## **Appendix A**

### Questionnaires



A) Retraining Questionnaire (Variable Name in **BOLD CAPITAL LETTERS**)

Local Labor office code (**OFFICE**)

Serial number (within local office) (**SERIALNO**)

Type of training: (**TRRAINTYP**)

- 1 - listed in the National Register of Training
- 2 - narrow-scope training not included in the National Register
- 3 - language course
- 4 - job-search training
- 5 - general educational course (for low-educated)
- 6 - other

Duration of training : (**DURATION**)

- 1 - less than 1 month
- 2 - 1-3 months (not including 3)
- 3 - 3-6 months (not including 6)
- 4 - 6-12 months (not including 12)
- 5 - 12 month or more

Organizer of training and hours per week (**ORGAN**)

- 1 - Regional Training Center, 20 or more hours per week
- 2 - Regional Training Center, less than 20 hours per week
- 3 - Other organizer, 20 or more hours per week
- 4 - Other organizer, less than 20 hours per week

Contribution of participant to training costs (**CONTRIB**)

- 1 - contributed
- 2 - did not contribute

The local Labor office (**LOCALLO**)

- 1 - accepted the training ("individual training") or
- 2 - suggested the training ("group training")

Q1. Participation in training between January 1995 and September 1996

from: year, month (**TRAINBEG**)

to: year, month (**TRAINEND**)

Q2. Which services of the employment office did you use before starting the training program?  
(**SERVICE1**)

- 1 - job interview referral
  - 2 - counseling
  - 3 - psychological counseling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

Q3. Which services of the employment office did you use after finishing the training program?  
(**SERVICE2**)

- 1 - job interview referral
  - 2 - counseling
  - 3 - psychological counseling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

Q4. Have you looked for a regular non-subsidized job since participating in retraining? (**LOOKED**)

- 1 - yes
- 2 - no            skip to Q6

Q5. Job search method (**SEARCH**)

- 1 - looked at ads
  - 2 - placed ads
  - 3 - answered ads
  - 4 - public employment office
  - 5 - private, union or non-profit placement agency
  - 6 - friends, relatives
  - 7 - direct application
  - 8 - other method
  - 9 - no answer
- (more responses allowed)

Q6. Have you started a new non-subsidized job or self-employment since participating in retraining?  
(**STARTJOB**)

- 1 - got employed in a temporary job
- 2 - got employed in a permanent job
- 3 - got employed as a sub-contractor
- 4 - got self-employed
- 5 - no skip to Q13
- 6 - no answer

Ask questions 7-12 about the first job since retraining!

Q7. When did you start this job? (**STARTDTE**)

year, month

Q8. Ownership of employer: (**OWNER**)

- 1 - state or local government
- 2 - co-operative
- 3 - private
- 4 - mixed
- 5 - self-employment
- 6 - don't know 43

Q9. Job finding method (**JOBFIND**)

- 1 - placed ads (and the employer answered)
- 2 - answered ads
- 3 - public employment office referral
- 4 - referral of private, union or non-profit placement agency
- 5 - friends, relatives
- 6 - direct application
- 7 - other method
- 8 - don't know

Q10. Occupation for the job (**OCC**)

FEOR code

Q11. For this job, how valuable are the skills provided in the training? (**VALUE**)

- 1 - very valuable
- 2 - valuable
- 3 - of little value
- 4 - of no value

Q12. What was your starting net monthly earnings in this job? (**EARN1**)

forints per month

Q13. Labor market state month by month after finishing the training course: (**LMSTATE**)

- a. non-subsidised job
- b. non-subsidises self-employment
- c. subsidised job
- d. subsidised self-employment
- e. participation in retraining
- f. gyes/gyed, pension, military service, student
- g. registered unemployed
- h. non-registered unemployed conducting a job-search
- i. had no work and did not look for work
- j. does not know, does not remember



1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q13.2 Unemployment related benefit receipt month by month: **(UIBENE)**

- 1 - no benefit
- 2 - UI benefit
- 3 - CB benefit
- 4 - UA benefit
- 5 - no answer

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q14. What is your recent net monthly earnings? (if employed) (**EARN2**)

forints per month

Q15. (If he/she had no employment since finishing the training) (**WHYNOT**)

Why could not you find a job?

- 1 - looked for a job but there were no vacancies
- 2 - looked for a job but the wage offers were too low
- 3 - health problems
- 4 - family reasons
- 5 - enrolled in school
- 6 - military service
- 7 - did not want a job
- 8 - discouragement (did not look for a job for Labor market reasons)
- 9 - other reason

Q16. Total number of household members (**HH**)

Q17. Do you have a spouse living in the same household? (**SPOUSE1**)

- 1 - yes
- 2 - no skip to Q19

Q18. Is your spouse in a job or self-employment? (**SPOUSE2**)

- 1 - yes
- 2 - no

Q19. Number of emptied or self-employed household members excluding the respondent and the spouse (**HHOTHER**)

Q20. Number of pensioners living in the household (including disabled pension) (**PENSION**)

Q21. Number of children aged 0-6 living in the household (**KIDS06**)

Q22. Total number of dependants over 6 living in the household (**KIDS6**)

Q23. Total net average monthly income earned by all household members during the last quarter (including all income components) (**HHEARN**)

Date of interview (**INTDATE**)

yymmdd

Interviewer (**INTER**)

B) Public Service Employment

Local Labor office code (**OFFICE**)

Serial number (within local office) (**SERIALNO**)

Skill level of PSE job (**SKILL**)

- manual
- 1 - unskilled
- 2 - semi-skilled
- 3 - skilled
- non-manual
- 4 -
- 5 -
- 6 - managerial

Industry of employer (first 2 digits) (**INDUSTRY**)

- 01-05: agriculture and fishing
- 10-14: mining
- 15-37: manufacturing
- 40-41: power and water supply
- 45: construction
- 50-99: services

Q1. Starting and finishing date of the last two PSE spells between January 1995 and July 1996

starting date of first spell, year, month (**START1**)

finishing date of first spell, year, month (**END1**)

starting date of second spell, year, month (**START2**)

finishing date of second spell, year, month (**END2**)

- Q2. Which services of the employment office did you use before starting PSE? (**SERVICE1**)
- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)
- Q3. Which services of the employment office did you use after finishing PSE? (**SERVICE2**)
- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)
- Q4. Have you looked for a regular non-subsidized job since finishing PSE in the 2nd quarter of 1996? (**LOOKED**)
- 1 - yes
  - 2 - no            skip to Q7.
- Q5. Job search method (**JOBFIND1**)
- 1 - looked at ads
  - 2 - placed ads
  - 3 - answered ads
  - 4 - public employment office
  - 5 - private, union or non-profit placement agency
  - 6 - friends, relatives
  - 7 - direct application
  - 8 - other method
  - 9 - no answer
- (more responses allowed)

Q6. Did PSE help you in finding a non-subsidized job? (**PSEHELP**)

- 1 - yes
- 2 - no
- 3 - don't know

Q7. Have you started a new non-subsidized job or self-employment since finishing PSE in the 2nd quarter of 1996? (**STARTJOB**)

- 1 - got employed in a temporary job
- 2 - got employed in permanent job
- 3 - got employed as a sub-contractor
- 4 - got self-employed
- 5 - no skip to Q13.
- 6 - no answer

ASK QUESTIONS 8 - 12 ABOUT THE FIRST JOB SINCE PSE

Q8. When did you start this job? (**STARTDTE**)

year, month

Q9. Ownership of employer: (**OWNER**)

- 1 - state or local government
- 2 - co-operative
- 3 - private
- 4 - mixed
- 5 - self-employment
- 6 - don't know

Q10. Job finding method (**JOBFIND2**)

- 1 - placed ads (and the employer answered)
- 2 - answered ads
- 3 - public employment office referral
- 4 - referral of private, union or non-profit placement agency
- 5 - friends, relatives
- 6 - direct application
- 7 - other method
- 8 - don't know

Q11. Occupation for the job (**OCC**)

FEOR code

Q12. What was your starting net monthly earnings in this job: (**EARN1**)

forints per month

Q13.1 Labor market state month by month after finishing PSE: (**LMSTATE**)

- a. non-subsidised job
- b. non-subsidises self-employment
- c. subsidised job
- d. subsidised self-employment
- e. participation in retraining
- f. gyes/gyed, pension, military service, student
- g. registered unemployed
- h. non-registered unemployed conducting a job-search
- i. had no work and did not look for work
- j. does not know, does not remember

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q13.2 Unemployment related benefit receipt month by month: **(UIBENE)**

- 1 - no benefit
- 2 - UI benefit
- 3 - CB benefit
- 4 - UA benefit
- 5 - no answer

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q14. What is your recent net monthly earnings? (if employed) **(EARN2)**

florints per month

Q15. (If he/she had no employment since finishing PSE) **(WHYNOT)**  
Why could you not find a job?

- 1 - looked for a job but there were no vacancies
- 2 - looked for a job but the wage offers were too low
- 3 - health problems
- 4 - family reasons
- 5 - enrolled in school
- 6 - military service
- 7 - did not want a job
- 8 - discouragement (did not look for a job for Labor market reasons)



9 - other reason

Q16. Total number of household members (**HH**)

Q17. Do you have a spouse living in the same household? (**SPOUSE1**)

1 - yes

2 - no skip to Q19.

Q18. Is your spouse in a job or self-employment? (**SPOUSE2**)

1 - yes

2 - no

Q19. Number of emptied or self-employed household members excluding the respondent and the spouse (**HHOTHER**)

Q20. Number of pensioners living in the household (including disabled pension) (**PENSION**)

Q21. Number of children aged 0-6 living in the household (**KIDS06**)

Q22. Total number of dependents over 6 living in the household (**KIDS6**)

Q23. Total net average monthly income earned by all household members during the last quarter (including all income components) (**HHEARN**)

Date of interview (**INTDATE**)

yymmdd

Interviewer (**INTER**)

C) Wage subsidy

Local Labor office code (**OFFICE**)

Serial number (within local office) (**SERIALNO**)

Skill level of subsidised job (**SKILL**)

- manual
- 1 - unskilled
- 2 - semi-skilled
- 3 - skilled
- non-manual
- 4 -
- 5 -
- 6 - managerial

Industry of employer (first 2 digits) (**INDUSTRY**)

- 01-05: agriculture and fishing
- 10-14: mining
- 15-37: manufacturing
- 40-41: power and water supply
- 45: construction
- 50-99: services

Q1. Starting and finishing date of employment under the wage subsidy scheme starting date, year, month (**EMPSTART**)

finishing date, year, month (**EMPEND**)

Q2. Which services of the employment office did you use before entering the wage subsidy program? **(SERVICE1)**

- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

Q3. Which services of the employment office did you use after leaving the wage subsidy program? **(SERVICE2)**

- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

Q4.1 Labor market state month by month after finishing the wage subsidy: **(LMSTATE)**

- a. non-subsidised job
- b. non-subsidises self-employment
- c. subsidised job
- d. subsidised self-employment
- e. participation in retraining
- f. gyes/gyed, pension, military service, student
- g. registered unemployed
- h. non-registered unemployed conducting a job-search
- i. had no work and did not look for work
- j. does not know, does not remember

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q4.2 Unemployment related benefit receipt month by month: **(UINBENE)**

- 1 - no benefit
- 2 - UI benefit
- 3 - CB benefit
- 4 - UA benefit
- 5 - no answer

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q5. Did you get a permanent job at the employer who employed you with wage subsidy when the subsidy stopped? (**PERM**)

- 1 - yes
- 2 - no
- 3 - don't know

Q6. Are you still working for the same employer who employed you with wage subsidy? (**SAMEEMP**)

- 1 - yes skip to Q15
- 2 - no, he/she has an other job
- 3 - no, he/she has no job
- 4 - no answer

Q7. Have you looked for a regular non-subsidised job since wage subsidy stopped? (**LOOKED**)

- 1 - yes
- 2 - no skip to Q9

Q8. Job search method (**JOBFIND1**)

- 1 - looked at ads
  - 2 - placed ads
  - 3 - answered ads
  - 4 - public employment office
  - 5 - private, union or non-profit placement agency
  - 6 - friends, relatives
  - 7 - direct application
  - 8 - other method
  - 9 - no answer
- (more responses allowed)

Q9. Have you started a new non-subsidised job or self-employment since wage subsidy stopped?  
**(STARTJOB)**

- 1 - got employed in a temporary job
- 2 - got employed in a permanent job
- 3 - got employed as a sub-contractor
- 4 - got self-employed
- 5 - no skip to Q16
- 6 - no answer

Ask questions 10-14 about the first job since wage subsidy!

Q10. When did you start this job? **(STARTDTE)**

year, month

Q11. Ownership of employer: **(OWNER)**

- 1 - state or local government
- 2 - co-operative
- 3 - private
- 4 - mixed
- 5 - self-employment
- 6 - don't know

Q12. Job finding method **(JOBFIND2)**

- 1 - placed ads (and the employer answered)
- 2 - answered ads
- 3 - public employment office referral
- 4 - referral of private, union or non-profit placement agency
- 5 - friends, relatives
- 6 - direct application
- 7 - other method
- 8 - don't know

Q13. Occupation for the job **(OCC)**

FEOR code

Q14. What was your starting net monthly earnings in this job? (**EARN1**)

forints per month

Q15. What is your recent net monthly earnings? (if employed) (**EARN2**)

forints per month

skip to Q17

Q16. (If he/she had no employment since the subsidy stopped) (**WHYNOT**)

Why could not you find a job?

1 - looked for a job but there were no vacancies

2 - looked for a job but the wage offers were too low

3 - health problems

4 - family reasons

5 - enrolled in school

6 - military service

7 - did not want a job

8 - discouragement (did not look for a job for Labor market reasons)

9 - other reason

Q17. Total number of household members (**HH**)

Q18. Do you have a spouse living in the same household? (**SPOUSE1**)

1 - yes

2 - no skip to Q20

Q19. Is your spouse in a job or self-employment? (**SPOUSE2**)

1 - yes

2 - no

Q20. Number of emptied or self-employed household members excluding the respondent and the spouse (**HHOTHER**)

Q21. Number of pensioners living in the household (including disabled pension) (**PENSION**)

Q22. Number of children aged 0-6 living in the household (**KIDS06**)

Q23. Total number of dependants over 6 living in the household (**KIDS6**)

Q24. Total net average monthly income earned by all household members during the last quarter (including all income components) (**HHEARN**)

Date of interview (**INTDATE**)

yymmdd

Interviewer (**INTER**)



D) Start-up subsidy (Self-employment)

Filename:

Local Labor office code (**OFFICE**)

Serial number (within local office) (**SERIALNO**)

Type of enterprise set up (**ENTTYPE**)

- 1 - (individual) self-employment
- 2 - business partnership (not a legal entity)
- 3 - company (a legal entity)

Industry of enterprise (first 2 digits) (**INDUSTRY**)

- 01-05: agriculture and fishing
- 10-14: mining
- 15-37: manufacturing
- 40-41: power and water supply
- 45: construction
- 50-99: services

Starting and finishing date of start-up subsidy

starting date, year, month (**STARTSUB**)

finishing date, year, month (**ENDSUB**)

Q1. Did you continue self-employment after the subsidy stopped? (**CONTINUE**)

- 1 - yes
  - 2 - no, got employed in non-subsidized job
  - 3 - no, got employed in subsidised job
  - 4 - no, got unemployed again
  - 5 - no answer
- (in case of answers 2-5 skip to Q6)

- Q2. Are you recently self-employed? (**SELFEMP**)
- 1 - yes
  - 2 - no, got employed in non-subsidized job
  - 3 - no, got employed in subsidised job
  - 4 - no, got unemployed again
  - 5 - no answer
- (in case of answers 2-5 skip to Q6)
- Q3. Number of employees in the enterprise not including the respondent (**EMP**)
- Q4. Number of previously unemployed among employees (**UNEMPEMP**)
- Q5. What are the prospects of your self-employment? (**PROSPECT**)
- 1 - it can be expanded, I plan to hire more employees
  - 2 - stable, but isn't likely to be expanded
  - 3 - uncertain prospects
  - 4 - failure is certain
- Q6. In lack of the subsidy (**LACK**)
- 1 - I could not have started the business at all
  - 2 - I could have started the business only later
  - 3 - I could have started the business anyway
- Q7. What was your starting net monthly earnings in this business?  
forints per month (**EARN1**)
- Q8.1 Labor market state month by month after the start-up subsidy stopped: (**LMSTATE**)
- a. non-subsidised job
  - b. non-subsidises self-employment
  - c. subsidised job
  - d. subsidised self-employment
  - e. participation in retraining
  - f. gyes/gyed, pension, military service, student
  - g. registered unemployed
  - h. non-registered unemployed conducting a job-search
  - i. had no work and did not look for work
  - j. does not know, does not remember

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q8.2 Unemployment related benefit receipt month by month: **(UIBENE)**

- 1 - no benefit
- 2 - UI benefit
- 3 - CB benefit
- 4 - UA benefit
- 5 - no answer

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q9. What is your recent net monthly earnings? (if employed) (**EARN2**)  
  
forints per month

If he/she recently works in the business set up with the subsidy, skip to Q19!

Q10. Have you looked for a regular non-subsidised job since the start-up subsidy stopped?  
(**LOOKED**)

- 1 - yes
- 2 - no skip to Q12

Q11. Job search method (**JOBFIND1**)

- 1 - looked at ads
  - 2 - placed ads
  - 3 - answered ads
  - 4 - public employment office
  - 5 - private, union or non-profit placement agency
  - 6 - friends, relatives
  - 7 - direct application
  - 8 - other method
  - 9 - no answer
- (more responses allowed)

Q12. Which services of the employment office did you use while unemployed? (**SERVICE**)

- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

Q13. Have you started a new non-subsidised job or self-employment since start-up subsidy stopped? (**STARTJOB**)

- 1 - got employed in a temporary job
- 2 - got employed in a permanent job
- 3 - got employed as a sub-contractor
- 4 - got self-employed
- 5 - no
- 6 - no answer

Ask questions 14-17 about the first job since wage subsidy!

Q14. When did you start this job? (**STARTDTE**)

year, month

Q15. Ownership of employer: (**OWNER**)

- 1 - state or local government
- 2 - co-operative
- 3 - private
- 4 - mixed
- 5 - self-employment
- 6 - don't know

Q16. Job finding method (**JOBFIND2**)

- 1 - placed ads (and the employer answered)
- 2 - answered ads
- 3 - public employment office referral
- 4 - referral of private, union or non-profit placement agency
- 5 - friends, relatives
- 6 - direct application
- 7 - other method
- 8 - don't know

Q17. Occupation for the job (**OCC**)

FEOR code

Skip to Q19!

Q18. (If he/she had no employment since the subsidy stopped)

Why could not you find a job? (**WHYNOT**)

1 - looked for a job but there were no vacancies

2 - looked for a job but the wage offers were too low

3 - health problems

4 - family reasons

5 - enrolled in school

6 - military service

7 - did not want a job

8 - discouragement (did not look for a job for Labor market reasons)

9 - other reason

Q19. Total number of household members (**HH**)

Q20. Do you have a spouse living in the same household? (**SPOUSE1**)

1 - yes

2 - no skip to Q20

Q21. Is your spouse in a job or self-employment? (**SPOUSE2**)

1 - yes

2 - no

Q22. Number of employed or self-employed household members excluding the respondent and the spouse (**HHOTHER**)

Q23. Number of pensioners living in the household (including disabled pension) (**PENSION**)

Q24. Number of children aged 0-6 living in the household (**KIDS06**)

Q25. Total number of dependants over 6 living in the household (**KIDS6**)

Q26. Total net average monthly income earned by all household members during the last quarter (including all income components) (**HHEARN**)

Date of interview (**INTDATE**)

year, month, day

Interviewer

E) Comparison group

Local Labor office code (**OFFICE**)

Serial number (within local office) (**SERIALNO**)

Q1. Which of the following active Labor market programs have you participated in since you registered as unemployed (after the 1<sup>st</sup> of April, 1995)? (**LMP**)

- 1 - none
- 2 - group training
- 3 - individual training
- 4 - public service employment
- 5 - start-up subsidy
- 6 - wage subsidy
- 7 - early retirement

Q2. Have you looked for a regular non-subsidised job since registering as unemployed? (**LOOKED**)

- 1 - yes
- 2 - no            skip to Q4

Q3. Job search method (**SEARCH**)

- 1 - looked at ads
  - 2 - placed ads
  - 3 - answered ads
  - 4 - public employment office
  - 5 - private, union or non-profit placement agency
  - 6 - friends, relatives
  - 7 - direct application
  - 8 - other method
  - 9 - no answer
- (more responses allowed)

- Q4. Which services of the employment office did you use during your spell of registered unemployment? (**SERVICE**)
- 1 - job interview referral
  - 2 - counselling
  - 3 - psychological counselling
  - 4 - skills assessment
  - 5 - job-search training
  - 6 - job club
  - 7 - other service
  - 8 - no service
- (more responses allowed)

- Q5. Have you started a new non-subsidised job or self-employment since registering as unemployed? (**STARTJOB**)
- 1 - got employed in a temporary job
  - 2 - got employed in a permanent job
  - 3 - got employed as a sub-contractor
  - 4 - got self-employed
  - 5 - no skip to Q11
  - 6 - no answer

Ask questions 6-10 about the first job since registration!

- Q6. When did you start this job? year, month (**STARTDTE**)
- Q7. Ownership of employer: (**OWNER**)
- 1 - state or local government
  - 2 - co-operative
  - 3 - private
  - 4 - mixed
  - 5 - self-employment
  - 6 - don't know



- Q8. Job finding method (**JOBFIND**)
- 1 - placed ads (and the employer answered)
  - 2 - answered ads
  - 3 - public employment office referral
  - 4 - referral of private, union or non-profit placement agency
  - 5 - friends, relatives
  - 6 - direct application
  - 7 - other method
  - 8 - don't know
- Q9. Occupation for the job FEOR code (**OCC**)
- Q10. What was your starting net monthly earnings in this job?  
forints per month (**EARN1**)
- Q11.1 Labor market state month by month since the 1<sup>st</sup> of April, 1995: (**STATE**)
- a. non-subsidised job
  - b. non-subsidises self-employment
  - c. subsidised job
  - d. subsidised self-employment
  - e. participation in retraining
  - f. gyes/gyed, pension, military service, student
  - g. registered unemployed
  - h. non-registered unemployed conducting a job-search
  - i. had no work and did not look for work
  - j. does not know, does not remember
- 1995 April  
May  
June  
July  
August  
September  
October  
November  
December

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q11.2 Unemployment related benefit receipt month by month: **(UI)**

- 1 - no benefit
- 2 - UI benefit
- 3 - CB benefit
- 4 - UA benefit
- 5 - no answer

1995 April  
May  
June  
July  
August  
September  
October  
November  
December

1996 January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November  
December

1997 January  
February  
March  
April

Q12. What is your recent net monthly earnings? (if employed)

forints per month (**EARN2**)

Q13. (If he/she had no employment since registering)

Why could not you find a job? (**WHYNOT**)

- 1 - looked for a job but there were no vacancies
- 2 - looked for a job but the wage offers were too low
- 3 - health problems
- 4 - family reasons
- 5 - enrolled in school
- 6 - military service
- 7 - did not want a job
- 8 - discouragement (did not look for a job for Labor market reasons)
- 9 - other reason

Q14. Total number of household members (**HH**)

Q15. Do you have a spouse living in the same household? (**SPOUSE1**)

1 - yes

2 - no skip to Q19

Q16. Is your spouse in a job or self-employment? (**SPOUSE2**)

1 - yes

2 - no

Q17. Number of emptied or self-employed household members excluding the respondent and the spouse (**HHOTHER**)

Q18. Number of pensioners living in the household (including disabled pension) (**PENSION**)

Q19. Number of children aged 0-6 living in the household (**KIDS06**)

Q20. Total number of dependants over 6 living in the household (**KIDS6**)

Q21. Total net average monthly income earned by all household members during the last quarter (including all income components) (**HHEARN**)

Date of interview

year, month, day (**INTDATE**)

Interviewer (**INTER**)

## F) Register Data Base

Local Labor office code (**OFFICE**)Serial number (within local office) (**SERIALNO**)Q1. Active Labor Program identification code (empty for comparison) (**ALPID**)

- 0 None
- 1 Retraining
- 2
- 3
- 4
- 5
- 6
- 7

Q2. Number of local office (**OFFICE**)

- 01 Fovaros (Budapest)
- 02 Baranya
- 03 Bacs-Kiskun
- 04 Bekes
- 05 Borsod
- 06 Csongrad
- 07 Fejer
- 08 Gyor-Moson-Sopron
- 09 Hajdu-Bihar
- 10 Heves
- 11 Komarom-Esztergon
- 12 Nograd
- 13 Pest
- 14 Somogy
- 15 Szabolcs-Szatmar-Bereg
- 16 Jasz-Nagykun-Szolnok
- 17 Tolna
- 18 Vas
- 19 Veszprem
- 20 Zala

Q3. Rank number of participant (**SERIALNO**)

4 digits

Q4. Labor identification number (gender + birthdate + 4 digits) (**LABORID**)

First digit of labor ID code

- 1 Male born in 20<sup>th</sup> century
- 2 Female born in 20<sup>th</sup> century
- 3 Male born in last century
- 4 Female born in last century

Birthdate yymmdd

last 4 digits randomly assigned

Q5. Registration date in second quarter of 1995 (**REGDATE**)

yymmdd

Q6. Date of first registration (**REGDATE1**)

yymmdd

Q7. Level of education (**EDUC**)

- 0 Less than 8 classes of primary school
- 1 Finished primary school (8 classes)
- 2 Vocational school
- 3 Vocational school for typists and nurses
- 4 High school with some vocational qualification
- 5 Technical high school
- 6 Grammar school (without vocational qualification)
- 7 College
- 8 University
- 9 New types of vocational school

Q8. Educational qualification (**EDUCQUAL**)

- 10000-19999
- 20000-29999
- 30000-39999
- 40000-49999
- 50000-59999
- 60000-69999
- 70000-79999
- 80000-89999
- 90000-99999

Q9. Earlier employment situation (**EARLYEMP**)

- 1 Employed
- 2 Lost employment
- 3 Dependent
- 4 School leaver
- 5 Pensioner
- 6 Student
- 7 Other
- 8 Member of cooperative without any obligation to work
- 9 New type of school leaver (1996)

Q10. Average monthly earnings before unemployment (in current Hungarian forints)  
(**AVGEARN**)

6 digits

Q11. Special reason for difficulties finding a job (**SPECIAL**)

- 0 No such reason
- 1 Overcrowded profession
- 2 Health problem
- 3 Family obligations
- 4 Frequent job changes
- 5 Comes from jail
- 6 No vocational qualification
- 7 Outlook, etc.
- 8 Other

Q12. Employment category in last job (**EMPCAT1**)

## Blue Collar

- 1 Skilled worker
- 2 Semi-skilled worker

## White Collar

- 3 Unskilled worker
- 4 Top manager
- 5 Middle manager
- 6 Production controller
- 7 Professional
- 8 Clerical

Q13. Occupation in last job (**OCCLAST**)

- 0000-0999 Armed forces
- 1000-1999 Legislators, senior officials and managers
- 2000-2999 Professionals
- 3000-3999 Technicians and associate professionals
- 4000-4999 Clerks
- 5000-5999 Service workers and shop and market sales workers
- 6000-6999 Skilled agricultural and fishery workers
- 7000-7999 Craft and related trades workers
- 8000-8999 Plant and machine operators and assemblers
- 9000-9999 Elementary occupations

Q14. Employment category in the job wanted (**EMPCAT2**)

## Blue Collar

- 1 Skilled worker
- 2 Semi-skilled worker

## White Collar

- 3 Unskilled worker
- 4 Top manager
- 5 Middle manager
- 6 Production controller
- 7 Professional
- 8 Clerical



Q15. Occupation in the job wanted (**OCCWANT**)

0000-0999	Armed forces
1000-1999	Legislators, senior officials and managers
2000-2999	Professionals
3000-3999	Technicians and associate professionals
4000-4999	Clerks
5000-5999	Service workers and shop and market sales workers
6000-6999	Skilled agricultural and fishery workers
7000-7999	Craft and related trades workers
8000-8999	Plant and machine operators and assemblers
9000-9999	Elementary occupations

Q16. Registered unemployed on March 20, 1997 (**REG0320**)

1 = yes  
0 = no

Q17. Eligible for passive measures on March 20, 1997 (**PASSIVE**)

1	School leavers benefit
2	UC
3	UA
4	Not eligible for any passive measures

Q18. Total months registered unemployed since 1990 (**MONTHS**)Q19. Number of breaks in registration between December 1992 and March 1997 (**BREAKS**)Q20. Total days of unemployment compensation (**DAYSUC**)Q21. Starting date of the most recent registration (**STRTLAST**)Q22. Number of referrals between January 1995 and March 1997 (**REFERRAL**)



G) Non-response Data Set (**Variable Name in BOLD CAPITAL LETTERS**)

Office Code: 4-digits (**OFFICE**) The first two digits denote the county as follows:

01	Fovaros (Budapest)
02	Baranya
03	Bacs-Kiskun
04	Bekes
05	Borsod
06	Csongrad
07	Fejer
08	Gyor-Moson-Sopron
09	Hajdu-Bihar
10	Heves
11	Komarom-Esztergon
12	Nograd
13	Pest
14	Somogy
15	Szabolcs-Szatmar-Bereg
16	Jasz-Nagykun-Szolnok
17	Tolna
18	Vas
19	Veszprem
20	Zala

ID Code within office: 4 digits (**SERIALNO**)

1. Date of first attempt to interview: mmdd (**FIRSTATT**)
2. Date of second attempt to interview: mmdd (**LASTATT**)
3. Reason of failure to complete interview (**REASON**):
  - 1 Did not find at home the person during either of the two visits
  - 2 Person refused to answer the questionnaire
  - 3 Did not find at home during either of two visits; spouse also refused to answer.
  - 4 Person moved to an unknown place or to outside the local labor office area.
  - 5 Person died.
  - 6 Person is not known at the address provided
  - 7 The address is outside the local office area
  - 8 Other
4. Code of person conducting the interview: 2 digits (**INTER**)



## **Appendix B**

### Notes on Evaluation Methodology



## Notes on Evaluation Methodology<sup>43</sup>

Since there is a possibility of selection bias in assigning registered unemployed to active labor programs (ALPs), special care must be taken in evaluating the impacts of these programs on labor market success. To appreciate the results presented in this report, it is useful to have knowledge of three separate ways net program impact estimation methods: (1) simple unadjusted comparison of means, (2) comparison of means using a matched pairs comparison group, and (3) regression adjusted impact estimates. The following is a brief description of each of these procedures. Also given is a concise statement of the subgroup impact estimation methodology, and some other procedures used in the evaluation.

### Unadjusted Impact Estimates

In terms of clearly guiding policy, simple unadjusted impact estimates are usually the most influential because they are easy to understand. This is the main appeal of program evaluation done using a classically designed experiment involving random assignment.<sup>44</sup> When random assignment has been achieved, modeling of behavior and complex econometric methods are not needed to estimate reliable program impacts. With large samples randomly assigned to treatment and control groups, observable and unobservable characteristics of the two groups should not differ on average so that any difference in outcomes may be attributed to exposure to the program. Program impacts may be computed as the simple difference between means of the samples of program participants and control group members on outcome measures of interest, or:

$$(1) \quad E(y_p) - E(y_c),$$

---

<sup>43</sup>A major part of the review presented in this appendix is adapted from O'Leary (1997).

<sup>44</sup>For examples of employment programs evaluated using a classically designed field experiment see Decker and O'Leary (1995).

where  $E$  is the expectation operator yielding means of the random variables,  $y$  is an outcome of interest, and the index  $p$  denotes the sample of program participants while  $c$  denotes the comparison sample. Tests of significance are done using  $t$ -statistics.

The result of the computation stated in equation (1) is equivalent to the slope coefficient estimated by ordinary least squares (OLS) applied to a simple bivariate regression model. That is, program impacts can be estimated by running the OLS model:

$$(2) \quad y_i = a_0 + a_1P_i + u_i,$$

on a pooled sample of comparison group members and program participants, where  $y$  is the outcome of interest,  $a_1$  is the impact of the program on the outcome for the ALP participants,  $a_0$  is the mean value of the outcome for comparison group members,  $P$  is a dummy variable with a value of 1 for active labor program (ALP) participants and 0 otherwise,  $u_i$  is a normally distributed mean zero error term, and  $i$  is an index denoting individuals in either the participant or comparison group samples. Tests for significance of program impacts are simply  $t$ -tests on the parameter  $a_1$ .

### Impact Estimates Using a Matched Pairs Comparison Group

When participant group and comparison group members differ significantly in terms of observable characteristics, it would not be surprising to observe different labor market success across program participant and comparison groups even in the absence of ALPs. To put the assessment of ALPs on an even footing, a separate comparison group for each sample of ALP participants may be formed using a matched pairs methodology.<sup>45</sup>

---

<sup>45</sup>See Fraker and Maynard (1987) for an interesting review and application of comparison group designs for evaluating employment-related programs.



For this study in Hungary the comparison group was randomly selected from the unemployment register. Matched pairs comparison groups were formed by comparing persons in the ALP participant samples with those in the full comparison group using the standardized Mahalanobis distance measure:

$$(3) \quad d_{pc} = \sum_k (Z_{pk} - Z_{ck})^2$$

where, the index  $p$  represents observations in an ALP participant sample and the index  $c$  represents observations from the comparison group, the index  $k$  runs over the  $n$  exogenous characteristics on which the observations are matched, and  $Z$  represents the standardized value of a characteristic where the mean and standard deviation of the characteristic is computed on the pooled sample of the comparison group sampling frame and the participants in the relevant ALP.

Using this distance measure, separate matched pairs comparison groups were selected for each ALP. The person with the smallest  $d_{pc}$  from the full comparison group sampling frame was selected for inclusion in the matched pairs comparison group, with ties being resolved randomly and each person in the ALP sample being compared to all those in the full comparison group sampling frame.<sup>46</sup>

After forming the matched pairs comparison groups, program impact estimates were computed using a simple difference of means, with significance of impacts being judged by  $t$ -tests. It should be noted that because a single observation from the comparison sample may be chosen more than once for the synthetic comparison group, the estimated standard error, computed in the usual way, for this group will be reduced. The  $t$ -tests for the matched pairs analysis therefore depend on weighted standard error estimates which give the upper bound on the possible standard error.

---

<sup>46</sup>That is, sampling was done with replacement.

## Regression Adjusted Impact Estimates

Multivariate regression analysis is a natural method for assessing the net impact of program participation on labor market success when observable characteristics of participant and comparison group members are dramatically different. This method involves a simple extension of equation (2). In such cases, estimation of the model:

$$(4) \quad y_i = a_0 + a_1P_i + b_1X_{1i} + b_2X_{2i} + \dots + b_nX_{ni} + u_i,$$

by OLS on the pooled sample yields net program impact estimates.<sup>47</sup> In equation (4)  $y$  is the outcome of interest,  $a_0$  is the mean value of the outcome for comparison group members evaluated at the mean of all observable characteristics included in the regression,  $P$  is a dummy variable with a value of 1 for program participation and 0 otherwise,  $a_1$  is the impact of the program on the outcome for the program participants evaluated at the mean of all observable characteristics,  $X_1$  to  $X_n$  are observable characteristics measured as deviations from their mean values,  $u_i$  is a normally distributed mean zero error term, and  $i$  is an index denoting individuals in either the participant or comparison group samples.<sup>48</sup>

---

<sup>47</sup>In this report, since the main dependent variable of interest—in a non-subsidized job—is binary, the regression model predicts the probability of reemployment. The OLS estimation is a linear probability model, which may yield biased estimates. OLS estimates may be biased since the range of variation in the dependent variable is constrained to the zero-one interval. Maddala (1982, Chapter 1) suggests using the logit estimator in such cases. Bias is usually most severe when the bulk of probability clusters at one or other extreme of the zero-one interval. Since reemployment probabilities for the ALP and comparison groups generally range from about 40 to 60 percent, the limited range of the dependent variable is not a likely source of severe bias in estimating parameters by OLS.

<sup>48</sup>In this application the regression model is a statement of an analysis of covariance methodology, where  $X_1$  to  $X_n$  are the covariates. Mohr (1992, pp. 83-87) discusses extending a regression model for program impacts to include control variables.

This method yields net program impacts adjusted for observable characteristics.<sup>49</sup> The estimates are called net because the comparison and program participant groups are statistically adjusted so as to remove heterogeneity across the samples. That is, the only remaining factor contributing to a difference in the outcome measure is exposure to the program treatment. The estimation methodology nets out all other observable factors affecting the outcome.

#### Full Interaction Regression Adjusted Impact Estimates

A more general regression model for impact estimation which allows for variation in program effects by observable characteristics during estimation is called a full interaction regression model. Such a model is a direct generalization of equation (4). The model may be written:

$$(5) \quad y_i = a_0 + a_1P_i + b_1X_{1i} + b_2X_{2i} + \dots + b_nX_{ni} + c_1P_iX_{1i} + c_2P_iX_{2i} + \dots + c_nP_iX_{ni} + u_i,$$

and can be estimated by OLS on the pooled sample to give net program impact estimates. In equation (5) the variables are the same as those defined for equation (4). However, for this generalized regression model the net program impact is computed as  $a_1 + \sum_k (c_k E(X_k))$ , where  $E(X_k)$  denotes the mean of characteristic  $X_k$ . Tests of confidence on these linear combinations of estimates may easily be performed as  $F$ -tests.

#### Subgroup Net Impact Estimation Methodology

For each separate ALP, subgroup treatment impacts were simultaneously estimated in a single regression model. The specification employed allows the treatment response for each subgroup to be estimated controlling for the influence of other subgroup characteristics. For example, the model allows

---

<sup>49</sup>The obvious next procedure to adjust for differences across samples is to account for differences in unobservable characteristics. The technique, which involves applying the methods of Heckman (1976), is problematic because instruments are usually not available to explain program participation independent of reemployment success.

estimation of treatment impacts associated with being female controlling for the fact that females are more likely to have more formal education and less likely to work in a blue collar occupation.

Suppressing subscripts and using matrix notation, the regression equation used to estimate subgroup net impact estimates can be written:

$$(6) \quad Y = a + PB + GC + GPD' + u$$

where  $Y$  is the outcome measure,  $a$  is the intercept,  $B$ ,  $C$ , and  $D$ , are conformable parameter vectors,  $P$  is the indicator of participation in an ALP,  $G$  is the matrix of dummy variables which code for membership in a subgroup, and  $u$  is a mean zero normally distributed random error term. Equation (6) specifies a complete one-way interaction model. It allows simultaneous estimation of all subgroup treatment impacts, but imposes linear restrictions on the estimates. Treatment impacts for a particular subgroup are computed as the sum of the parameter estimate on the product of the subgroup dummy variable and the treatment indicator plus the sum of parameter estimates on the product of subgroup dummy variables and the treatment indicator multiplied by their respective population shares. In each computation, parameter estimates for the complement to the subgroup of interest are omitted.

The subgroup impact estimates may be considered to be regression adjusted in the sense that each subgroup impact is estimated while simultaneously allowing impacts to vary across other subgroups considered.

#### Methodology for Estimation of Program Components

To estimate the impact of separate features of an ALP on outcomes of interest, new program variables are defined from the single program variable  $P_i$  such that the vectors for the new variables add up to the vector for the old variable. For example, if  $P_i$  has a value of 1 if participated in an ALP and 0 otherwise, to examine the separate impacts of the ALP operated by public and private enterprises on

outcomes of interest we may define  $P_{1i} = 1$  if participated in an ALP operated by a public enterprise and 0 otherwise, and  $P_{2i} = 1$  if participated in an ALP operated by a private enterprise and 0 otherwise. Therefore  $P_i = P_{1i} + P_{2i}$ , and the separate impacts of the ALP run by public and private enterprises on outcomes of interest can be estimated by OLS regression applied to a simple model like:

$$(7) \quad y_i = b_0 + b_1 P_{1i} + b_2 P_{2i} + u_i.$$

From this model the parameter estimate for  $b_1$  is the impact of wage subsidy run by public enterprise on outcome of interest, while  $b_2$  is the impact of wage subsidy run by private enterprise. The model of equation (7) can be applied to other partitions of the program experience, such as short and long duration participation, or to partitions which are more than two way, such as three industry groups for program operators. This method was used in sections 4.4, 5.4, 6.4, 7.4, and 8.4 in this report.

Notice, that in this case the full set of indicator variables is included in the equation for OLS estimation. For this procedure the full set of program treatment indicators does not introduce singularity in estimation, because the program vectors include data on both program participants and comparison group members. Equation (7) also presumes that the participant and comparison groups are homogenous in observable characteristics. If this is not the case, control variables should be added to the specification as was shown in equation (4).

#### Method for Separating out Impacts of Multiple Programs

It is very possible that an individual may have participated in more than one ALP. In particular, it is a frequent occurrence that a participant in an ALP such as retraining or public service employment will also use the services of the employment service (ES) in an effort to gain reemployment. To estimate the impact of a single program when some in a sample being analyzed have used more than one program, a simple regression model may be used. Suppose that someone uses both an ALP and the ES, then a model like the following might be estimated:

$$(8) \quad y_i = a_0 + b_1 ALP_i + b_2 ES_i + b_3 ALP_i * ES_i + c_1 X_i + u_i,$$

where ALP represents participation in an ALP, ES represents use of an ES service,  $X$  represents exogenous control variables,  $y$  is the outcome of interest, and  $u$  is a normally distributed mean zero error term. After estimating an equation of this form by OLS, the marginal effect of the ALP on  $y$  is estimated by the sum of  $b_1 + b_3 * E(ES)$ , where  $E$  is the expectation operator and  $E(ES)$  is the mean of the variable ES or the proportion of the sample which used the ES. Similarly the marginal effect of the ES on  $y$  is estimated by the sum of  $b_2 + b_3 * E(ALP)$ . Tests of confidence on these sums of estimates may easily be performed as  $F$ -tests.

#### Methods for Analysis of the Timing of Response

To examine the impact of ALP participation on the time pattern of reemployment, conditional exit rates are examined for each month. The exit rate is computed by dividing the number of registered unemployed who left the register for reemployment in a given month by the number of claimants in the group at the start of that month. Letting  $h(t)$  denote the conditional exit rate in month  $t$ , and  $R_t$  the number of registered unemployed at the start of month  $t$ , then

$$(9) \quad h(t) = (R_t - R_{t+1}) / R_t,$$

is a conditional measure of a change in behavior because it depends on the number who had yet to change their behavior regarding the outcome at the start of each month ( $R_t$ ). The expression  $h(t)$  is the popular Kaplan-Meier exit rate discussed thoroughly by Kiefer (1988). The number of registered unemployed at the start of each time period ( $R_t$ ) is called the “risk set” because it is the number of job seekers “at risk” of changing behavior in the subsequent month. Note that in the tables in sections 4.5, 5.5, 6.5, and 7.5 in this report it is always the case that the risk set in month  $t+1$  equals the risk set in the previous month times one minus the exit rate for that month [ $R_{t+1} = R_t (1 - h(t))$ ].

## Sample Size Requirements for Power Tests of ALP Effects

Testing the difference between proportions is somewhat complicated by the fact that the sample sizes required for properly testing a given difference between proportions varies depending on whether the proportions are near zero or one. Specifically, the required sample sizes for testing the difference in proportions with adequate power depend on the effect size,  $h$ , which is the difference in the arcsin transformation of the proportions. That is,  $f(p) = 2\arcsin \sqrt{p}$  and the effect size is  $h = |f(p_p) - f(p_c)|$  for non-directional tests where  $p_p$  is the proportion employed among the ALP participant group and  $p_c$  is the proportion employed among the comparison group. For tests of  $(p_p - p_c) = 0.05$  when  $p_p$  is around 0.5 then  $h = 0.1$ . To perform two tailed tests at the confidence level of 98 percent with a power of 80 percent and  $h = 0.1$  the harmonic mean of the sample sizes should be at least 2,007 in size, where the harmonic mean,  $n'$ , of the samples sizes is  $n' = 2n_p n_c / (n_p + n_c)$ . Lowering the confidence level to 90 percent lowers the sample size requirement to 1,237. When  $p_p$  is closer to either 0 or 1 the sample size requirements for similar tests  $[(p_p - p_c) = 0.05]$  are smaller.





## REFERENCES

Cohen, Jacob (1988), *Statistical Power Analysis for the Behavioral Sciences*, Second Edition, New York: Academic Press.

Decker, Paul T. and Christopher J. O'Leary (1995), "Evaluating Pooled Evidence from the Reemployment Bonus Experiments" *Journal of Human Resources*, Volume 30, Issue 3 (Summer): 534-50.

Disney, Richard and Alan Carruth (1989), "The Evaluation of Active Labor Market Policies," *Studies in Economics*, Canterbury: University of Kent.

Disney, Richard et al (1992), *Helping the Unemployed*, London: Anglo-German Foundation for the Study of Industrial Society.

Fraker, Thomas and Rebecca Maynard (1987), "The Adequacy of Comparison Group Designs for Evaluations of Employment-Related Programs," *Journal of Human Resources*, Volume 22, Number 2 (Spring): 207-27.

Godfrey, Martin, György Lázár, and Christopher O'Leary (1993), Report on a Survey of Unemployment and Active Labor Market Programmes in Hungary, the International Labor Office/Japan project (October).

Ham, John and Samuel Rea (1987), "Unemployment Insurance and Male Unemployment Duration in Canada," *Journal of Labor Economics* 5 (July): 325-353.

Heckman, James (1976), "The Common Structure of Statistical Models of Truncation, Sample Selection, and Limited Dependent Variables and a Simple Estimator for such Models," *Annals of Economic and Social Measurement*, Volume 5: 475-92.

Kiefer, Nicholas M. (1988), "Economic Duration Data and Hazard Functions," *Journal of Economic Literature*, 26 (June): 646-79.

Maddala, G.S. (1983), *Limited-dependent and qualitative variables in econometrics*, Cambridge: Cambridge University Press.

Micklewright, John, and Gyula Nagy (1994), "Flows to and from insured unemployment in Hungary," European University Institute (EUI) working papers in economics, no. 94/41 (EUI, Florence).

Mohr, Lawrence B. (1992), *Impact Analysis for Program Evaluation*, London: Sage.

O'Leary, Christopher J. (1997), "A Net Impact Analysis of Active Labor Programs in Hungary," *The Economics of Transition*, Volume 5, Number 2.

O'Leary, Christopher J. (1995), "Performance indicators: A management tool for active labour programmes in Hungary and Poland," *International Labour Review*, Volume 134, Number 6.

O'Leary, Christopher J. and Stephen A. Wandner, editors (1997) *Unemployment Insurance in the United States: Analysis of Policy Issues*, Kalamazoo: W.E. Upjohn Institute for Employment Research.

Woodbury, Stephen A. (1997), "The Duration of Benefits," in *Unemployment Insurance in the United States: Analysis of Policy Issues*, Christopher J. O'Leary and Stephen A. Wandner, eds., Kalamazoo: W.E. Upjohn Institute for Employment Research.