Foundation for the Advancement of Economics

IMPACT EVALUATION

of active labour market programmes targeting disadvanatged youth in Serbia

IMPACT EVALUATION

of active labour market programmes targeting disadvantaged youth: key findings

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1. Introduction

This report presents the findings of the impact evaluation carried out on the active labour market programmes targeting disadvantaged youth that were implemented by the National Employment Service (NES) of Serbia under the aegis of the Joint Programme on *Youth Employment and Migration (YEM)* in the period 2010-2012. The key research question was whether participation in the active labour market programmes piloted within the YEM joint programme increased the probability of participants to find and retain gainful employment. To answer such question and analyze participants' labour market outcomes in detail, a one-to-one survey was run (November 2013) though a cooperative effort of the International Labour Office (ILO), the National Employment service of Serbia, the Foundation for the Advancement of Economics (FREN) and the Statistical Office of the Republic of Serbia (SORS). The survey covered two main sub-groups of programme participants – i.e. disadvantaged youth who participated to the YEM pilot programmes, funded by the Millennium Development Goals Achievement Fund and young people who attended standard NES programmes financed by the Government of Serbia – as well as non-participants.

Labour market context at the time of implementation of the YEM joint programme

Low and declining employment and high unemployment have been the key socio-economic problems of the Republic of Serbia for years. It should be noted that the YEM programme was implemented between 2010 and 2012, at the time when the already difficult labour market situation was further deteriorating due to the impact of the 2008 global economic and financial crisis.

As shown by Table 1.1 below, between April 2008 and April 2011, the employment rate of the working age population dropped from 54% to 45.5%, while the unemployment rate increased from 14% to 22.9%. The crisis was especially harsh on young people (aged 15-24) as their labour market performance worsened at a faster pace compared to the working age population. The recorded cumulative drop in youth employment between April 2008 and April 2011 was remarkably large – around 25%, double the drop in employment experienced by the working age population.

		Apr 2008	Oct 2008	Apr 2009	Oct 2009	Apr 2010	Oct 2010	Apr 2011	Oct 2011	Apr 2012	Oct 2012	Apr 2013	Oct 2013
Youth population (15-24)	Employment rate	21.0	21.2	16.8	17.0	15.1	15.2	14.1	13.9	14.3	14.7	14.8	14.2
	Unemployment rate	32.7	37.4	40.7	42.5	46.4	46.1	49.9	51.9	50.9	51.2	49.7	49.1
	Activity rate	31.1	33.8	28.3	29.5	28.2	28.2	28.1	28.8	29.1	30.2	29.5	27.9
Working age population (15-64)	Employment rate	54.0	53.3	50.8	50.0	47.2	47.1	45.5	45.3	44.2	46.4	45.8	49.2
	Unemployment rate	14.0	14.7	16.4	17.4	20.1	20	22.9	24.4	26.1	23.1	25.0	21.0
	Activity rate	62.8	62.6	60.8	60.5	59.1	58.8	58.9	59.9	59.7	60.4	61.0	62.2
Youth to working age ratios (15-24 / 15-64)	Employment rate	0.39	0.40	0.33	0.34	0.32	0.32	0.31	0.31	0.32	0.32	0.32	0.29
	Unemployment rate	2.33	2.54	2.48	2.44	2.31	2.31	2.18	2.13	1.95	2.22	1.99	2.34
	Activity rate	0.50	0.54	0.47	0.49	0.48	0.48	0.48	0.48	0.49	0.50	0.48	0.45

Source: Statistical Office of Serbia (SORS), Labour force surveys and own calculations

The employment drop among young men was a stunning 30%, while it was still deep, but more moderate for young women (around 16% employment drop). While the data conform with the expected pattern of adjustment of employment and youth employment to the crisis, what was really surprising was the extremely high responsiveness of youth employment to the decline in Gross Domestic Product (GDP).[1] Indeed, youth were the worst affected population group among all the groups considered vulnerable in the labour market.[2]

There were several factors behind this dramatic worsening of the youth labour market situation. First, the labour market in Serbia is dual, with youth being over-represented in the secondary, largely informal labour market – which was more affected by the economic crisis than the primary labour market. Youth are under-represented in the primary public sector, mostly sheltered from the crisis. Second, the labour market is also two-tiered, with youth belonging largely to the second tier, i.e. characterized by temporary, part-time and fixed-term contracts, in contrast to adult workers who are mostly on full-time, open-ended contracts. Faced with the downturn, firms shed their second-tier workers first. Third, youth tend to prolong their schooling when faced with a deteriorating labour market, which lowers their activity rates compared to adult workers who do not have such an option. The employment rate of young people dropped from 21% in 2008 to a low of 14.1 % in April 2011, while the youth unemployment rate increased from 32.7 % in April 2008 to 49.9 % in April 2011. The youth unemployment rate, at an exceptional 50%, was among the highest in Europe at the time. The youth inactivity rate also increased to reach 71.9% in April 2011. The rise in youth inactivity could partly be ascribed to an increased participation in education. Part of such increase, however, was involuntary, with youth having few prospects of finding a job in a fast deteriorating labour market. In addition, a growing number of young people are not in employment, education and training (NEETs): in 2009 approximately one every ten Serbian youth were outside the education and training system and were not working nor looking for a job.[3]

1 Arandarenko, M. and A. Nojkovic (2009). The impact of global economic and financial crisis on youth employment in the Western Balkans, ILO, Geneva, mimeo.
2 Krstic, G. et al (2010). Polozaj ranjivih grupa na trzistu rada Srbije, FREN and UNDP.
3 Ibid.

While the bottom of the youth employment downward trend was reached in October 2011, the employment rate of the working age population reached its bottom value in April 2012. Since then, the working age population recorded a significant recovery, with its employment rate rising by a full 5 percentage points (from 44.2% in April 2012 to 49.2% in October 2013). The youth employment rate, conversely, stagnated at a level of 14-15%.

In 2009, to respond to the growing job crisis, the Government of Serbia initiated a large-scale youth employment programme (*First Chance).* The target group comprised young people below 30 years old with at least secondary education and no significant work experience. While this programme undoubtedly helped in preventing a further deterioration of the youth labour market, its design left behind low-skilled and other vulnerable youth. Conversely, the focus of the YEM joint programme was on the design and implementation of innovative active labour market programmes (ALMPs) targeting low-skilled and other disadvantaged youth.

Main features of active labour market programmes implemented within the YEM Joint Programme

The active labour market programmes piloted by the YEM joint programme targeted young men and women 15 to 29 years old, with low educational attainment, long unemployment spells and those considered "hard-to-place" due to their personal and household characteristics (i.e. youth at risk of social exclusion). Relaxed entry criteria and the possibility of longer programme duration were envisaged for the most disadvantaged youth, such as young people belonging to Roma population groups. The sequence of programmes designed with the assistance of the YEM joint programme envisaged: 1) individualized counselling and guidance and job search assistance; 2) training programmes to remedy poor skills level; 3) wage subsidies to provide incentives to employers to recruit young unemployed (work-training contracts, work trials and employment subsidies); 4) programmes to promote self-employment among young people; and 5) schemes targeting young persons with disabilities. Roughly half of the measures were financed by the NES, while the other half was financed by the YEM joint programme. Whereas the measures piloted under the YEM joint programme targeted specifically low-skilled and other disadvantaged youth, the programmes designed by the NES had wider eligibility criteria, especially in terms of age-group and educational attainment. The differences in design and targeting will be analyzed in more detail in the following chapters. Table 1.2 below summarizes the key features of the active labour market programmed reviewed in this report.

Table 1.2: Features of the active labour market programmes under review

Programmes financed by the NES	
Functional elementary education	Education courses provided to adults (aged 15 and over) to gain elementary qualifications. The length is 15 months, with a grant of RSD 70,000 to education providers per individual trained.
Labour market training	Generic training courses (mainly languages and computer literacy) organized by a training provider. The duration of the programme is of 3 months, with the provider receiving RSD 40,000 per person trained.
Job specific training	It provides a grant of RSD 40,000 per individual trained to enterprises for the training of beneficiaries in occupation-specific skills. The duration is 4 months
Training in entrepreneurship	Self-employment training (3 days) provided by the NES Business Centres.
Self-employment subsidies	Grant of RSD 160,000 provided on a competitive basis to individuals who attended the self-employment training course. The duration of the programme is 12 months (i.e. the individual has to keep the business open for at least a year or s/he has to repay the grant).
Self-employment subsidies (Vojvodina)	As above, applicable only in the Autonomous Province of Vojvodina
Subsidies for persons < 30 years of age	Employment subsidy (100% reimbursement of the employer's share of social security contributions) for 2 years with an obligation on employers to retain the subsidized young workers for additional 2 years.
Subsidies for beginners < 30 years of age	As above, but the target group is individuals with no prior work experience. The subsidy is provided for 3 years, and the employer has to retain the subsidized workers for additional 3 years.
Programmes supported by the YEM joint programme (piloted in districts of Belgrade, Novi Sad, Jagodina, Nis and Vranje)	
Institution-based training	Competency-based training organized by a training provider. Minimum one, maximum 6 months.
On-the-job training (pre-employment qualification)	Competency-based training organized in a partner enterprise. Minimum one, maximum 6 months. There is no obligation on the enterprise to retain trainees, unless the firm trains more than 9 young persons at any given time.
Self-employment programme	Self-employment services and lump sum grant of RSD 160,000. The duration of the programme is 12 months
Programme for persons with disabilities	Institution-based and/or on-the-job training followed by subsidized employment. For the recruitment of a young person with a disability the enterprise may receive: 1) a monthly subsidy of RSD 25,000 for individuals with only elementary education, and RSD 32,500 for individuals with lower secondary education and over. The duration of the programme is from one to 6 months, with an obligation on the employer to retain the workers for a minimum additional period equal to the duration of the subsidy. Employers can also receive a grant for the adaptation of premises (RSD 80,000 payable only once); and a grant of RSD 80,000 to adapt work-stations. The overall length of the programme targeting youth with disability cannot exceed 12 months.

The figures in this report refer to the period from 1st January 2010 to 31st December 2012. According to the NES data, during this period a total of 2,813 young women and men participated in the above mentioned active labour market programmes. Approximately half participated to the evaluation survey. The reasons of non-participation to the survey are analyzed in Section 2.

To benchmark the performance of programme participants, the survey included a control group. The control group consisted of young unemployed men and women who had not participated in any of the programmes, but had the same set of basic characteristics of programme participants, namely:

- Age and labour market status: individuals 15 to 29 years old registered as unemployed with the NES;[4]
- Level of education: young unemployed with level of education I and II (equivalent to ISCED Level 1). This criterion was relaxed to include also youth with higher educational attainment, e.g. levels III and IV (equivalent to ISCED 2 and 3a) when they faced additional barriers to labour market entry (such as belonging to Roma population groups, internally displaced persons and refugees, persons with disabilities, beneficiaries of social protection and returnees under the Readmission Agreement); and
- Geographical coverage: the programmes designed under the aegis of the YEM Joint Programme were implemented in the Districts of Belgrade, Novi Sad, Nis, Jagodina and Vranje. The control group was selected in (non-participating) districts neighbouring those targeted by the joint programme.

Section 2 of this report explains in detail the survey design and the methodology of the evaluation, namely selection of the control group, definition of the main outcome variables and econometric analysis of outcome variables. Section 3 compares the labour market outcomes of programme beneficiaries who participated in the survey with the outcomes of control group members. Section 4 contains the core part of the analysis, where econometric methods are applied to isolate the statistically independent effects of programme participation on the outcome variables. Both Sections 3 and 4 also compare, within the treatment group, also the effect of the different types of programmes and sources of financing (YEM vs. NES).

4 Young unemployed were allowed to enrol in the YEM programmes up to their 30th birthday.

2. The impact evaluation methodology and survey design

The main objective of this report is to evaluate the effectiveness and efficiency of the active labour market programmes targeting youth implemented under the aegis of the YEM joint programme. For this purpose, we measure the differences in labour market outcomes (employment at the time of survey and employment at any time between the end of the programme and the survey date) and subjective wellbeing outcomes (subjective evaluation of the change in the financial situation and chances to find a job before and after programme participation) between those who participated to the programmes (*treatment group)* and those who did not (*control group)*.

The control group consists of young unemployed men and women who did not participate in any of the programmes, but have the same set of basic characteristics as programme participants. For a more precise estimate of programme effects, it is necessary to "compare the comparable".[5] This means that programme participants need to be compared only to those non-participants who could have participated in the programme (i.e. had an equal chance to be selected for participation as those who were actually treated). Hence, the control group is selected by means of a matching approach (see Section 2.3). The following section describes the main methodological problem addressed in constructing the treatment and the control group in the context of the YEM-supported programmes.

2.1 Sample

Total size of the sample frame

The database received from the NES consisted of 2,813 programme participants from five districts. As a response rate of around 67% was expected, it was planned that the sample of participants would amount to approximately 2,000 individuals. Since the impact evaluation literature suggests that the matching of the treatment and the control group improves as the number of individuals in the control group increases, it was decided that the control group be twice as large as the treatment group (e.g. a sample size of 4,000 individuals).[6] As the response rate for the control group was expected to be similar to that of participants, the sample frame was set at 6,000 young individuals.

Selection of the control group

To isolate the causal impact of the intervention a valid control group is needed. This consists of individuals who had not participated to the YEM-supported programmes, but who do not differ significantly from programme participants in the relevant characteristics. Since the control group is affected by the same labour market conditions as programme participants, the impact of the programme can be isolated by comparing the employment probability of participants against that of the control group.

5 Heckman, J., LaLonde, R. and Smith J. (1999). "The Economics and Econometrics of Active Labour Market Policy ", in Ashenfelter, O. and Card, D. (eds.), The Handbook of Labour Economics, Volume III, Amsterdam: Elsevier Science.

6 Smith, H. (1997), "Matching with Multiple Controls to Estimate Treatment Effects in Observational Studies," Sociological Methodology, 27, 325-353.

Since the selection of participants in the YEM-supported programmes was not randomized, it would be very difficult to create a valid control group within the same geographical district. Moreover, in all districts, except in Belgrade, the share of programme participants in the target population (low-skilled and other disadvantaged youth) was large. In some districts, many eligible individuals refused to participate to the survey, which means they were either informally employed or inactive. ***For these reasons, the creation of a control group from the same district would not have yielded the correct estimate of programme impact.*** A different approach was chosen, whereby ***the control group was selected out of individuals who were comparable to participants, but lived in bordering districts***, and thus were not eligible to participate. More precisely, the control group consisted of young persons from the control districts who:

- were not working (or were not expecting to start work) at a cut-off date – this date reflected the period of most intensive recruitment of participants into the YEM-supported programme;[7]
- were registered with the NES at the cut-off date, but did not participate in any programme during the implementation period of the YEM-supported measures,[8] and
- had the same characteristics of programme participants: e.g. they were aged 15 to 29 at the time of programme implementation, had low educational attainment (no school or only primary education) and unemployment spells of three months and over.[9]

The sample frame was selected by the NES on the basis of the above mentioned criteria. In addition, selection questions were included in the survey questionnaire to ensure compliance with the specified characteristics (see Section 2.2 below).

Control group strata were introduced based on the frequency of participants in each district (see Table 2.1, column A), to increase the similarity of the regional structure of the control group and of participants. The sample frame for each of the strata of the control group was then calculated as a percentage of programme participants in each of the districts multiplied by the number of people in the sample frame (see Table 2.1, Column C).[10]

Table 2.1 Control group strata

		(A)	(B=A / Total A)	(C=6000*B)
	NES branch office	Programme participants	Percentage	Sample frame for the control group
1	Belgrade	351	12.5%	749
2	Jagodina	264	9.4%	563
3	Niš	632	22.5%	1,348
4	Novi Sad	1,140	40.5%	2,432
5	Vranje	426	15.1%	909
	TOTAL	2,813		6,000

Source: Own calculation based on the NES database of programme participants.

7 The data on participants' recruitment showed that most participants were enrolled into the programmes around November 2010.

8 Except programmes that were organized within the NES, which included individual counselling and job-search training (compiling CV's, motivational letters and so on).

9 Or secondary level of education (and all other characteristics being the same) if the person belonged to a vulnerable group (Roma, internally displaced people, refugees, people with disabilities).

10 The methodology of impact evaluation does not require ideal proportionality of programme participants and the control group, since dummy variables for districts are included in the regression analysis. However, since the distribution of the sample size among the programme participants is far from uniform (for example Novi Sad accounted for almost 40% of the programme participants and Jagodina for less than 10%), it was necessary to introduce a stratification process at this stage of the analysis.

The selection of the control municipalities was based on three criteria:[11]

- closest distance of the municipality to the treatment district,
- number of persons who could 'participate' in the control group in each district and the size of the control group strata needed,
- analysis of the aggregate, 'macro' data of the districts and municipalities (e.g. number of unskilled young individuals, regional unemployment rate, average wage and other relevant labour market indicators).

The selected control municipalities are listed in Table A1 in Annex 1. In Belgrade – due to the small share of YEM-supported participants in the target population and a more dynamic labour market compared to the rest of the country – it was decided that the control group could include persons from the same district who fulfilled the above mentioned criteria. Table A2 in the Annex 1 shows the differences between the macro level indicators for programme districts and for control districts/municipalities.

Survey processing

As already mentioned, the sample frame comprised 2,813 programme participants. Of these, 43.9% (1,235 youth) participated in the survey. The most recurrent reason of non-participation in the survey was the lack of reliable contact information (interviewers could not reach respondents on their mobile phone; the telephone number was wrong and so on). Only 1.5% of respondents refused to participate in the survey (Table 2.2).

Table 2.2: Survey outcomes, by reason for not conducting the interview

	Number	Structure (%)
Interview conducted	**1,235**	**43.9**
Refused	**41**	**1.5**
No phone	**73**	**2.6**
Mobile phone unavailable	**512**	**18.2**
Wrong phone number	**292**	**10.4**
Person did not participate in the programme	**76**	**2.7**
Duplicate	**120**	**4.3**
Interview not carried out[1]	**130**	**4.6**
No data[2]	*334*	*11.8*
TOTAL	2,813	*100.0*

Source: Own calculation based on the NES database of programme participants and RSO database from the survey.

1 Due to time constraints, some interviews could not be conducted.
2 Individuals were present in the database of the NES, but were not part of the database of the Statistical Office. In part this problem is due to the duplicates in the NES sample.

11 After an initial analysis of the macro data and the geographical position of the programme districts it was concluded that the selection of the control group strata should be based on the selection of municipalities neighbouring the programme districts, rather than on the selection of only one district.

The sample frame of the treatment group includes a slightly higher number of NES-supported programme participants compared to YEM-supported ones (52% and 48%, respectively). However, due to higher response rate among the YEM-supported participants, these latter make up 55.5% of completed interviews (Table 2.3).[12]

Table 2.3: Survey outcomes by the source of financing (programme participants)

	Number of programme participants		Structure		Response rate (in %)[8]
	Sample	Sample frame	Sample	Sample frame	
NES-supported programmes	550	1,462	44.5	52.0	37.6
YEM-supported programmes	685	1,351	55.5	48.0	50.7
TOTAL	**1,235**	**2,813**	**100.0**	**100.0**	**43.9**

Source: Own calculation based on the NES database of programme participants and RSO database from the survey.

The disaggregation by type of programme shows that four measures account for the largest share of programme participants. The largest programme was the YEM-supported *On-the-job training* (42.3% of all participants). *Entrepreneurship training* and *Functional elementary education,* supported by the NES, also had important shares of total participants (19.8% and 14.6%, respectively). However, to cover all the information needed, reach an adequate number of respondents for each group and gain a clearer insight about the performance of the different programmes, participants and non-participants were pooled into four groups (Table 2.4).

The first group comprises participants to the **On-the-job training** programme (YEM), since the sample is large enough to make separate conclusions about the programme's effect. The second group includes all **job subsidies**, regardless of the source of the financing. The third group comprises **education and training** programmes, assigned to external education and training providers. The fourth group includes participants to the NES **Entrepreneurship training** programme. The two largest groups (On-the-job training and Entrepreneurship training) also had above-average response rates, which increased their share among interviewed participants to 50.9% and 20%, respectively. The other two groups have lower response rates and thus have lower shares in the sample of interviewed programme participants (Table 2.4).

12 The figure reported in Table 2.3 is not the response rate in the common meaning since most interviews were not conducted due to inadequate contact information.

Table 2.4: Survey outcomes by type of the programme

Programme and cluster group	Number of programme participants		Structure (%)		Response rate (%)
	Sample	Sample frame	Sample	Sample frame	
YEM - On-the job training	629	1,189	50.9	42.3	52.9
On-the-job training	*629*	*1,189*	*50.9*	*42.3*	*52.9*
NES - Subsidies for beginners < 30 years of age	38	118	3.1	4.2	32.2
NES - Job specific training	9	19	0.7	0.7	47.4
NES - Subsidies for persons < 30 years of age	18	67	1.5	2.4	26.9
NES - Subsidies for persons < 30 yrs (Vojvodina)	53	139	4.3	4.9	38.1
NES - Self-employment subsidies (Vojvodina)	3	7	0.2	0.2	42.9
NES - Self-employment subsidies	14	52	1.1	1.8	26.9
YEM - Self-employment programme	21	95	1.7	3.4	22.1
YEM - Programme for persons with disabilities	28	57	2.3	2.0	49.1
Job subsidies	*184*	*554*	*14.9*	*19.7*	*33.2*
NES - Functional elementary education	108	410	8.7	14.6	26.3
NES - Labour market training	60	94	4.9	3.3	63.8
YEM - Institution-based training	7	10	0.6	0.4	70.0
Education and training	*175*	*514*	*14.2*	*18.3*	*34.0*
NES – Entrepreneurship training	247	556	20.0	19.8	44.4
Entrepreneurship Training	*247*	*556*	*20.0*	*19.8*	*44.4*
TOTAL	**1,235**	**2,813**	**100.0**	**100.0**	**43.9**

Source: Own calculation based on the NES database of programme participants and RSO database from the survey.

The disaggregation by NES branch office shows that the largest share of participants was in Novi Sad (40.5%), followed by Niš (22.5%), Vranje (15.2%), Belgrade (13.2%) and Jagodina (8.9%). The structure of participants in the survey follows closely the sample frame, with a slightly lower number of participants in Novi Sad and higher numbers in the other branch offices (Table 2.5).

Table 2.5: Survey outcomes of programme participants by NES branch office

	Number of programme participants		Structure (%)		Response rate (%)
NES branch office	Sample	Sample frame	Sample	Sample frame	
Belgrade	157	351	12.7	12.5	44.7
Novi Sad	460	1,140	37.2	40.5	40.4
Jagodina	124	264	10.0	9.4	47.0
Niš	292	632	23.6	22.5	46.2
Vranje	202	426	16.4	15.1	47.4
TOTAL	**1,235**	**2,813**	**100.0**	**100.0**	**43.9**

Source: Own calculation based on the NES database of programme participants and RSO database from the survey.

As mentioned, the sample frame of the control group comprised 6,000 young individuals. Of these, 40.8% (2,447 youth) participated in the survey. Since the number of programme participants totalled 1,235 individuals, the number of individuals of the control group that were interviewed was sufficient to conduct the analysis. Similarly to what occurred for the treatment group, inadequate contact information was the most frequent reason for non-participation in the survey. Only 2.9% respondents refused to participate (Table 2.6).

Table 2.6: Survey outcomes for the control group, by the reason for not conducting the interview

	Number	Structure (%)
Interview conducted	**2,447**	**40.8**
Respondents did not pass the selection questions	713	11.9
Refused	171	2.9
No phone	109	1.8
Mobile phone unavailable	1,208	20.1
Wrong phone number	1,050	17.5
No data[1]	302	5.0
TOTAL	**6,000**	**100.0**

Source: Own calculation based on the NES database of programme participants and RSO database from the survey.

[1] Individuals were present in the database of the NES, but were not part of the database of the Statistical Office. In part this problem is due to the duplicates in the NES sample.

2.2 Survey questionnaire and outcome variables

Aside selection questions, the questionnaire for the control group included *questions on the employment history* of the individual from programme launch till the time of the survey, as well as ***control questions***, namely active job search, availability to work, willingness to participate in an active labour market programme and socio-demographic characteristics. Programme participants were asked the same set of questions alongside with ***questions on their subjective assessment*** *of the programme's usefulness for their future employment.*

The questionnaire was constructed by the Foundation for the Advancement of Economics (FREN), on the basis of the template provided by the ILO, questionnaires used in previous impact evaluation surveys (e.g. for the evaluation of the UNDP Severance-to-Job programme in 2010) and questions from the Labour Force Survey (LFS). The draft questionnaires (for programme participants and the control group) were commented upon by key stakeholders (the NES, SORS and the ILO) and pre-tested on a pilot sample.

Outcome variables

All the outcome variables examined in this report are based on survey questions. The main outcome variables used were:

1. *Employment rate:* share of young individuals employed over total number of respondents. Employment was defined on the basis of the ILO definition, namely all individuals who, in the reference week, performed some work for at least one hour for a remuneration (in cash or in-kind) and employed individuals who in the reference week were absent from work. The definition also includes farmers and contributing family members.
2. *Employed-at-any-time rate:* share of young individuals who were employed (according to the above definition) at any time after the programme's end (including those currently employed) over the total number of participants.
3. *Changes in the prospects of employment* after programme participation (for participants)/ cut-off point (for non-participants) – based on the subjective assessment of the respondent. Respondents rated the level of change on a three-point scale, from 1 ("Prospects are better") to 3 ("Prospects are worse").
4. *Changes in financial status* after programme participation/cut-off point – based on the subjective assessment of the respondent. Respondents rated the change on a five-point scale, ranging from 1 ("Financial situation is much better") to 5 ("Financial situation is much worse").

Aside these main indicators, the survey also provided information on other labour market characteristics of programme participants and the control group:

1. *Employment status:* wage-employment, self-employment and contributing family members;
2. *Informal employment:* individuals working in private unregistered business, or working in a registered business without an employment contract, including contributing family members;
3. *Ownership of enterprises* where employed individuals worked (private and public);
4. *Type of contract:* permanent or temporary;
5. *Sector of activity:* agriculture; manufacturing; and services;
6. *Wage levels.*

For those who were not employed, the following indicators were examined:

1. *Non-employment status:* unemployed and inactive. The unemployed are defined as active job seekers ready to start work within two weeks, or individuals who have found a job that will start within three months from the date of the interview. Inactive individuals are those who are neither employed nor unemployed.
2. *Unemployment duration:* duration of job search after the programme's end;
3. *Type of inactivity:* a distinction was made among those who: (i) want to work and are available for work, (ii) want to work, but are not available for work and (iii) do not want to work;
4. *Reason for not seeking employment.*

The main indicators are examined in both the descriptive (Section 3) and the econometric analysis (Section 4), while the additional indicators are used in Section 3 only. The descriptive analysis of Section 3 also includes the disaggregation of these indicators by programme type and funding source.

2.3 Impact evaluation methodology

Any impact evaluation research has to deal with the problem of the counterfactual. This arises because it is impossible to directly observe a single individual in two different statuses (participation and non-participation). Therefore, the main task of an impact evaluation study is to find a valid estimate of the counterfactual.

There are two methods to estimate the counterfactual: randomized experiments and non-experimental (also called quasi-experimental) methods. In principle, randomized experiments provide the most robust method to construct the counterfactual. In randomized experiments, individuals eligible for participation are randomly assigned to the treatment and control group. Since these two groups do not differ from each other (on average) either in observable or unobservable characteristics (i.e. the control group can be considered as "identical" to the treatment group), the average difference in outcomes between the two groups provides a simple answer to the counterfactual question. Often, however, randomized experiments are politically or socially unfeasible and they are not entirely free of estimation difficulties.[13]

The YEM-supported measures were not designed as randomized experiments, which substantially lowered the chances to obtain *ex post a control group with the same average characteristics as the treatment group.*[14] Still, the choice of a control group from neighbouring regions could mimic a natural experiment and the possibility of finding the treatment and the control group with essentially the same average characteristics was not excluded *a priori.*

However, a more realistic assumption would be that − if additional characteristics did play a role in determining the chances to participate in the YEM-supported programmes − one could not consider the treatment and the control group as "identical". In this case, a simple comparison of mean outcomes between the two groups would be insufficient. Moreover, the substantial differences between the number of planned and accomplished interviews in both groups could make this approach useless since the selection of the control group was based on planned, rather than on accomplished interviews.

To assess whether programme participation could be regarded as quasi-random, the characteristics of participants and non-participants were compared. Initially, statistical tests of the hypothesis of random assignment to participation were performed (i.e. random differences between the treatment and control group). In particular, we tested statistically whether the means of important socio-demographic characteristics and labour market outcomes were significantly different between treatment and control group. If the hypothesis of random assignment is rejected, it may be actually misleading to compute net effects as the difference in the average outcomes between participants and non-participants.

13 Heckman, J., LaLonde, R. and Smith J. (1999). "The Economics and Econometrics of Active Labour Market Policy ", in Ashenfelter, O. and Card, D. (eds.), The Handbook of Labour Economics, Volume III, Amsterdam: Elsevier Science discusses the advantages and disadvantages of the randomization approach.

14 Originally, the design of the YEM active labour market programmes envisaged the random allocation of the pool of applicants to two equal groups (participants and non-participants). However, the number of individual applications was too low to allow for randomization and it was decided to intake all applicants into the programmes.

Matching approach

Nowadays the most common technique to solve the evaluation problem when participants and non-participants are not randomly assigned to a labour market programme is the matching approach. This approach mimics a randomized experiment ex post by constructing a control group that resembles the treatment group as closely as possible. After matching, the members of the control group, on the basis of their observable characteristics, have a probability to be selected for participation in the programme comparable to that of the members of the treatment group.

In the dataset there are many variables that presumably influence both the selection into the programme and labour market outcomes. Hence, it appears reasonable to assume that selection into the programme and labour market outcomes are independent conditional on these observables.[15] Under this assumption we a*pply one-to-one nearest neighbour matching with replacement*. This approach consists of two steps: (i) an estimation of the individual probabilities to participate in the programme, depending on a set of observable characteristics; (ii) matching of participants and non-participants on the basis of these estimated probabilities. One-to-one matching means that each member of the treatment group is matched with a single member from the control group. Nearest neighbour matching means that the pairs are matched according to the minimum distance of the predicted probabilities of programme participation, and finally, matching with replacement means that the data on individuals in the control group may be used more than once, provided that they are the nearest neighbour of an individual in the treatment group.

3. Descriptive analysis of outcome indicators

This section presents the descriptive comparison of treatment and control groups' mean employment (and other) outcomes. Although this type of comparison necessarily includes a bias– due to the differences in characteristics between the two groups– its value lays in the assessment of the raw impact of the programmes.[16] It provides a direct answer to the question: *What is the labour market position of young women and men in the treated and the control group before and after the programme participation (cut-off point)*? It also allows analyzing a number of labour market indicators for the treatment and the control group. We further extend the descriptive analysis to a comparison between the structures within the treatment group as a whole: (i) differences in outcomes among the various programmes; and (ii) differences between the outcomes of participants to the YEM-supported programmes and standard NES programmes.

15 This is the so-called conditional independence assumption, which ensures that the matching approach indeed mimics a randomized experiment ex post.

16 Such bias is addressed in Section 4, where econometric methods are used to control for the outcome-relevant differences and reach a more precise estimate of programme's impact.

3.1 Main indicators

Overall, programme participants have higher employment outcomes than members of the control group. The employment rate of participants is 20.4 percentage points higher than that of the control group (38.5% and 18.1%, respectively). The difference is slightly lower – 13.7 percentage points −when the shares of those who were employed at any time since programme's end are compared (51.9% and 38.1%, respectively). This means that the stability and − presumably− the quality of jobs gained by the treatment group is better compared to those of the control group.

The differences in employment outcomes across programmes are also very pronounced. The highest employment rate is among participants to job subsidy programmes (63.6%) and entrepreneurship training (51.8%), while participants to on-the-job training and education and training programmes have significantly lower employment rates (30.5% and 21.7%, respectively). Since the programmes yielding lower employment outcomes have a higher rate of those employed at any time, the differences in any-time employment are lower than the differences in employment rates.

Overall, and before controlling for participants' characteristics, the measures supported by NES are more successful than those financed by the YEM joint programme, since the employment rate for the NES programmes is 13 percentage points higher (Table 3.1).

Table 3.1: Employment status

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepren. training	NES	YEM
Not-employed at any time	61.9	48.2	54.5	26.6	61.7	38.5	42.9	52.4
Employed at programme's end, currently unemployed	20	13.4	14.9	9.8	16.6	9.7	11.5	14.9
Currently employed	18.1	38.5	30.5	63.6	21.7	51.8	45.6	32.7
TOTAL	**2,447**	**1,235**	**629**	**184**	**175**	**247**	**550**	**685**

Source: Foundation for the Advancement of Economics (FREN) calculation based on survey data

Aside better employment opportunities, programme participants show a more positive attitude towards changes in well-being. While a quarter (25.5%) of programme participants states that their employment prospects have improved and 14% of them think that their financial situation is better since the end of the programme, these shares are significantly lower among non-participants (4.6% for both well-being indicators). However, programme participants assess their well-being as unchanged more frequently than the control group (see Table 3.2).

The most positive attitude towards the changes in well-being after the programme was found among the participants to job subsidies: 35.9% of them felt that their employment prospects were better and another 21.8% perceived that their financial situation had improved. Conversely, a quarter (26%) of participants to the on-the-job training programmes thought that their employment prospects had changed, while 13.5% considered their financial situation

better (see Table 3.2). Nearly a third (29%) of participants to education and training programme considered their employment prospects better, but only 8% of them felt that their financial situation has improved. The perception was that their skills had improved, and, even though they had not found a job yet (this is a group with the lowest employment rate), they felt more competitive in the labour market. Finally, 14% of participants to entrepreneurship training programme show a more positive attitude towards both employment prospects and financial situation.

Table 3.2: Self-assessment of the changes in employment prospects and the financial situation, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Employment prospects								
Better	4.6	25.5	26.1	35.9	29.1	13.8	23.1	27.4
Same	63	57.8	56.8	47.8	57.1	68.4	60.7	55.5
Worse	32.4	16.7	17.2	16.3	13.7	17.8	16.2	17.1
Financial situation								
Much better	0.1	1	1.3	1.1	0	0.8	0.5	1.3
Better	4.5	13.1	12.2	20.7	8	13.4	13.1	13.1
Same	28.3	60.2	56.6	59.2	67.4	65.2	64.9	56.5
Worse	47.6	16	17.3	14.7	15.4	13.8	14.5	17.1
Much worse	19	9.7	12.6	4.3	9.1	6.9	6.9	12
N	2,447	1,235	629	184	175	247	550	685

Source: FREN calculation based on survey data

On average, participants to the YEM- and NES-supported programmes have similar assessment of the changes in their well-being after the programme. However, the attitudes of YEM participants are slightly more polarized, since they have lower shares of neutral assessments (Table 3.2).

3.2 Additional indicators

Aside having a higher employment rate, the quality of jobs that programme participants gain is higher than for the control group (Table 3.3). Specifically, participants work less frequently in the informal economy (27.2% and 50.2%, respectively); have higher shares of wage-employment (73.3% and 64.9%); and the shares of those engaged as contributing family members are lower (3.4% and 15.3%, respectively). Participants work less frequently in agriculture (5.7% and 24.8%) and more frequently in the service industry (52.2% and 32.7%, respectively).

The differences in job characteristics across programme groups are also pronounced. Informal employment is less frequent among beneficiaries of job subsidies (18.8%), followed by participants of entrepreneurship training and on-the-job training programmes (26.6% and 27.1%, respectively).[17]

17 The highest share of informal employment is found among participants who attended education and training programmes (55.3%), but due to the low sample size, this result is not reliable.

Wage-employment represents around three quarters of all jobs gained by participants, except for those who attended entrepreneurship training since over half of them are self-employed (50.8%). Participants to job subsidies and entrepreneurship training programmes work most frequently in the service sector (63.2% and 60.2%, respectively), while beneficiaries of on-the-job training are mostly employed in manufacturing (49.5%).

The programmes supported by the YEM joint programme, on average, create jobs of higher quality compared to those funded by the NES. The share of participants employed informally after attending a YEM-supported programme is lower compared to NES-supported programmes (24.1% and 29.9%, respectively) and wage employment is more widespread (87.5% and 60.6%). However, while more than half of employed participants after a NES-supported programme work in the services sector (57%), manufacturing and services jobs are equally represented among young workers who attended a YEM-supported programme (Table 3.3).

	Control group On-the-job training	Programme Participants Job subsidies	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training.	NES	YEM
Informal employment								
Formal	49.8	72.8	72.9	81.2	44.7	73.4	70.1	75.9
Informal	50.2	27.2	27.1	18.8	55.3	26.6	29.9	24.1
Employment status								
Employee	64.9	73.3	89.6	74.4	78.9	46.1	60.6	87.5
Self-employed	19.8	23.4	7.8	23.1	10.5	50.8	35.1	10.3
Contributing family member	15.3	3.4	2.6	2.6	10.5	3.1	4.4	2.2
Sector of activity								
Agriculture	24.8	5.7	7.8	4.3	5.3	3.9	4.8	6.7
Manufacturing	42.6	42.1	49.5	32.5	55.3	35.9	38.2	46.4
Services	32.7	52.2	42.7	63.2	39.5	60.2	57	46.9
N	444	475	192	117	38	128	251	224

Source: FREN calculation based on survey data

Compared to the control group, programme participants work more frequently under permanent contracts (30.9% and 43.1%, respectively). The higher share of permanent contracts among programme participants is mainly due to lower shares of informal wage-employment (i.e. workers without contracts are 24.7% and 33.3% of the total, respectively). It is worth noting that, in both groups, around one third of those in wage employment are engaged under temporary contracts (35.8% and 32.2%), which is far higher than what is found among the general population, but in line with the findings of research on the employment characteristics of disadvantaged youth.[18] The sample size does not allow a reliable comparison of job characteristics among those in wage employment across programmes (Table 3.4).

18 Krstic, G. et al (2010). Polozaj ranjivih grupa na trzistu rada Srbije, FREN and UNDP, op.cit.

While there are no differences between the YEM- and NES-supported programmes in the share of permanent contracts, temporary work is more common among participants to the YEM-supported programmes (35.2% and 28.3%, respectively). This is again due to higher number of workers engaged without written contracts among NES participants compared to YEM participants (29.6% and 20.9%). YEM participants in wage employment also work more often in the public sector compared to NES ones (13.3% and 8.6%).

Table 3.4: Wage-employment characteristics of the control group and programme participants, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Ownership type								
Public	11.1	11.2	12.2	10.3	10	10.2	8.6	13.3
Private	88.9	88.8	87.8	89.7	90	89.8	91.4	86.7
Type of contract								
No contract	33.3	24.7	22.7	17.2	50	28.8	29.6	20.9
Temporary	35.8	32.2	37.2	23	23.3	35.6	28.3	35.2
Permanent	30.9	43.1	40.1	59.8	26.7	35.6	42.1	43.9
N	288	348	172	87	30	59	152	196

Source: FREN calculation based on survey data

On average, programme participants have higher wages than the control group. This is mainly due to the higher share of youth working for wages lower than SRD 20 000 in the control group (28.4% for the control group and 24.9% for programme participants). In addition, almost 20% of young people in the control group work as contributing family members, while there are no programme participants in this labour market status (Table 3.5).

Table 3.5: Earnings, control group and programme participants, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Mean wage	22,165	25,870	21,890	28,843	32,050	27,288	28,823	22,625
No wages	19.8	0	0	0	0	0	0	0
up to 20,000	28.4	24.9	34.3	12.8	26.7	20.7	19.2	31.1
20,000-24,999	24.8	33.7	34.3	38.4	40	25.6	33.3	34.2
25,000-29,999	10.3	18.9	19.3	22.1	13.3	17.1	18.1	19.9
30,000-34,999	10.5	9.8	6.4	10.5	13.3	13.4	12.4	6.8
35,000+	6.2	12.7	5.7	16.3	6.7	23.2	16.9	8.1
N	419	338	140	86	30	82	177	161

Source: FREN calculation based on survey data

On average, NES-supported participants have higher wages than participants in YEM-supported programmes. This difference is due to higher share of YEM participants working for wages up to RSD 20 000 (31.1% and 19.2%, respectively), and lower shares of young workers earning wages over RSD 30 000. Again, the low sample size does not allow a meaningful comparison across programmes.

Characteristics of non-employed youth

Young people that participated to the programmes are more active in job search than those in the control group (Table 3.6). While 69.1% of non-employed programme participants are looking for a job, this share is 52.6% for the control group. Differences among programmes are low, the only outlier being the group of participants who attended education and training programmes (with only 65.6% of the non-employed actively seeking for a job).

Table 3.6: Labour market status of non-employed youth, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Unemployed	52.6	69.1	69.1	70.1	65.6	72.2	68.2	69.7
Inactive	47.4	30.9	30.9	29.9	34.4	27.8	31.8	30.3
N	2,004	760	437	67	137	119	299	461

Source: FREN calculation based on survey data

Both treatment and the control group have very high shares of long-term unemployment (70% among participants and 86.7% among the members of the control group). Most long-term unemployed had been looking for a job for longer than two years (see Annex 1, table A3).

Conversely, the structure of the inactive among programme participants and the control group is quite similar (see Annex 1, Table A4). The more significant differences include a higher share of those who are inactive due to child or elderly care in the control group and higher share of those who are not looking for job due to participation to education among programme participants.

3.3 Characteristics of the respondents

Part of the differences in labour market outcomes between programme participants and the control group is due to the differences in their demographic characteristics. A similar explanation could be offered for the different outcomes across the various programmes (aside from the differences stemming from the characteristics and intensity of programmes). Specifically, better employment outcomes can be expected for individuals with higher levels of education, those who have prior work experience, those with shorter unemployment spells and so on. Thus, if the groups systematically differ in these characteristics, the differences in employment outcomes may be due to these differences, rather than to differences in programme effects. In this section we only present raw differences between the treatment and the control groups, while in the next section the differences in characteristics are included in the econometric analysis and their impact on outcomes examined in detail.

Among programme participants there are equal shares of young men and young women, while in the control group women represent 60% of all the respondents. Gender differences are also found across programmes: women represent the majority of participants to the on-the-job training programmes, while in all the other programmes young men prevail. In the YEM-financed programmes most participants are women (53.6%), while the programmes supported by the NES see a prevalence of young men (Table 3.7).

On average, programme participants are younger than the members of the control group, with lower shares of those aged 28 and over (47% and 52.8%, respectively). It should be noted that at the time of survey the age groups had shifted by three years compared to the standard classification of the age groups, since the cut-off date and the date of the most frequent entry into the programmes were three years prior to the survey. Comparing single programmes, participants to job subsidies and entrepreneurship training are the oldest, with around 60% of the respondents having 28 years and above (i.e. 25 years and over at the time of entry). Participants to on-the-job training have equal shares of those aged 23 to 27 and 28 and over (around 42%), while the youngest were those participating in education and training programmes. Since a large number of participants in this latter group attended the functional elementary education measure, it is not surprising that they have almost equal shares in all three age subgroups (Table 3.7).

The education structure of programme participants and the control group differs significantly. Over 90% of the control group members have primary and less than primary education, with only 7.3% having secondary education. On the other hand, among programme participants as much as one third has secondary education, while 2% have a college degree (Table 3.7). [19] The differences in educational attainment of participants across measures are also very pronounced. While among participants to job subsidies and entrepreneurship training less than half of respondents have primary or less than primary education, this share is significantly higher for participants to on-the-job training, where over three quarters (77%) had primary education or less. Since the majority of participants to the education and training programmes were enrolled in the functional elementary education measure, this group has the largest share of those with primary education or lower (as much as 44.6% of them did not complete elementary school).

Table 3.7: Demographic characteristics, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Employment prospects								
Male	40.3	51.7	45.5	58.7	57.1	58.7	58.4	46.4
Female	59.7	48.3	54.5	41.3	42.9	41.3	41.6	53.6
Age group								
Up to 22	10.8	15.5	16.5	10.3	29.1	6.9	14.7	16.1
23/27	36.4	37.4	41.5	31	37.1	32	32	41.8
28 or more	52.8	47.1	42	58.7	33.7	61.1	53.3	42.2
Highest education before attending the programme								
No school[1]	13.1	10.3	6.7	2.7	44.6	0.8	15.1	6.4
Primary	79.6	54.4	70.6	34.8	40	38.1	38.5	67.2
Secondary (3yrs)	4.7	20.6	15.9	34.8	9.1	30	23.8	18
Secondary (4yrs)	2.6	12.8	6	25.5	5.7	25.5	19.3	7.6
Tertiary	0	1.9	0.8	2.2	0.6	5.7	3.3	0.9
N	2,447	1,235	629	184	175	247	550	685

[1] Including incomplete primary level of education
Source: FREN calculation based on survey data

19 As already mentioned, programme participants (and consequently the control group) were supposed to have at most primary level of education, or secondary – if they belong to a vulnerable group. Since some programme participants have tertiary level of education, clearly they do not belong to the target population, although the NES data suggest otherwise. We will deal with this issue further on in the text (Table 3.10).

Besides higher educational attainment, programme participants also had better labour market histories at programme's entry (or cut-off point) compared to the control group. On average, the treatment group had a higher share of those with work experience (49.1% and 35.8%, respectively) and shorter unemployment spell compared to the members of the control group (Table 3.8).

The differences in labour market histories were also significant across programmes. More than half of participants to job subsidies and entrepreneurship training programmes had prior work experience (53.3% and 57.9%, respectively) and shorter unemployment spell: Participants to on-the-job training and education and training programmes had on average less work experience (47.2% and 38.9%, respectively) and longer unemployment spell. The unemployment spell was especially long for participants to the on-the-job training programme: 42% of respondents had been looking for a job for longer than two years at the time of entry (Table 3.8).

Table 3.8: Labour market characteristics before programme's entry/cut-off point, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Employment prospects								
less than a month	0	7.3	0.5	9.8	5.1	24.3	15.3	0.9
1-3 months	3.2	11.9	2.7	19.6	5.7	34	22.7	3.2
4-6 months	11.4	9.2	6	21.2	10.3	7.7	12.4	6.7
6-12 months	17.3	18.4	20.2	16.3	25.1	10.5	16	20.3
12-24 months	23.1	22.6	28.6	15.8	24.6	10.9	15.6	28.2
24+ months	45	30.6	42	17.4	29.1	12.6	18	40.7
Highest education before attending the programme								
No	64.2	50.9	52.8	46.7	61.1	42.1	49.5	52.1
Yes	35.8	49.1	47.2	53.3	38.9	57.9	50.5	47.9
N	2,447	1,235	629	184	175	247	550	685

[1] As per NES registration prior to the programme

Source: FREN calculation based on survey data

The YEM-supported measures specifically targeted disadvantaged groups of young people and applied relaxed entry criteria for them. Table 3.9 shows that the control group has slightly higher shares of disadvantaged individuals compared to programme participants: Roma youth (19.9% and 14.6%, respectively), refugees (3.3% and 1.6%), internally displaced youth (5.4% and 3.2%) and youth with disabilities (5.2% and 4.6%, respectively).

Table 3.9: Disadvantaged groups among programme participants and control group, %[1]

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Roma youth	19.9	14.6	16.5	1.6	33.7	5.7	13.5	15.5
Refugees	3.3	1.6	1.4	1.6	0.6	2.8	2	1.3
Internally displaced youth	5.4	3.2	2.2	4.3	4	4	4.5	2.0
Youth with disabilities	5.2	4.6	1.9	6.5	9.1	6.9	6	3.5
N	2,447	1,235	629	184	175	247	550	685

[1]The categories in the table can overlap, and thus cannot be summed.
Source: FREN calculation based on survey data.

Significant differences for Roma young and young persons with disabilities can also be found across different programmes. Namely, members of Roma youth, given their lower level of education, are more frequently represented in education and training programmes (33% of total programme participants were of Roma population groups), but also in the on-the-job training programme. This latter programme also has lower shares of youth with disabilities compared to all other programmes, while their share is highest in the education and training programme.

Target population as a subset of participant population

As already mentioned, the measures supported by the YEM joint programme targeted young people (15 to 29 years old), registered with the NES; with low levels of education (primary education or less). The educational attainment criterion was relaxed for youth who faced additional barrier to labour market integration (belonging to Roma population groups, internally displaced youth and refugees, youth with disabilities, beneficiaries of social protection and young returnees under the Readmission Agreement).

However, the analysis of the demographic characteristics of survey respondents shows that some participants did not fully comply with the established eligibility criteria (327 young people or 26.5% of respondent participants). Since the main aim of the survey is to assess whether participation to the YEM-supported measures increases the probability of young beneficiaries to find gainful employment compared to non-participants, those respondent participants that do not comply with the eligibility criteria were deleted from the analysis. Across measures, the highest shares of participants that fail to comply with the selection criteria are found among participants to job subsidies and entrepreneurship training programmes, where only half of respondents fit the selection criteria (53.3% and 55.5% respectively). Table 3.10 below show that on-the-job training and education and training programmes had higher shares of participants belonging to the target group (81.2% and 92.6% respectively).

Table 3.10: Target population check, %

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Target group from survey	100	73.5	81.2	53.3	92.6	55.5	67.3	78.5
N	2,447	1,235	629	184	175	247	550	685

Source: FREN calculation based on survey data

Even after deleting those outside the target group, participants still have better labour market characteristics compared to the members of the control group. Table 3.11 shows that participants' employment rate is 16.6 percentage points higher than for the control group (34.7% and 18.1%, respectively). The difference in employment at any time is somewhat smaller, but still pronounced – 10.7 percentage points (48.8% and 38.1%, respectively). Similarly, the differences in employment outcomes across the programmes are also marked. The highest employment rate is found among participants to job subsidies (63.3%) and entrepreneurship training (48.2%) and the lowest among participants to on-the-job training and education and training (30.1% and 20.4% respectively). Overall, the programmes supported by the NES still have a higher employment return compared to the programmes financed by the YEM joint programme, although this difference is much lower after the deletion of ineligible participants – 8.5 percentage points (Table 3.11).

Table 3.11: Employment status of the target population

	Control group	Programme Participants	Group				Source	
			On-the-job training	Job subsidies	Education and training	Entrepr. training	NES	YEM
Not employed at any time	61.9	51.2	55	26.5	63.6	40.1	47.6	53.7
Employed at programme's end, currently unemployed	20	14.1	14.9	10.2	16	11.7	12.7	15.1
Currently employed	18.1	34.7	30.1	63.3	20.4	48.2	39.7	31.2
N	2,447	908	511	98	162	137	370	538

Source: FREN calculation based on survey data

4. Impact evaluation analysis

The primary objective of this report is to evaluate the effectiveness and efficiency of the active labour market programmes implemented under the aegis of the YEM joint programme against a counterfactual reality where these programmes did not exist. For this purpose, we compare labour market (employment, unemployment, inactivity and average net wage) and subjective wellbeing outcomes (self-assessment of past and current financial situation and evaluation of the chances to find a job). For a valid measurement of the programme effects, we compare programme participants – the *treatment group* – only to those non-participants (*control group*) who could have participated in the programme, i.e. those who had an equal chance to be selected for participation in the programme as the actually treated.

Evaluation problem

To assess whether programme participation can be regarded as quasi-random, we perform statistical tests of **the hypothesis of random assignment to participation.** Specifically, we test whether the means of important socio-demographic characteristics and labour market outcomes are significantly different between the two groups. If the hypothesis of random assignment is rejected, it would be misleading to measure net effects as the difference in average outcomes between the two groups.[20]

Table 4.1 below shows the t-test results of random differences between the treatment and control groups.[21] **The test indicates that the means of important characteristics of the treatment and the control group are significantly different.** Treated individuals tend to be **younger;** are more likely to be male; **are less likely to be married;** have less likely to have children below 15 years of age; and belong to households where there are less unemployed members, but more retired ones. Additionally, treated individuals are **more likely to have vocational or secondary educational attainment, live in an urban area,** and are more likely to belong to vulnerable groups of the population.

20 Table A2.1 in Annex 2 shows the number of observations included in the treatment and control groups.
21 Where appropriate, we report χ2-test.The sample size of treatment and control groups vary due to missing observations on one of the covariates.

Table 4.1 Socio-demographic characteristics of treatment and control groups (comparison of means)

Socio-demographic characteristics	Treatment group		Control group		Significance		
	obs.	mean	obs.	mean	t-test	p-value	
Age	908	26.785	2447	27.407	4.472	0.000	***
ln(Age)	908	3.276	2447	3.303	5.055	0.000	***
ln(Age)2	908	10.757	2447	10.925	4.877	0.000	***
Sex	908	0.505	2447	0.597	6.083	0.000	***
Married	908	0.496	2447	0.621	7.293	0.000	***
Employment of a partner	459	1.745	1520	1.790	1.430	0.153	
# Children in the family	908	0.574	2447	0.649	4.012	0.000	***
# Number of children	521	1.804	1588	2.008	4.314	0.000	***
# Age of youngest child	521	4.527	1588	4.336	-1.164	0.244	
Education (rank)	908	2.025	2447	1.969	-2.596	0.001	***
Education: no education /less than primary school	908	0.140	2447	0.131	-0.689	0.491	
Education: primary	908	0.740	2447	0.796	3.461	0.000	***
Education: vocational	908	0.075	2447	0.047	-3.110	0.002	***
Education: secondary	908	0.045	2447	0.026	-2.810	0.001	***
Nationality –Roma	908	0.196	2447	0.199	0.166	0.868	
Refugees	908	0.021	2447	0.032	1.789	0.074	*
IDPs	908	0.040	2447	0.054	1.643	0.100	*
Disabled persons	908	0.059	2447	0.052	-0.862	0.389	
Vulnerable persons	908	0.405	2447	0.311	-5.154	0.000	***
# Members of household	908	4.269	2447	4.284	0.228	0.819	
# Children under 15	908	1.113	2447	1.353	5.086	0.000	***
# Employed members of household 15-64	908	0.853	2447	0.502	-11.574	0.000	***
# Unemployed members of household 15-64	908	2.083	2447	2.249	3.230	0.001	***
# Retired household members	908	0.218	2447	0.180	-2.006	0.045	**
House ownership status†	908	1.903	2447	1.996	1.833	0.067	*
Size of the apartment	908	65.441	2447	61.893	-2.694	0.007	***
Place of living (urban)	908	0.693	2447	0.517	- 9.214	0.000	***
# Has work experience	908	0.469	2447	0.357	-5.922	0.000	***
# Working experience, before 2011 (in months)	426	41.694	875	34.474	-3.433	0.001	***
# Working without contract, before 2011	358	0.469	681	0.554	6.176	0.000	***
# Agriculture	418	0.072	875	0.198	5.895	0.000	***
# Manufacturing	418	0.428	875	0.341	-3.064	0.002	***
# Services	418	0.500	875	0.462	-1.289	0.198	
# Seeking for work before 2011	482	0.732	1572	0.731	-0.062	0.950	
# Ownership type, before 2011	426	1.877	875	1.918	2.295	0.022	**
Salary on previous job	349	21365.18	694	20330.1	-0.786	0.432	
Salary on previous job, groups	349	1.903	694	1.868	1.868	0.441	

Outcome variables							
Employed	908	0.347	2447	0.181	-10.335	0.000	***
Employed, at any time since 2011	908	0.487	2447	0.381	-5.601	0.000	***
Unemployed	908	0.454	2447	0.431	-1.193	0.233	
Inactive	908	0.199	2447	0.388	10.424	0.000	***
Average net wage (last 6 months)	360	23898	812	20187.6	-3.188	0.001	***
Average net wage (last 6 months), groups	360	2.241	812	2.118	- 1.496	0.135	
Average net wage per hour of work	234	139.1231	419	129.162	-0.437	0.663	
Financial situation at the end of 2011 (estimate) †	908	3.791	2447	3.823	1.010	0.313	
Current financial situation (estimate) †‡	908	3.261	2447	3.823	17.777	0.000	***
Chances to find a job†‡	908	1.927	2447	2.278	15.793	0.000	***

Notes: † χ2 – test
‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.
*Difference statistically significant at the 99 percent level: ****
*Difference statistically significant at the 95 percent level: ***
*Difference statistically significant at the 90 percent level: **

The test also points to significant differences in **the main outcomes for the treatment and the control group**. More precisely, it appears that the treatment group is substantially better positioned in the labour market compared to the control group. Members of the treatment group **are more likely to be employed** (currently, but also at any time since the end of the programme), **less likely to be unemployed or inactive, and have higher average wage.** Further, the **subjective estimation of wellbeing** is relatively better among the members of the treatment group. However, as **individual characteristics differ significantly – and** these characteristics may positively affect individuals' employability − one would expect that a simple comparison of mean outcomes between participants and non-participants overestimates the impacts of the YEM-supported programmes on labour market outcomes. Based on these findings we conclude that the hypothesis of random differences between the treatment and comparison group can be rejected. Therefore, a non-experimental method needs to be applied to account for the individual probabilities of programme participation, in order to construct a valid control group and to calculate the unbiased impact of participation to YEM-supported programmes.

4.1 The matching procedure

In order to mimic a randomized experiment *ex post, we constructed a control group that resembles the treatment group by applying one-to-one nearest neighbour matching with replacement*. This method comprises two steps: (i) an estimation of the individual probabilities to participate to the programme, depending on a set of observable characteristics; and (ii) the matching of participants and non-participants on the basis of these estimated probabilities.

Probit regression

The impact of individual characteristics on the likelihood of participating to the YEM-supported programme is estimated by using standard *probit* regressions on the treated and the non-treated. The estimated coefficients provide insights on the factors influencing selection into treatment, but they may also capture factors of attrition from the survey, i.e. factors explaining differential non-response rates in the treatment and in the control group.

The preferred specification of the regression model includes a full range of explanatory variables, defined in Table A2.2 appended in Annex 2.[22] Table 4.2 below exhibits the *probit* **estimation results** (estimated coefficients and marginal effects), **underlying the propensity scores** for the various treatments.[23]

Table 4.2 Probit estimation results (coefficients and marginal effects)

	Estimation results		Significance	
Variable	Coefficient	Marginal Effect	p-value	
Sex	-0.073	-0.025	0.571	
ln(Age)	-47.395	-16.419	0.008	***
ln(Age)2	7.285	2.524	0.008	***
Married	-0.288	-0.104	0.057	*
# Members of household	0.164	0.057	0.007	***
# Unemployed / Inactive members of household	-0.215	-0.074	0.003	***
# Children	-0.266	-0.092	0.005	***
# Retired household members	-0.131	-0.046	0.442	
Vulnerable group	0.489	0.176	0.001	***
Place of living (urban)	0.478	0.162	0.000	***
Education: no education/ less than primary school	0.504	0.188	0.140	
Education: primary	0.304	0.099	0.330	
Education: vocational	0.140	0.050	0.687	
Education: secondary	dropped			
Financial situation at the end of 2011 (estimate)	0.066	0.023	0.347	
# Work experience before 2011: employed	0.456	0.145	0.004	***
# Work experience before 2011: informally employed	-0.489	-0.171	0.000	***
# Work experience before 2011: wage (monthly level)	3.19e-06	1.11e-06	0.198	
# Work experience before 2011: manufacturing (sector of activity)	0.440	0.157	0.024	**
# Work experience before 2011: services (sector of activity)	0.355	0.123	0.068	*
# Observations	624			
Log-pseudolikelihood	-335.3385			
Pseudo R2	0.1481			

*Notes: Difference statistically significant at the 99 percent level: ****
*Difference statistically significant at the 95 percent level: ***
*Difference statistically significant at the 90 percent level: **

22 Several specifications of the probit model were tried. The results did not change qualitatively. The chosen specification appears to deliver the best overall predictions of programme participation rates.

23 In technical terms, the reported coefficients represent the so-called marginal effects. The marginal effects reveal the percentage change of the programme participation rate in response to a one percentage point change in the explanatory variable, respectively the percentage change of the programme participation rate if a dummy variable changes from value zero to value one, holding the value of all other explanatory factors constant.

The results basically confirm the impression gained from the descriptive statistics. There is no statistically different role for sex (man and women take part in the programme equally), but programme participants are more likely to be younger and belonging to vulnerable population groups. Being married, having more children and having unemployed/inactive members in the household generally decreases the probability of treatment. On the other hand, having more household members (of all types), living in urban areas and having a low education profile increases the probability of treatment. Furthermore, the probability of treatment is higher if a person worked before 2011 (i.e. s/he has previous work experience), was engaged in the manufacturing or service sectors, but decreases if the young individual worked in the informal economy.

Considering the statistical significance of the above mentioned general effects, the *probit* estimates suggest statistically significant effects for the above covariates. In sum, the probit results suggest that the YEM-supported programmes reached its intended target group very well. This is young people with low educational attainment and belonging to vulnerable population groups, predominantly living in urban areas. However, this interpretation should be treated with some caution; probably the main drawback of our finding is the small sample available to compare outcomes across different type of programmes (by source of financing or by type of measure).

As a second step, we apply the *one-to-one nearest neighbour matching with replacement* by using the estimated parameters shown in Table 4.2 to predict the probability to participate in a treatment – the so-called *propensity score* – for each individual in the treatment and comparison groups. The propensity scores are used to match participants with comparable non-participants. For each treated individual, we look for the one individual among non-participants who is the closest neighbour in terms of the predicted probability of being treated. In other words, for each pair comprising a participant and a non-participant, the absolute difference in terms of the estimated propensity to participate in a certain treatment is minimized.

Because the sample sizes − especially of the non-participants − are relatively small, we opt for matching with replacement. This means allowing for the possibility that different participants are matched with the *same* non-participants. To ensure that the matched pairs have reasonably similar probabilities to be treated, we exclude participants for whom the predicted probability to be in the programme is larger than for any individual in the comparison group. In this way we achieve *common support*.

Figures 4.1 and 4.2 show the distributions of the propensity scores for participants and non-participants in the YEM-supported programme, obtained from *probit* estimates.

Figure 4.1: Distribution of propensity scores and common support

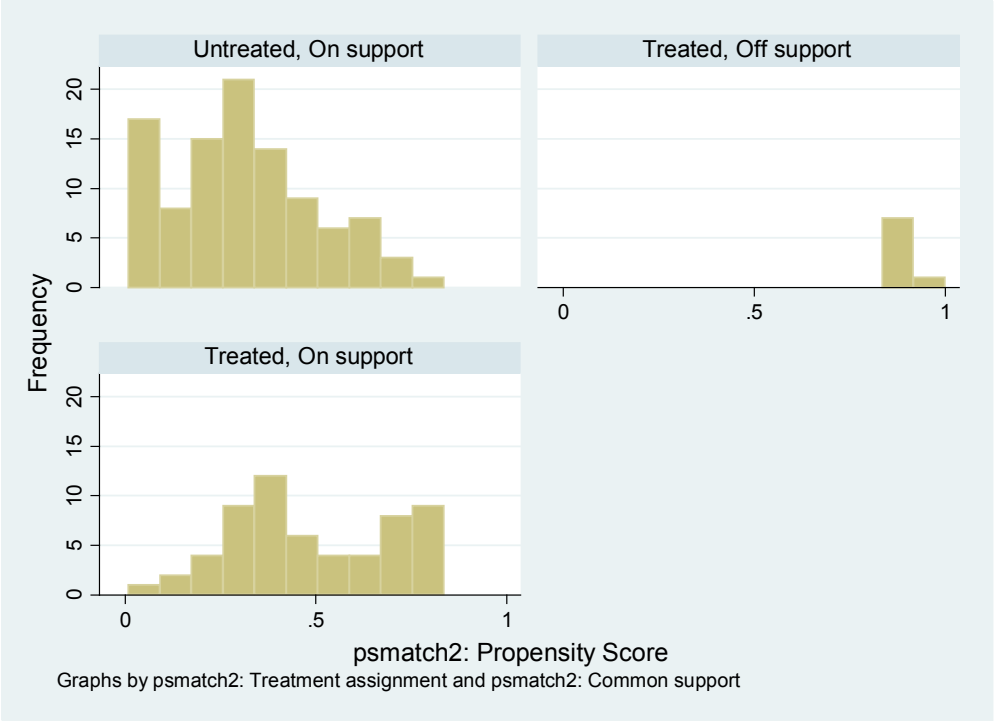

Figure 4.2: Distribution of propensity scores and common support

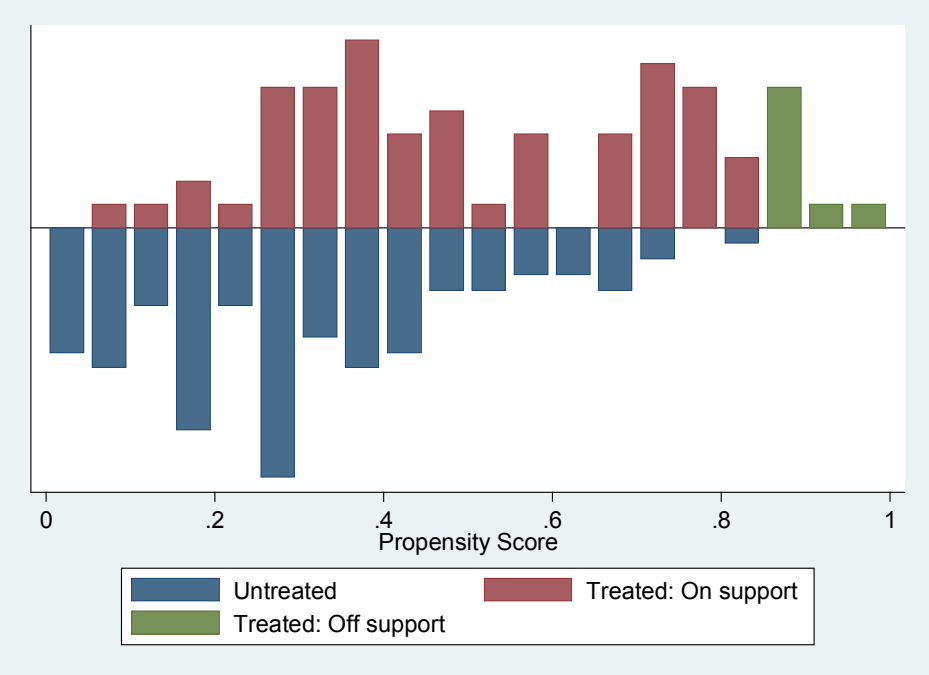

Figure 4.1 depicts the number of observations in twenty intervals of width 0.05 in the possible range from 0 to 1. Obviously, the distributions between participants and non-participants differ: while most of the non-participants exhibit propensity scores closer to 0, the majority of participants exhibit propensity scores of 0.5 and above.

It seems that the individuals surveyed as potential control members for the evaluation exercise are not randomly selected with regard to the characteristics determining programme participation. Overall, the non-participants tend to have characteristics that make them systematically less likely to be self-selected for participation in the YEM-supported programme compared to individuals who received the treatment. To construct a valid comparison group for evaluating programme impacts, one needs to exclude those individuals among the non-participants who appear to be too different in terms of their propensities to receive treatment.

Table 4.3 below shows the matching quality. Among programme participants, five have a higher propensity score than the individual with the highest estimated propensity score among non-participants. Hence these individuals are off support and need to be excluded for the computation of **the average treatment effect on the treated** (ATT).

After forming the matched pairs, a suitable way to assess the matching quality is to compare the standardized bias before matching (*SB^b) to the standardized bias after matching (SB^a). The standardized biases are defined as:*

$$SB^b = \frac{(\bar{X}_1 - \bar{X}_0)}{\sqrt{0.5(V_1(X) - V_0(X))}}; SB^a = \frac{(\bar{X}_{1M} - \bar{X}_{0M})}{\sqrt{0.5(V_{1M}(X) - V_{0M}(X))}}$$

Where $X_1(V_1)$ is the mean (variance) in the treated group before matching and $X_0(V_0)$ is the analogue for the comparison group. X_{1M} (V_{1M}) and X_{0M} ($V_{0M)}$ are the corresponding values after matching.[24] We also re-estimate the propensity score on the matched sample to compute the pseudo-R^2 before and after matching.[25]

Table 4.3: Matching quality

	Treated vs. untreated
# treated individuals	203
# treated individuals off support	5
# matched pairs	198
Mean SB before matching	14.355
Mean SB after matching	7.824
Pseudo R^2 before matching	0.148
Pseudo R^2 after matching	0.024

24 Rosenbaum P. R. and Rubin D.B. (1985) "Constructing a control group using multivariate matched sampling methods that incorporate the propensity score", The American Statistician, 1985, Vol.39, No1.

25 Following the example of Sianesi, B. (2004): "An Evaluation of the Active Labour Market Programmes in Sweden," The Review of Economics and Statistics, 86(1), 133-155.

These measures suggest that the quality of the matching procedure is satisfactory. The standardized bias of the matched sample is markedly smaller than that of the unmatched sample (a decrease from 14.3 to 7.8). Likewise, the **pseudo-R^2 after matching is fairly low and decreases substantially compared to before matching (from 0.148 to 0.024). This is what one would expect since after matching there should not be any systematic differences in the distribution of covariates between participants and matched non-participants. If the matching approach is successful in mimicking a randomized experiment, any differences in the observable characteristics between the treatment and control groups should disappear.** Table 4.4 summarizes the characteristics of the matched programme participants and non-participants. They indicate that the **constructed treatment and control groups indeed have basically identical socio-demographic characteristics**. This shows that the matching approach is mimicking a randomized experiment, which allows evaluating programme impacts by comparing mean outcomes between the treatment and the control group.

Table 4.4: Socio-demographic characteristics of treatment and control group *after matching* (comparison of means)

Socio-demographic characteristics	Treatment group	Control group			
	mean	mean	% Bias	t-test	p-value
Sex	0.491	0.390	20.2	1.11	0.270
ln(Age)	3.378	3.369	9.0	0.58	0.566
ln(Age)2	11.418	11.354	9.3	0.59	0.554
Married	0.780	0.763	4.4	0.22	0.828
Vulnerable persons	0.390	0.458	-14.3	-0.74	0.460
Place of living (urban)	0.678	0.661	3.6	0.19	0.846
# Members of household	4.525	4.898	-19.3	-0.98	0.330
# Number of children	1.780	1.763	2.0	0.11	0.913
# Unemployed/inactive household members	1.475	1.745	19.0	-0.96	0.338
# Retired household members	0.102	0.136	-9.1	-0.46	0.644
Education: no education /less than primary	0.136	0.136	0	0	1.000
Education: primary	0.729	0.695	7.7	0.40	0.687
Education: vocational	0.068	0.034	11.5	0.83	0.406
Financial situation at the end of 2011 (estimate)	3.695	3.559	17.0	0.92	0.362
# Work experience before 2011: employed	0.830	0.746	20.3	1.12	0.264
# Work experience before 2011: informally employed	0.458	0.458	0	0	1.000
# Work experience before 2011: wage (monthly level)	20780	20724	0.5	0.04	0.969

4.2 Programe impacts

In the following paragraphs we study the causal impact of the YEM-supported programmes on labour market outcomes, namely unemployment probability, employment probability, recent employment history/employed at any time and time spent on the job after the programme, inactivity and average net wage. We will also look at core subjective well-being variables (self-assessment of the financial situation before and after the programme and chances to find a job).

Labour market outcomes

Outcome variables are based on the labour market status at the time of the interview namely: (i) unemployment, (ii) employment in a regular job, including self-employment, and (iii) inactivity. In addition, we estimate the effects of the programme (iv) on the level of wage (in 2013); and (v) on employment at any time in the two years preceding the survey. This latter outcome is used as a proxy for individuals' employment history.[26]

Table 4.5 summarizes the estimated average treatment effect on the treated (ATT) for **five labour market outcomes** at the date of the survey. In addition to estimating effect on all treated participants, we separately analyzed the programme effects by source of financing (Table 4.6. and 4.7). In the present context, the ATT represents the difference between the actual employment rate of participants post-programme and the counterfactual employment rate of participants had they not received the treatment.

26 The survey data did not trace individuals' employment histories in the traditional way.

Table 4.5: Programe impacts for treatment (all) and control groups

Participation in the YEM programme				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.384 0.374	0.242 0.298	3.70 *** 1.64 *
Employed, at any time	Unmatched ATT	0.611 0.606	0.579 0.612	0.74 -0.08
Unemployed	Unmatched ATT	0.438 0.441	0.401 0.372	0.88 1.07
Inactive	Unmatched ATT	0.177 0.181	0.356 0.330	-4.65 *** -2.57 **
Average wage	Unmatched ATT	25975.22 27236.8	21297.03 22594	1.62 * 1.09
Average wage per hour	Unmatched ATT	144.96 154.12	124.98 120.35	1.12 1.28
Financial situation in 2011	Unmatched ATT	0.059 0.060	0.040 0.200	0.60 -1.99 **
Current financial situation †‡	Unmatched ATT	0.328 0.360	0.039 0.200	5.47 *** 1.70 *
Chances to find a job†‡	Unmatched ATT	0.389 0.400	0.099 0.160	4.73 *** 2.46 **

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using a 3 and 5 point scale for subjective wellbeing (as in Table 7) we created dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals ***judging their personal financial situation as improved*** *because of programme participation/period before 2011.*

Our point estimates suggest that participation to the YEM-supported programmes is generally associated with a higher employment probability and this effect is statistically different from zero. The findings suggest that participation in the programme: (i) increases the probability of being employed by about 7.6 percentage points; (ii) does not increase the probability of being employed at any time in the last two years; (iii) decreases the probability of being unemployed at the survey date by about 7 percentage points (the effect is not statistically different from zero); and (iv) decreases the probability of being inactive by around 15 percentage points (statistically different from zero). The estimated programme effects on wages suggest an increase after treatment, but the effect is not statistically significant.

Table 4.6 and 4.7 below provide the results of a similar analysis conducted across different programmes by their source of financing.

Table 4.6:Programme impacts for treatment (financing source: NES) and control groups

Participation in the programme				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.467 0.451	0.242 0.268	4.12 *** 2.09 **
Employed, at any time	Unmatched ATT	0.636 0.606	0.579 0.563	0.93 0.45
Unemployed	Unmatched ATT	0.377 0.394	0.401 0.423	-0.41 -0.30
Inactive	Unmatched ATT	0.156 0.154	0.356 0.310	-3.49 *** -1.88 *
Average wage	Unmatched ATT	30625 32880	21297.029 21504	2.29 ** 1.46
Average wage per hour	Unmatched ATT	148.092 159.456	124.981 102.783	1.04 1.65 *
Financial situation in 2011	Unmatched ATT	0.094 0.040	0.040 0.080	1.19 -0.50
Current financial situation †‡	Unmatched ATT	0.219 0.240	0.040 0.080	3.31 *** 1.43
Chances to find a job†‡	Unmatched ATT	0.281 0.240	0.099 0.080	2.61 ** 1.43

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Table 4.7: Programe impacts for treatment (financing source: YEM) and control groups

Participation in the programme				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.333 0.319	0. 242 0.269	2.04 ** 0.73
Employed, at any time	Unmatched ATT	0.595 0.588	0.579 0.655	0.31 -0.88
Unemployed	Unmatched ATT	0.476 0.479	0.401 0.504	1.49 -0.32
Inactive	Unmatched ATT	0.190 0.202	0.356 0.227	-3.54 *** -0.37
Average wage	Unmatched ATT	21724 21726.429	21297.03 25200	0.17 -1.08
Average wage per hour	Unmatched ATT	142.098 146.458	124.981 131.224	0.84 0.47
Financial situation in 2011	Unmatched ATT	0.029 0.036	0.040 0.071	-0.30 -0.54
Current financial situation †‡	Unmatched ATT	0.429 0.464	0.040 0.071	6.52 *** 3.55 ***
Chances to find a job†‡	Unmatched ATT	0.486 0.500	0.099 0.178	5.42 *** 2.62 **

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using a 3 and 5 point scale for subjective wellbeing (as in Table 7) we created dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measures the change in the percentage share of individuals ***judging their personal financial situation as improved*** *because of programme participation/period before 2011.*

Table 4.8: Socio-demographic characteristics of NES and YEM groups (comparison of means)

Socio-demographic characteristics	NES group		YEM group		Significance		
	obs.	mean	obs.	mean	t-test	p-value	
Age	370	27.056	538	26.598	1.680	0.009	*
ln(Age)	370	3.283	538	3.270	1.208	0.227	
ln(Age)2	370	10.811	538	10.718	1.359	0.174	
Sex	370	0.414	538	0.541	-3.798	0.000	***
Married	370	0.473	538	0.527	-1.627	0.103	*
Employment of a partner	175	0.343	284	0.368	-1.267	0.201	
# Children in the family	370	0.532	538	0.602	-2.092	0.037	**
# Number of children	197	1.812	324	1.799	0.153	0.879	
# Age of youngest child	197	4.360	324	4.630	-0.845	0.398	
Education (rank)	370	2.065	538	1.998	1.573	0.116	
Education: no education /less than primary school	370	0.224	538	0.081	6.206	0.000	***
Education: primary	370	0. 572	538	0.855	-10.024	0.000	***
Education: vocational	370	0.116	538	0.046	3.952	0.000	***
Education: secondary	370	0.086	538	0.017	5.037	0.000	***
National group - Roma	370	0.200	538	0.193	0.249	0.863	
Refugees	370	0.027	538	0.017	1.064	0.287	
IDPs	370	0. 059	538	0.026	2.543	0.011	**
Disabled persons	370	0.084	538	0.043	2.575	0.010	*
Vulnerable persons	370	0.445	538	0.377	2.072	0.038	**
# Members of household	370	4.349	538	4.214	1.068	0.285	
# Children under 15	370	1.122	538	1.108	0.175	0.861	
# Employed members of household 15-64	370	0.884	538	0.832	0.822	0.411	
# Unemployed members of household 15-64	370	2.130	538	2.052	0.771	0.441	
# Retired household members	370	0.213	538	0.221	-0.216	0.829	
House ownership status†	370	1.948	538	1.872	0.908	0.364	
Size of the apartment	370	70.470	538	61.983	3.320	0.001	***
Place of living (urban)	370	0.721	538	0.673	1.565	0.117	
# Has work experience	370	0.465	538	0.472	-0.215	0.830	
# Working experience, before 2011 (in months)	172	50.395	254	35.803	3.923	0.001	***
# Working without contract, before 2011	138	0.449	220	0..482	-0.599	0.549	
# Agriculture	168	0.059	250	0.080	-0.794	0.427	
# Manufacturing	168	0.363	250	0.472	-2.214	0.027	**
# Services	168	0.577	250	0.448	2.609	0.009	***
# Seeking for work before 2011	198	0.676	284	0.771	-2.310	0.021	**
# Ownership type, before 2011	172	1.930	254	1.842	2.730	0.007	***
Salary on previous job	138	26171.74	211	18221.56	2.498	0.013	**
Salary on previous job, groups	138	2.101	211	1.715	3.016	0.003	***

Outcome variables							
Employed	370	0.397	538	0.312	2.652	0.008	***
Employed, at any time since 2011	370	0.524	538	0.463	1.823	0.069	*
Unemployed	370	0.411	538	0.483	-2.158	0.031	**
Inactive	370	0.192	538	0.204	-0.465	0.642	
Average net wage (last 6 months)	150	27122	210	21595.14	2.090	0.037	**
Average net wage (last 6 months), groups	150	2.447	210	2.095	2.589	0.010	***
Average net wage per hour of work	105	149.437	129	130.727	1.274	0.204	
Financial situation at the end of 2011 (estimate) †	370	3.713	538	3.843	-2.227	0.026	**
Current financial situation (estimate) †‡	370	3.197	538	3.304	-1.911	0.056	**
Chances to find a job†‡	370	1.959	538	1.905	1.239	0.215	

Notes: † χ2 – test
‡ Current subjective evaluation of financial situation as compared to the situation before 2011.
*Difference statistically significant at the 99 percent level: ****
*Difference statistically significant at the 95 percent level: ***
*Difference statistically significant at the 90 percent level: **

Overall, the **programmes financed by the NES appear to be more successful than those supported by the YEM joint programme** (participation in NES programmes increased the probability of being employed by about 18 percentage points and the effect is statistically significant). Despite the fact that the **main outcomes differ** among participants according to funding source, the results of the t-test indicate that the NES and YEM groups **are significantly different in their means of important characteristics**. More precisely, it appears that the NES group is substantially better positioned in the labour market (**they have more often vocational or secondary education, are more frequently male, unmarried and without children**, see Table 4.8). To verify these findings, we conducted a **matching procedure between participants to the YEM-supported programmes and those in standard NES programmes.** We focus on the average treatment effects for YEM participants using NEs participants as a control group (identical results would be obtained in the reverse situation). First, we estimate a *probit* model considering the statistical significance of the above-mentioned characteristics of YEM and NES participants.

Table 4.9: *Probit* estimation results (coefficients and marginal effects), YEM (1) vs. NES(0)

	Estimation results		Significance	
Variable	Coefficient	Marginal Effect	p-value	
Sex	0.253	0.096	0.101	*
ln(Age)	33.402	12.839	0.075	*
ln(Age)2	-5.169	-1.987	0.071	*
Married	-0.048	-0.018	0.782	
# Members of household	-0.038	-0.014	0.525	
# Unemployed / Inactive members of household	0.021	0.008	0.770	
# Children	0.193	0.074	0.034	**
# Retired household members	0.049	0.018	0.783	
Vulnerable group	0.577	0.213	0.007	***
Place of living (urban)	-0.018	-0.007	0.906	
Education: no education/ less than primary school	0.204	0.076	0.617	
Education: primary	1.585	0.568	0.000	***
Education: vocational	0.158	0.059	0.693	
Education: secondary	dropped			
Financial situation at the end of 2011 (estimate), good	0.001	0.003	0.970	
# Work experience before 2011: employed	-0.293	-0.112	0.096	*
# Work experience before 2011(in months)	-0.003	-0.001	0.099	*
# Work experience before 2011: wage (monthly level)	-5.76e-06	-2.21e-06	0.181	
# Work experience before 2011: manufacturing	0.502	0.176	0.055	*
# Work experience before 2011: services	0.425	0.161	0.005	***
# Observations	426			
Log-pseudolikelihood	-236.914			
Pseudo R^2	0.176			

Table 4.9 shows the *probit* estimation results (estimated coefficients and marginal effects), underlying the propensity scores for both groups of participants. Being a young woman, from vulnerable groups, having more children and only primary education generally increases the probability of being a YEM-supported participant. Conversely, living in urban areas and having prior work experience reduces the probability of being a YEM participant. In short, the *probit* results confirm that NES participants have *a* better starting position compared to YEM-supported participants.

Second, we implement the *one-to-one nearest neighbour matching principle* using the estimated parameters of the *probit* model of Table 4.9 to predict the probability to participate in a treatment (*propensity score)* for each individual in the treatment (YEM) and comparison group (NES). The outcomes of the matching procedure are shown in Figures 4.3 and 4.4, as well as in Table 4.10.

Figure 4.3: Distribution of propensity scores and common support

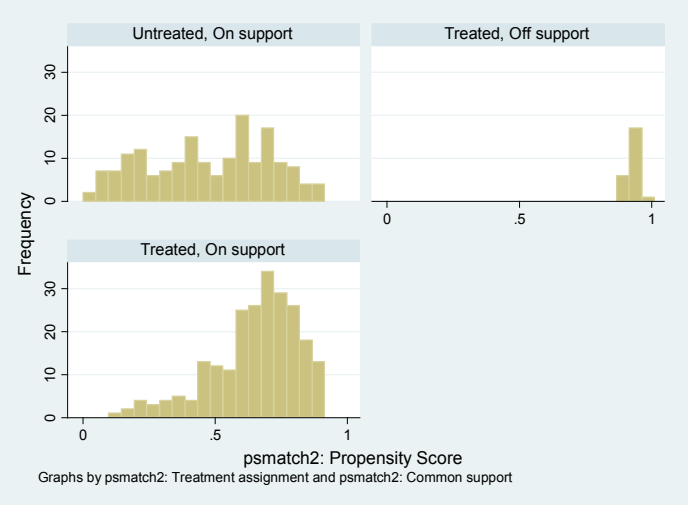

Figure 4.4: Distribution of propensity scores and common support

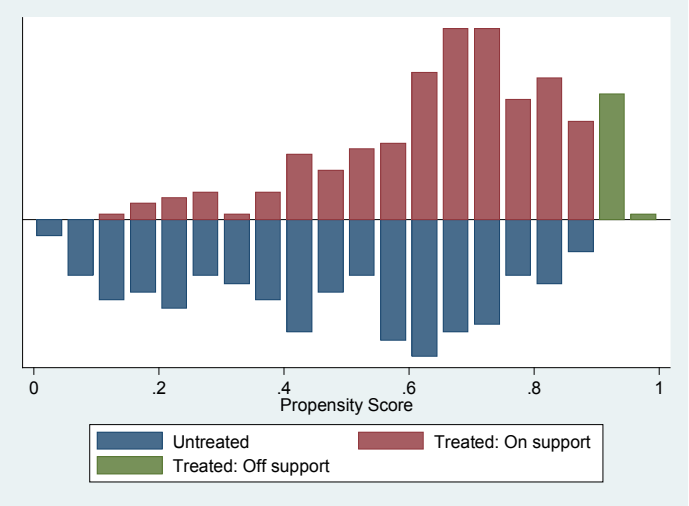

Table 4.10: Matching quality

	Treated (YEM) vs. untreated (NES)
# treated individuals	230
# treated individuals off support	24
# matched pairs	254
Mean SB before matching	6.4
Mean SB after matching	3.4
Pseudo R^2 before matching	0.175
Pseudo R^2 after matching	0.034

Table 4.11 summarizes the characteristics of the matched YEM and NES participants. After matching the two groups of participants have basically identical socio-demographic characteristics.[27] We find that there is no significant difference in labour market outcomes between the two groups. The only impact that is positive and significant relates to the more optimistic view of YEM participants on their chances to find a job (see Table 4.12).

Table 4.11: Socio-demographic characteristics of treatment (YEM) and control group (NES) *after matching* (comparison of means)

Socio-demographic characteristics	YEM group mean	NES group mean	% Bias	t-test	p-value
Sex	0.452	0.483	-6.2	-0.65	0.514
ln(Age)	3.303	3.306	-2.3	-0.24	0.810
ln(Age)2	10.930	10.954	-2.7	-0.29	0.775
Married	0.543	0.587	-8.7	-0.94	0.348
Vulnerable group	0.269	0.283	-2.7	-0.31	0.755
Place of living (urban)	0.700	0.717	-3.8	-0.41	0.682
# Members of household	4.100	4.165	-3.4	-0.41	0.685
# Number of children	1.026	1.161	-12.2	-1.33	0.186
# Unemployed/inactive household members	1.900	1.822	5.5	0.62	0.533
# Retired household members	0 .174	0.161	3.0	0.32	0.753
Education: no education /less than primary school	0.056	0.061	-1.4	-0.20	0.843
Education: primary	0.865	0.874	-2.1	-0.28	0.782
Education: vocational	0.056	0.052	1.4	0.21	0.837
Financial situation at the end of 2011 (estimate)	0.083	0.048	12.8	1.51	0.131
# Work experience before 2011: employed	0.856	0.813	11.7	1.25	0.210
# Work experience before 2011: wage (monthly level)	15308	15570	-0.9	-0.24	0.808
# Work experience before 2011, in months	37.843	39.096	-3.3	-0.38	0.707
# Work experience before 2011: manufacturing (sector of activity)	0.069	0.039	12.0	1.44	0.151
# Work experience before 2011: services (sector of activity)	0.491	0.315	35.4	1.92	0.057*

27 After matching the only exception is work experience in the service sector before 2011 and it is altogether negligible.

Table 4.12: Programme impacts for treatment (YEM) and control groups (NES)

Participation in the YEM programme				
Variable	Sample	Treated (YEM)	Control (NES)	t-test
Employed	Unmatched ATT	0.362 0.365	0.471 0.449	-2.25 ** -1.06
Employed, at any time	Unmatched ATT	0.587 0.587	0.663 0.548	-1.59 0.52
Unemployed	Unmatched ATT	0.465 0.465	0.389 0.413	1.53 0.70
Inactive	Unmatched ATT	0.173 0.169	0.139 0.139	0.93 0.53
Average wage	Unmatched ATT	24068.169 24418.246	31839.344 38982.456	-1.31 -0.96
Average wage per hour	Unmatched ATT	143.105 144.763	151.298 137.399	-0.36 0.23
Financial situation in 2011	Unmatched ATT	0.070 0.088	0.136 0.017	-1.23 1.22
Current financial situation †‡	Unmatched ATT	0.366 0.351	0.254 0.386	1.37 -0.28
Chances to find a job†‡	Unmatched ATT	0.493 0.456	0.220 0.123	3.32 *** 2.98 ***

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

*Note: I*nstead of using 3 and 5 point scale for subjective wellbeing (as in Table 7) we created dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals judging ***their personal as improved*** because of program participation/period before 2011.

A similar analysis is carried out to understand the effects of specific programmes (see Table A2.3 to Table A2.6 in Appendix 2). The main findings are that:

1) There is no significant effect of the on-the-job training programme on the main labour market outcomes (employment, employment in the last two years, unemployment, inactivity and wages), but there is a significant effect on the subjective improvement in wellbeing (e.g. current financial situation and chances to find a job, see Table A2.3 in Annex 2);

2) Job and self-employment subsides significantly decrease the probability of being unemployed (by 24 percentage points) and inactive (by around 4 percentage points), but there is no significant effect on the improvement of individual welfare of participants (see Table A2.4 in Annex 2);

3) Participation in education and training programmes significantly impacts only the probability of being inactive, lower by around 38 percentage points (Table A2.5 in Annex 2);

4) Entrepreneurship training significantly increases only average wage per hour, while other effects are not significant (see Table A2.6 in Annex 2).

These findings, however, have to be interpreted with some caution, given that the sample is small when estimating the effects across four different programme types.

Subjective well-being

Even though an active labour market programme does not immediately raise the employment probabilities of participants, a social planner may find it beneficial if it improves the welfare of the target group. The survey data collected to assess the impact of the YEM-supported programmes provide the unique opportunity to study the effects on various dimensions that may serve to approximate individual well-being. Individuals were asked to compare their current situation with that before the YEM-supported programme came into effect, and had to judge whether their situation has strongly or somewhat improved, has remained more or less the same, or has strongly or somewhat deteriorated. Specifically, the survey instrument asked respondents to assess their financial situation before and after the programme and evaluate their chances to find a job. Dummy variables that took the value of 1 if individuals reported that their financial situation (chances to find a job) has strongly or somewhat improved, and the value of 0 otherwise, were constructed. In this way, the ATT measures the change in the percentage share of individuals **judging their personal situation as better** due to programme participation/period before 2011.

The point estimates show that **participation in the programme improved the personal situation of young individuals in all aspects considered.** Among participants there are more youth that reported an improvement on their current financial situation compared to before participation. The estimated effect of all programmes on this outcome is 16 percentage points higher than among non-participants (see Table 5). The same stands for the chances to find a job compared to 2011 (24 percentage points higher and statistically significant). The same significant effects were found in the self-assessments of well-being for both the YEM- and the NES-supported programmes (Table 6 and Table 7). Taken together, these results suggest positive programme effects on individuals' wellbeing.

5. Conclusions and recommendations

The main objective of this report was to evaluate the impact of the active labour market measures implemented under the aegis of the YEM joint programme against a counterfactual reality in which these measures did not exist. For this purpose, we compared the labour market (employment, unemployment, inactivity, average wage levels) and subjective wellbeing outcomes (prior and current financial situation and chances to find a job) of participants and non-participants. The research found significant effects stemming from participation in the YEM-supported programmes on the main labour market outcomes (employment probability and inactivity), accompanied by a significantly positive effect on subjective wellbeing (e.g. current financial situation compared to before programme participation and chances to find a job). Participation to the programme increased the probability of being employed by about 7.6 percentage points (about 25%), compared to non-participation.

An additional research question addressed in this report relates to the relative performance of the YEM-supported active labour market programme compared to the standard measures implemented by the National Employment Service of Serbia on the same target groups of young unemployed. Whereas at the level of descriptive statistics and within a common pool of treatment group, the NES programmes appeared to be more successful, the deployment of a matching procedure between the participants to the YEM- and NES-supported programmes shows that participation to these latter does not bring an advantage. On the contrary, the participation to YEM-supported measures improves some aspects of subjective wellbeing. These results confirm the findings of the performance monitoring carried out in 2012, which indicated that the better employment performance of standard NES measures was to be ascribed to the better individual characteristics of NES participants or, in other words, to imperfect targeting.[28]

Although neither gross or raw net effects (obtained by comparing the mean outcomes of treatment and control group, without econometric matching) of the YEM-supported programmes represent a decisive confirmation of their efficiency, they are impressive enough to present a strong argument for the implementation of active labour market programmes targeting low-skilled and other disadvantaged groups of young people. The positive results of net impact evaluation, on the other hand, demonstrate that active labour market programmes targeting disadvantaged youth should become integral part of any comprehensive package for the promotion of youth employment.

Furthermore, the evidence provided by the econometric analysis emphasizes the importance of good targeting: whereas easy gains in terms of gross effects could be achieved by cream-skimming (i.e. the enrolment of relatively easy-to-employ individuals into active labour market programmes), they are unlikely to be sustained once a proper net impact evaluation is conducted.

In the period of implementation of the YEM-supported active labour market measures, the labour market context was marked by a deep deterioration of youth employment. Young people experienced the largest employment drop among all other age-groups until 2010 and they did not benefit from the overall employment recovery that started in 2012.

28 Corbanese, V. (2012) *Performance monitoring of active labour market programmes targeting disadvantaged youth.* YEM Joint Programme, Belgrade; Arandarenko, M. (2012) *Performance monitoring of the YEM Joint Programme: Employment Component.* YEM Joint Programme, Belgrade.

Since the end of the *First Chance* programme in 2011 and the closure of the YEM joint programme, the active labour market programmes targeting youth implemented by the NES have been significantly reduced in size. The *Professional Practice* programme, designed to replace the *First Chance*, has a modest coverage. The same could be said for the *On-the-Job Training* programme, introduced in 2012 to ease the labour market entry of individuals with low qualifications (a legacy of its namesake developed under the YEM joint programme). Furthermore, the participation of young unemployed in standard labour market measures was also reduced, with the most notable example being the self-employment programme.[29] A recent attempt to develop a unified approach to address the youth employment challenge through the design of a *Youth Service Package* in 2013 (inspired by the youth guarantee initiatives promoted at European Union level), has not been successful due to severe financial constraints.

In general, the active labour market programmes implemented by the NES to date – both before and after the crisis – have paid a very limited attention to addressing the multiple disadvantages that many young people face in the gaining a foothold in the labour market. Hence, the most affordable and desirable policy option is to improve the design of active labour market programmes by: a) targeting both individual characteristics (e.g. sex, educational attainment, socio-cultural and ethnic background) and the labour market disadvantages faced by young individuals; b) linking interventions more closely to the world of work; and c) making programmes more responsive to the demands of the labour market.

The policy options already suggested by the ILO to promote the labour market inclusion of disadvantaged youth include the reform of the targeting and financing of active labour market policies and the integration of employment and social services. The key elements of such reform should include: a) the development of a early profiling system for young unemployed; b) the strengthening of the Youth Employment Fund as a means to channel resources towards easing young people's transition to decent work; c) the design of sequenced and individualized employment services and programmes targeting both labour demand and labour supply; and d) establishing an appropriate monitoring and evaluation system to measure the net impact of programmes on young beneficiaries. With regard to the integration of employment and social services, it would be important to: a) develop a unique early identification mechanism; b) establish a referral system between employment and social services; and c) design measures addressing the multiple layers of disadvantages faced by Serbian youth.

In this context, the present analysis represents a contribution toward the establishment of an effective monitoring and evaluation system to measure the impact of active labour market programmes on young beneficiaries.

29 Arandarenko, M. (2013) "Using evidence for the development of National Employment Action Plan", IPA 2011 project on *Further integration of systems for forecasting, monitoring and evaluation in the design and implementation of active employment policy measures*.

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Annexes

Annex 1

Table A1: List of control municipalities

Belgrade: Ba*nat-South District:* Opovo, Pančevo, *District Srem:* Pećinci, Stara Pazova, *District Šumadija:* Aranđelovac, *District Podunavski:* Smederevo;
Jagodina: *District Rasinski:* Varvarin, Ćićevac, *District Šumadija:* Batočina, Knić, Kragujevac - grad, Rača (Kragujevačka);
Niš: *District Rasinski:* Kruševac, *District Pirotski:* Babušnica, Bela Palanka, Dimitrovgrad, Pirot, *District Toplički:* Žitorađa, Prokuplje;
Novi Sad: *Western Bačka District:* Sombor, Kula, Odžaci, *North Bačka District:* Bačka Topola, Mali Iđoš, Subotica, Distict Srem: Irig, Sremska Mitrovica;
Vranje: *District Jablanički:* Bojnik, Vlasotince, Lebane, Leskovac, Crna Trava.

Table A2: Macro indicators of programme districts and control municipalities

		A		B		C		D	E	F	G
		Employment rate (2011)		Unemployment rate (2011)		Inactivity rate (2011)		Share of youth (15/29) in total number of registered unemployed	Share of those with low level of education (I i II) among young unemployed*	Share of vulnerable groups among young unemployed*	Average net wages
		15-29	15-64	15-29	15-64	15-29	15-64				
Beograd	Programme	32.0%	51.1%	28.2%	17.9%	55.4%	37.7%	26.2%	6.9%	1.0%	51,121
	Control	29.6%	43.5%	35.5%	23.5%	54.1%	43.1%	27.8%	15.8%	1.1%	38,507
Jagodina	Programme	25.2%	41.9%	41.1%	25.8%	57.2%	43.5%	27.9%	20.6%	2.0%	34,471
	Control	29.0%	44.5%	36.8%	26.2%	54.1%	39.8%	25.6%	14.5%	3.1%	31,528
Niš	Programme	24.7%	41.8%	45.9%	32.0%	54.4%	38.5%	27.2%	11.7%	1.9%	34,880
	Control	22.6%	39.7%	47.7%	31.2%	56.9%	42.3%	27.0%	18.3%	2.4%	30,439
Novi Sad	Programme	30.8%	47.3%	32.5%	22.4%	54.3%	39.0%	26.9%	17.1%	0.4%	44,386
	Control	31.7%	44.4%	33.2%	23.4%	52.6%	42.1%	27.7%	17.9%	0.4%	34,197
Vranje	Programme	21.4%	40.1%	51.9%	32.8%	55.5%	40.2%	26.3%	21.3%	1.0%	32,749
	Control	23.0%	40.6%	48.8%	33.5%	55.0%	39.0%	25.9%	19.6%	1.0%	29,423

* Registered at NES for at least three months

Source: Columns A to C: Own calculation based on the Census data (2011); Columns D to F: On calculation based on the NES data (2012); Column G: SORS: Communication *"Salaries and wages per employee in the Republic of Serbia".*

Table A 3: Unemployment spell group

	Control group	Participants	Group				Source	
			On-the-job training	Subsidies	Education and training	Entrepr. training	NES	YEM
1-3 months	6	7.7	6.4	6.5	12.4	8.1	9.9	6.3
4-6 months	3.6	6.9	7	4.3	9	5.8	6.4	7.2
6-12 months	3.1	14	15.4	13	12.4	11.6	12.4	15.1
12-24 months	8.5	23.7	24.4	37	15.7	22.1	20.3	25.8
24+ months	78.2	47.7	46.8	39.1	50.6	52.3	51	45.6
N	1,047	520	299	46	89	86	202	318

Source: FREN calculation based on survey data

Table A4: Groups of inactive youth and reasons for not seeking work

	Control group	Participants	Group				Source	
			On-the-job training	Subsidies	Education and training	Entrepr. training	NES	YEM
Group of inactive								
Want to work and available for work	46.9	47.2	51.1	30	51.1	36.4	42.1	50.7
Want to work, but not available for work	30.1	31.9	31.9	35	25.5	39.4	30.5	32.9
Don't want to work	23	20.9	17	35	23.4	24.2	27.4	16.4
Reason for not seeking work								
Found a job / Expecting to go back to previous job	3.6	6.4	5.9	0	4.3	15.2	7.4	5.7
Illness or disability	11.8	8.5	5.9	5	21.3	3	11.6	6.4
Child or elderly care	51.8	40.9	45.9	50	19.1	45.5	34.7	45
Education	1.3	7.2	2.2	5	23.4	6.1	14.7	2.1
Discouraged	18.8	20.9	23	20	17	18.2	16.8	23.6
Pregnant or with small child	3.2	5.1	5.9	10	4.3	0	4.2	5.7
Other reasons	2	6	7.4	0	4.3	6.1	4.2	7.1
Job seekers, not available for work	7.6	5.1	3.7	10	6.4	6.1	6.3	4.3
N	949	235	135	20	47	33	95	140

Source: FREN calculation based on survey data

Annex 2

Table A2.1: Definitions of treatment and control groups

Type of treatment	Size of treatment group	Size of control group
Participation to all YEM/NES programmes	908 obs.	2477 obs.
Participation to NES programmes	370 obs.	
Participation to YEM programmes	538 obs.	
Participation to on-the-job training	511 obs.	
Participation to employment and self-employment subsides	98 obs.	
Participation to education and training	162 obs.	
Participation to entrepreneurship training	137 obs.	

Table A2.2: Explanatory variables included in the preferred specification of the regression model

Name of variable	Survey question	Description
Sex	What is your sex?	1: Female 2: Male
ln(Age)	What is your exact age?	Logarithm of age (in years)
ln(Age)2		Logarithm of age (in years) squared
Married	What is your marital status?	1: If married 0: Otherwise
# Employment of a partner	What is the employment status of your partner?	1: If employed 0: Otherwise
# Members of household	Number of members of household?	Number: 1-18
# Members of household able unemployed	Number of members of household who are unemployed and able to work?	Number: 0-10
# Children in the family	Number of children in family?	Number: 0-9
# Retired household members	Number of household members over 64 years?	Number: 0-3
Vulnerable persons	Nationality / Refugees, IDPs, Disabled	1: If Rome, refugee, IDPs, disabled 0: Otherwise
Size of the apartment	Size of the apartment? (in sq meters)?	Number: 10-500
House ownership status	What is your house ownership status?	1: Ownership, without credit/mortgage 2: Ownership, with credit/mortgage 3: Rental agreement 4: Non-paying rental agent
Education: less than primary school	What is your highest educational level?	1: If without education, up to 4 years of primary school, 5 to 7 years of primary school 0: Otherwise
Education: primary		1: If primary school 0: Otherwise
Education: vocational		1: If vocational (3 years), 0: Otherwise
Education: secondary		1: If secondary special school (4 years), 0: Otherwise
Place of living	What is your place of living?	1: Urban 0: Otherwise
# Months of work experience	How many months of work experience?	Number: 0-182
# Years of work experience on the previous job	How many years of work experience on the job which precedes the current one?	Number: 0-45
Economy sector of previous job	What was industry sector of previous job?	1:Agriculture 2: Manufacturing 3: Services
Salary on previous job	Your salary on previous job before 2011?	Number, salary in RSD

Table A2.3: Programme impacts for treatment (type of programme: On-the-job training) and control groups

Participation to on-the-job training				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0. 524 0.491	0.426 0. 491	1.38 0.00
Employed, at any time	Unmatched ATT	0.361 0.382	0.359 0.400	0.03 -0.16
Unemployed	Unmatched ATT	0.115 0.127	0.216 0.109	-1.77* 0.22
Inactive	Unmatched ATT	21385.625 20840.909	21297.029 22181.818	0.03 -0.54
Average wage	Unmatched ATT	137.171 125.580	124.981 127.123	0.58 -0.06
Average wage per hour	Unmatched ATT	0.031 0.045	0.039 0.045	-0.21 0.00
Financial situation in 2011	Unmatched ATT	0.406 0.454	0.039 0.045	6.08 *** 3.19 ***
Current financial situation †‡	Unmatched ATT	0.500 0.500	0.099 0.136	5.49 *** 2.35 **
Chances to find a job†‡	Unmatched ATT	0. 524 0.491	0.426 0. 491	1.38 0.00

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using 3 (5) – point scale for subjective wellbeing (as in Table 7) we created dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals ***judging their personal as improved*** *because of program participation/period before 2011.*

Table A2.4: Programme impacts for treatment (type of programme: Other employment and self-employment subsidies) and control groups

Participation to employment and self-employment subsidies				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.592 0.560	0.242 0.280	4.07 *** 1.83 *
Employed, at any time	Unmatched ATT	0.741 0.720	0.580 0.480	1.65* 1.58
Unemployed	Unmatched ATT	0.222 0.240	0.401 0.480	-1.85 * -1.64 *
Inactive	Unmatched ATT	0.185 0.200	0.356 0.240	-1.81 * -0.29
Average wage	Unmatched ATT	35066.667 39090.909	21764.130 21981.818	2.24 ** 1.03
Average wage per hour	Unmatched ATT	177.123 178.094	125.609 124.649	1.59 0.68
Financial situation in 2011	Unmatched ATT	0.133 0.000	0.010 0.000	-2.73** 0.00
Current financial situation †‡	Unmatched ATT	0.267 0.091	0.011 0.00	4.75 *** 1.00
Chances to find a job†‡	Unmatched ATT	0.200 0.091	0.087 0.091	1.34 0.00

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using 3 (5) – point scale for subjective wellbeing (as in Table 7) we create dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals ***judging their personal as improved*** *because of program participation/period before 2011.*

Table A2.5: Programme impacts for treatment (type of programme: Education and training) and control groups

Participation to Education and training				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.304 0.333	0.242 0.143	0.67 1.31
Employed, at any time	Unmatched ATT	0.565 0.571	0.579 0.619	-0.14 -0.28
Unemployed	Unmatched ATT	0.522 0.524	0.401 0.333	1.14 1.16
Inactive	Unmatched ATT	0.174 0.143	0.356 0.524	-1.79 * -2.48 **
Average wage	Unmatched ATT	24571.428 25500	21297.029 20350	0.61 0.63
Average wage per hour	Unmatched ATT	131.165 141.335	124.981 109.943	0.17 0.65
Financial situation in 2011	Unmatched ATT	0.142 0.000	0.040 0.000	1.25 0.00
Current financial situation †‡	Unmatched ATT	0.286 0.250	0.040 0.000	2.82 *** 1.00
Chances to find a job†‡	Unmatched ATT	0.285 0.500	0.099 0.250	1.52 0.55

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using 3 (5) – point scale for subjective wellbeing (as in Table 7) we create dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals ***judging their personal as improved*** *because of program participation/period before 2011.*

Table A2.6: Programme impacts for treatment (type of programme: Training in entrepreneurship) and control groups

Participation to entrepreneurship training				
Variable	Sample	Treated	Controls	t-test
Employed	Unmatched ATT	0.444 0.424	0.249 0.454	2.54 ** -0.23
Employed, at any time	Unmatched ATT	0.639 0.606	0.571 0.606	0.79 0.00
Unemployed	Unmatched ATT	0.417 0.424	0.413 0.333	0.04 0.70
Inactive	Unmatched ATT	0.139 0.151	0.338 0.212	-2.45 ** -0.60
Average wage	Unmatched ATT	27538.461 30444.444	22411.364 16377.778	1.19 1.98 **
Average wage per hour	Unmatched ATT	134.456 148.595	131.919 78.876	0.09 2.46 **
Financial situation in 2011	Unmatched ATT	/	/	/
Current financial situation †‡	Unmatched ATT	0.230 0.222	0.000 0.000	5.09 *** 1.51
Chances to find a job†‡	Unmatched ATT	0.385 0.333	0.114 0.111	2.63 0.89

‡ Current subjective evaluation of financial situation as compared to the situation before the 2011.

Note: Instead of using 3 (5) – point scale for subjective wellbeing (as in Table 7) we created dummy variables. We define dummy variables that take the value of one if individuals report that their financial situation (chances to find a job) has strongly or somewhat improved, and take a value of zero otherwise. In this way, the ATT measure the change in the percentage share of individuals ***judging their personal as improved*** *because of program participation/period before 2011.*

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