

AN EVALUATION OF MODERNISED VOCATIONAL PROFILES IN SERBIAN SECONDARY SCHOOLS

Lara Lebedinski*

Abstract: *This paper studies the labour market outcomes of graduates of three modernised vocational profiles in Serbian schools six months after finishing secondary school. As part of this process existing vocational profiles were modernised and a close cooperation with companies where pupils had their practical training was established. We employ a difference-in-difference methodology to estimate employment effects and self-reported quality of modernised educational profiles. Our dataset consists of 32 schools and 723 interviewed pupils. Our findings suggest a higher subjective quality of innovated profiles especially how pupils perceive their secondary education experience. With regards to employment, we do not find a higher employment rate for graduates of innovated profiles, but we find that the quality of their jobs is higher compared to the comparison pupils. While short-term impacts are encouraging, the literature emphasises that one should consider also the long-term perspective especially because vocational skills can depreciate at a faster rate than general skills.*

Keywords: *impact evaluation, secondary school education, vocational education training*

JEL Classification: *I28, J24, M53*

1. INTRODUCTION

In 2014/2015 a certain number of vocational education training (VET) profiles were modernised in Serbian secondary schools with the support from the German Development Cooperation. This paper studies the labour market outcomes of the third cohort of pupils who attended modernised vocational education training (VET) profiles in Serbian secondary schools and the goal is to validate the findings from the first evaluation which included the second cohort.

* Institute of Economic Sciences, Serbia, lara.lebedinski@ien.bg.ac.rs

These modernised profiles differ from the classic vocational profiles and are called vocational profiles with elements of dual education.¹ They have been developed based on the qualification standards and they are outcome based. The amount of practical lessons with outcomes that need to be reached in the company have been increased compared to the classic vocational profiles. The most important difference is that it was envisaged that students who are going to companies for practical lessons were active participants in the working process and that they had a trained instructor supporting them in this process. These modernised profiles were available in 15 schools in 2016/2017.

The cohort that we study entered school in 2016/2017 and finished school in 2019/2020 and we study their labour market outcomes six months after school completion. We focus on the following three modernised vocational profiles in this paper: locksmith-welder, electrician, and industrial mechanic, all three profiles last 3 years. We study employment effects and hence we focus on the outcome of being employed and on other employment characteristics. In addition to this, we study the impact of the intervention on the quality of educational profiles. We rely on a difference-in-difference methodology where we compare treated pupils with other pupils in the same school as well as pupils from a different, but similar school. The impact evaluation for the second cohort of pupils who graduated in modernised profiles, found that they were more likely to be employed, they had higher incomes and they judged their quality of education higher than comparable pupils (Bachmann et al., 2019).

In terms of quality of modernised educational profiles, we find that some improvements in terms of subjective quality of modernised profiles and in particular, self-reported quality of education was rated higher in modernised profiles. Turning now to employment impacts, we find that treated pupils were not more likely to be employed 6 months after graduation than their comparable peers, but the quality of their jobs was higher. We find that treated pupils were more likely to get their first job in the training company and they were more likely to hold a written contract. They were also more likely to respond that their current work is related to VET and that their education was useful, but these outcomes do not reach statistical significance.

The remainder of the paper is structured as follows. In section 2 we summarise the context and relevant literature, in section 3 we proceed with the discussion of the methodology, we then describe the sample in section 4. In section 5 we discuss the results and section 6 concludes.

¹ More details about the program can be found in Bachmann et al. (2019).

2. CONTEXT AND LITERATURE

Youth in Serbia is considered a vulnerable group. In 2020, youth in the age group 15 to 24 in Serbia had an activity rate of 28.3% and the employment rate of youth stood at 20.8% (SoRS, 2021). These two indicators reflect the fact that a large share of this age group is still in education, however, the unemployment rate stood at 26.6% in 2020, much above the unemployment rate of 9% in the whole population suggesting that youth has difficulties on the labour market. The share of youth not in education, employment or training stood at 15.6% in 2020. Among youth, young Roma are considered especially vulnerable as their low educational background and possible discrimination makes it difficult for them to find good quality jobs.² A majority of the Serbian youth have completed secondary education (56.5%) and only every fourth young person has a tertiary degree (Marjanović, 2016). This study focuses on youth who have completed secondary education and hence is relevant for a large share of the young population. Interestingly, youth with secondary vocational education have a faster school-to-work transition than other youth (Marjanović, 2016).

In the recent years policy makers are promoting vocational education and they are emphasising the importance of practical training in education. More practical experience is expected to help pupils ease the school to work transition and this is confirmed in the literature (Ryan, 2001; Shavit and Muller, 2018; Biavaschi et al., 2018). However, recent research emphasises that the short-term gains in terms of faster school-to-work transition are offset in the long-term. Due to technological change, the focus on specific job-related or firm-specific skills during education can have negative impacts on later life employability. By studying IALS data for 11 countries, Hanushek et al. (2015) find support for this hypothesis and show that individuals with general education have difficulties at the beginning of their career, while their employability improves over time. In contrast, individuals with vocational education find a job easier at the start of the career, but they face more difficulties later as their skills depreciate. Hanushek et al. (2015) stress that vocational education and training cannot be a substitute for providing strong basic skills. If the educational system equips students with general cognitive skills, the vocational education and practical training will not be a hurdle in the future. Weber (2014) shows that for an equal level of schooling, human capital depreciation is higher for vocational studies than for academic studies.

² Some efforts in the educational system are made to improve the educational outcomes of Roma and these could show positive effects in the medium term. For further details see Battaglia and Lebedinski (2015, 2017, 2022).

However, there are studies which cannot confirm this stylised fact (Stenberg and Westerlund, 2015) suggesting that there are country specific factors at play too and that case studies can provide important policy implications. Overall, this literature suggests that when studying the impacts of vocational education on labour market outcomes, one should keep both the short- and long-term perspective.

3. METHODOLOGY

We aim to estimate the effect of attending a modernised profile on labour market outcomes of graduates. We refer to these pupils as the “treatment group”. Related, we call newly introduced (modernised) profiles in these schools the “treated profiles” and the collaborating school “treated” schools. In order to estimate the true impact of being in the treatment group, we select three comparable groups of pupils, so-called comparison groups:³

1. Comparison group 1: Pupils attending a non-treated profile in a treated school.
2. Comparison group 2: Pupils attending a profile similar to the modernised profile, who are attending a comparison school
3. Comparison group 3: Pupils attending a non-treated profile in a comparison school. Ideally, comparison group 1 and comparison group 3 profiles should be the same.

We rely on the so-called difference-in-difference methodology⁴ to estimate the effect of attending a modernised profile. We calculate the difference in terms of outcomes, e.g. employment, *within* the GIZ schools by subtracting the average outcome of pupils in comparison profiles from outcomes of pupils in treated profiles within the same treated school. Similarly, we calculate the difference in outcomes *within* comparison schools between the profile similar to the modernised profile (comparison group 2) and the comparison profile (comparison group 3). Finally, the two simple differences are subtracted from each other and by doing so we account for both the problem of pupil, school and area selection.

³ This paper uses the same methodology as the impact evaluation of the second cohort conducted by Leibniz-Institut für Wirtschaftsforschung (RWI) and FREN. More details can be found in Bachmann et al. (2019).

⁴ For more details about the methodology see Angrist and Pischke (2008) or Cunningham (2021).

An evaluation of modernised vocational profiles in Serbian secondary schools

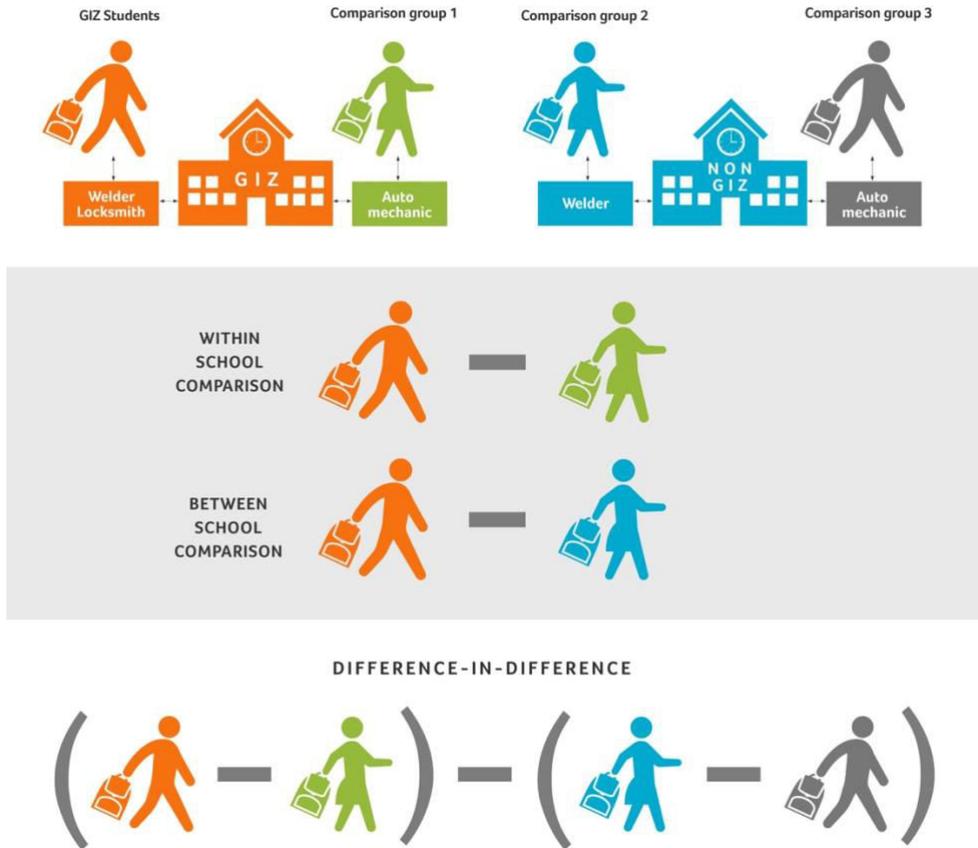


Figure 1. Illustration of difference-in-difference methodology

Source: Bachmann et al. (2019)

4. SAMPLE DESCRIPTION

As part of the impact evaluation, a baseline and a follow-up survey were conducted in schools with modernised vocational profiles and comparison schools. The baseline survey was conducted in spring 2019 and pupils were asked to give consent so that their data can be used for research purposes. In the case of pupils who were minors when the baseline survey was conducted, they were asked to provide the consent from their legal guardian. The follow-up survey was conducted in the winter 2020 over phone.

The sample includes 15 schools with modernised profiles and 17 comparison schools. For each of the 15 schools with modernised profiles, at least one comparable control school was selected.⁵ Each comparison school has at least one profile comparable to the GIZ modernized profile. In both treated and comparison schools we chose comparison profiles 1 and comparison profiles 3, that is profiles which are not necessarily related to the GIZ profile and these profiles serve the purpose to account for differences in school quality and local labour markets between treated and comparison schools.

Table 1 summarises the number of schools, profiles and pupils included in the survey. In total, all 15 schools with 3 new modernised profiles in 2016/2017 are in the sample. In treated schools, there are 17 treated class/profile combinations⁶ and 24 comparison class/profile combinations with 18 different profiles. In the 17 comparison schools, there are 21 different profiles and 38 different class/profile combinations.

Table 1. Number of schools, profiles, classes and pupils in baseline sample

School	Total	Treated		Comparison	
		T	C1	C2	C3
Profile					
Number of schools	32	15	15	17	17
Number of distinct profiles	31	3	18	8	13
Number of class/profile combinations	84	17	24	18	25
Number of pupils enrolled in last year	1,255	169	466	153	467

Source: Author's calculations from survey administered in the project

Table 2 summarises the response rates, the rejections rates and the unreachable rates based on the sample of pupils who completed a baseline questionnaire. Not all pupils who enrolled in the third year of school (last row in Table 1) completed a baseline questionnaire. The main reasons for not participating in the baseline questionnaire were the following: pupils were not at school at the time of the survey, pupils did not provide a consent from parents

⁵ The comparison profiles were selected with the help of the Institute for the Improvement of Education and Upbringing and the Institute for the Evaluation of Education.

⁶ We use the term class/profile to express that a profile is within a specific class. One class can have more than one profile, e.g. in one class it is possible to have one, two or three class/profile combinations.

(in case of minors) and some pupils refused to participate. Overall, we reached close to 63% of pupils from the baseline and 57.61% of pupils from baseline were interviewed in the follow-up survey. The rejection rate for the sample was 5.10% while the rate of pupils who couldn't be reached stood at 37.37%. The two reasons for not being able to reach a pupil were either that the phone number was incorrect or there was no response when the person was called. The unreachable rate among pupils from treated profiles stood at 30.18% and it was half of the unreachable rate of comparison profiles in both treated (33.26%) and comparison schools (45.75% and 41.11%).

Table 2. Follow-up sample size and response rate

Schools	Total	Treated		Comparison	
		T	C1	C2	C3
Profiles					
# Baseline questionnaires completed	1,255	169	466	153	467
# Follow-up questionnaires completed	723	115	287	72	249
Response rate	57.61%	68.05%	61.59%	47.06%	53.32%
Persons who rejected	64	3	24	11	26
Rejection rat	5.10%	1.78%	5.15%	7.19%	5.57%
Persons who were unreachable	468	51	155	70	192
Unreachable rate	37.37%	30.18%	33.26%	45.75%	41.11%

Source: Author's calculations from survey administered in the project

As a first step we examine whether pupils who were surveyed at baseline and follow-up differ in their socio-demographic characteristics from pupils surveyed only at baseline (survey dropouts). Ideally there should not be any differences between those two groups and we could infer that the sample of pupils included in the baseline and follow-up survey represents well the overall sample of pupils surveyed at baseline. Table 3 compares the gender, number of points for enrolment in secondary school, position of the enrolled school on wish list and mother's education between the pupils included in follow-up survey and those not included in follow-up. The comparison of baseline characteristics suggests that mother's education is somewhat higher among dropouts, but the difference is small and it is unlikely that this can have significant implication for the analysis.⁷

⁷ Note that even if the different education of the mother would impact our results, we know from theory that mother's education has a positive effect on both educational and labor market outcomes. Thus, we can infer that our results would be underestimated

Table 3. Background characteristics surveyed pupils and dropouts

	Baseline and follow-up	Baseline survey dropouts	T-Test/Chi-Square Difference
Female (%)	0.19	0.16	not sign.
Number of points for secondary school			not sign.
60-69 points	0.28	0.21	
70-79 points	0.29	0.31	
80 or more points	0.23	0.25	
Position of enrolled school on wish list			not sign.
First	0.63	0.59	
Second	0.17	0.18	
Third or higher	0.20	0.23	
Mother's education			*
At most primary school	0.16	0.13	
3 or 4 years secondary school	0.73	0.71	
College or higher	0.11	0.16	
Number of pupils	723	532	

Note: Difference: significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. Not sign. denotes not significant. T-test for Female and Chi-Square test for Points for secondary school, Position of enrolled school on wish list and Mother's education.

Source: Author's calculations from survey administered in the project

5. RESULTS

This section reports and analyses the available characteristics of pupils such as mother's education and their other characteristics at the end of primary school such as gender, number of points for secondary school enrolment and position of enrolled school on wish list. This analysis is required to understand to which extent the pupils in treated and comparison profiles are similar.

Table 4 compares the available background characteristics between treated and comparison profiles. In the columns (1) to (4), we report the characteristics for each of the four groups. The last column *Diff-in-Diff* reports the difference-

due to the bias resulting from having pupils with lower education of the mother in the subsample than in the overall sample.

in-difference estimator from a regression⁸ and this number reports the difference between the treated group and the comparison groups in the difference-in-difference setting. A statistically significant number in column *Diff-in-Diff* implies that the characteristics of the treated group is statistically different from the comparison groups. This structure of the columns will be used for all tables in the paper that analyse the effect of the program on the treated group.

A comparison of available background characteristics of pupils in treated and comparison profiles reveals that treated pupils were of somewhat lower quality than comparison pupils and they were less likely to enrol their first choice profile compared to comparison pupils. The other available characteristics capturing gender and educational background of the mother do not show up to be statistically significant between the treated and comparison profiles. Despite these small differences, it can be concluded that the quality of pupils in treated and comparison profiles is similar and that they are comparable.

Table 4. Background characteristics of treated and comparison pupils

School Profile	Treated		Comparison		Diff-In-Diff
	T	C1	C2	C3	
	(1)	(2)	(3)	(4)	[(1)-(2)]-[(3)-(4)]
Female (%)	0.04	0.24	0.03	0.24	not sign.
Number of points for secondary school					*
59 or less points	0.41	0.10	0.58	0.12	
60-69 points	0.45	0.25	0.25	0.25	
70-79 points	0.13	0.39	0.14	0.28	
80 or more points	0.01	0.26	0.03	0.36	
Position of enrolled school on wish list					**
First	0.58	0.54	0.60	0.74	
Second	0.19	0.20	0.18	0.12	
Third or higher	0.23	0.25	0.22	0.15	
Mother's education					not sign.
At most primary school	0.28	0.12	0.28	0.10	

⁸ We do not include control variables in the regressions due to a small number of observations and many missing values in the controls.

School Profile	Treated		Comparison		Diff-In-Diff
	T	C1	C2	C3	
	(1)	(2)	(3)	(4)	[(1)-(2)]- [(3)-(4)]
Secondary school (3 or 4 years)	0.68	0.75	0.69	0.75	
College or higher	0.04	0.13	0.03	0.15	
Number of pupils	115	287	72	249	
Total	723				

Note: significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. Not sign. denotes not significant. The impact estimates and confidence intervals are obtained by a linear regression model for Female and ordered logit for other outcome variables.

Source: Author's calculations from survey administered in the project

Quality of educational profiles

In a first step, we would like to assess whether the profiles that are used as comparison are objectively and subjectively of the same quality. It is expected that the modernisation of profiles raised their quality and thus it is expected that the higher quality is captured by at least some of the available measures.

Pupils were asked a series of questions on their opinion of the quality of the education, such as: what was the overall quality, how were the school and the company equipped, whether they felt prepared for work after finishing secondary school and if they would choose the same educational profile again. These questions are expected to reflect the subjective opinion of pupils on the quality of education. The results are reported in Table 5. In the columns (1) to (4), we report the characteristics for each of the four groups and the last column *Diff-in-Diff* reports the difference-in-difference estimator from a simple regression.

The findings reveal that all pupils in treated and comparison profiles finished the last grade by the time of the survey. This is not surprising as most dropouts in secondary school happen in the first grade. Among the interviewed students, the grade average in the third grade was somewhat smaller than 4 on a scale from 1 (worst) to 5 (best). Compared to control peers, treated pupils were less likely to respond that they plan to continue with their education within the next two years. The *Overall quality of secondary education* was rated higher by treated pupils. On the other hand, the other outcomes *School: Equipment and*

conditions, Company: Equipment and conditions, Readiness for work and Likelihood of choosing again the same profiles were not significantly different between the treated and comparison group. Both treated and comparison pupils said they would choose again the same educational profile if they were offered this choice.

Table 5. Subjective and objective measures of quality of education

School Profile	Treated		Comparison		Diff-In-Diff [[1)-(2)]- [(3)-(4)]
	T	C1	C2	C3	
	(1)	(2)	(3)	(4)	
Completed last grade	1.00	1.00	1.00	1.00	0.00
Grade average	3.77	3.91	3.71	3.99	13.39
Started education after finishing school	0.11	0.48	0.14	0.54	0.04
Plans to continue with education	0.32	0.48	0.48	0.40	-0.23**
Overall quality of secondary education	0.85	0.73	0.71	0.83	0.24**
Equipment and conditions of the school	0.73	0.63	0.60	0.56	0.07
Equipment and conditions of the company	0.92	0.82	0.92	0.82	-0.01
Readiness for work	0.86	0.68	0.74	0.63	0.07
Choose again same educational profile	0.82	0.75	0.78	0.78	0.06
Number of pupils	115	287	72	249	
Total number of pupils	723				

Note: significant at 10%, ** significant at 5%, *** significant at 1%. All scales are from 1 (worst) to 5 (best).

Source: Author's calculations from survey administered in the project

The difference-in-difference estimates from the last column in Table 5 are presented graphically in Figure 2. Overall, we find a statistically significant positive impact on treated pupils with respect to quality of their secondary education, treated pupils were 24 percentage points more likely to say that their education was good or very good. Other measures of school quality were higher for treated pupils, but they do not reach statistical significance. The other statistically significant difference is found for the outcome *Plans to continue with education*. Treated pupils were 23 percentage points less likely to express

an interest to continue with their education in the future. We believe that the reason for this response among treated pupils is that they felt better prepared for work and that there were better job opportunities available to them in their field of study.

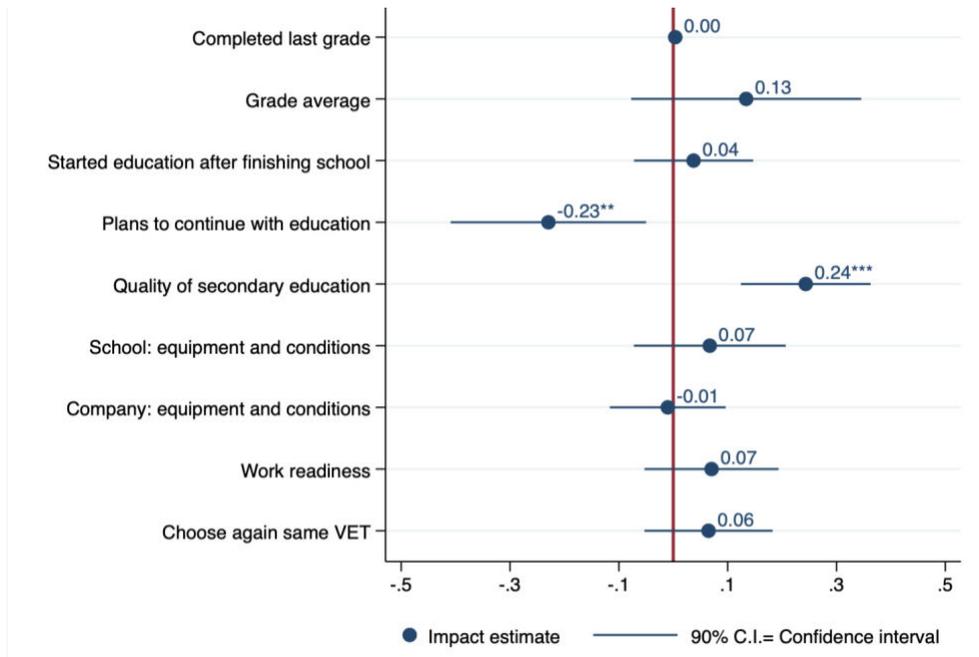


Figure 2. Impact estimates: Measures of quality of education

Notes: significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The impact estimate refers to the Diff-In-Diff column from Table 5.

Source: Author's calculations from survey administered in the project

Employment status and job search

We now assess the employment status in the sixth month after graduation. Table 6 shows whether pupils ever held a job and whether they are currently employed. We can see that among treated pupils 77% ever held a job and 65% are currently employed. We can also observe that the employment rates of the *Treated group* is similar to the *Comparison group 2*, while *Comparison group 1* and *Comparison group 3* pupils have lower rates of employment because these pupils attended four-year profiles and many of them continued their educational path. Both treated and comparison group pupils work, on average, somewhat more than the statutory working hours (40-hours week).

Table 6. Employment status

School	Treated		Comparison		Diff-In-Diff
Profile	T	C1	C2	C3	
	(1)	(2)	(3)	(4)	[(1)-(2)]- [(3)-(4)]
Ever employed	0.77	0.52	0.74	0.50	0.01
Currently employed	0.65	0.38	0.57	0.34	0.03
Number of hours worked	44.09	42.80	42.73	42.64	1.19
Number of pupils	115	287	72	249	
Total number of pupils	723				

Note: significant at 10%, ** significant at 5%, *** significant at 1%.

Source: Author's calculations from survey administered in the project

We compare characteristics of the employed individuals in both treated and comparison profiles and analyse whether job characteristics differ in Table 7. Most pupils in all groups are still employed in their first job. Almost half of all treated pupils (48%) got their first job in the company where the training took place, whereas this share is much lower in the comparison groups. Almost two thirds of treated pupils (64%) said that their job is work related, the numbers in the comparison groups are lower. Similarly, treated pupils gave higher scores than comparison group pupils for the usefulness of their VET education in their current job. In terms of salary, we observe that half of all treated pupils have a salary higher than 45.000 RSD while this share is lower for the comparison groups. We further observe that the *Treated group* has a similar distribution of net salaries to the *Comparison group 2* pupils, while *Comparison group 1* and *Comparison group 3* have larger shares in the lowest salary category (approximately one third of all employed). Most pupils do have a written fixed term contract. Finally, all four groups of pupils report high levels of satisfaction with their jobs.

Table 7. Job characteristics of employed

School Profile	Treated		Comparison		Diff-In-Diff
	T	C1	C2	C3	
	(1)	(2)	(3)	(4)	[(1)-(2)]- [(3)-(4)]
Still in first job after finishing secondary school	0.77	0.80	0.73	0.70	-0.06
First job in company where training took place	0.48	0.05	0.14	0.06	0.35**
Current work VET related	0.64	0.23	0.55	0.31	0.18
Current work VET use(ful?)	0.60	0.24	0.43	0.25	0.18
Monthly net salary					not sign.
Less than 35,000 RSD	0.21	0.35	0.14	0.34	
Between 35,000 RSD and 45,000 RSD	0.52	0.38	0.43	0.24	
More than 45,000 RSD	0.91	0.73	0.73	0.79	0.23**
Written contract (%)	0.26	0.12	0.21	0.19	0.12
Unlimited duration contract (%)	4.45	4.21	4.50	4.22	-0.04
Satisfied with job	0.21	0.35	0.14	0.34	
Number of pupils	74	110	41	84	
Total number of pupils	309				

Note: * significant at 10%, ** significant at 5%, *** significant at 1%. All scales are from 1 (worst) to 5 (best).

Source: Author's calculations from survey administered in the project

We now turn to presenting the impact estimates (last column in Table 7) in a graphical form and discussing them. Figure 3 displays the estimated impact for job conditions related to VET education. Compared to the comparison pupils, treated pupils were 35 percentage points more likely to find their first job in the company where they had their training during secondary school. They also reported a higher score than comparison pupils in terms of relatedness and usefulness of their VET education for their current job, but these numbers do not reach statistical significance.

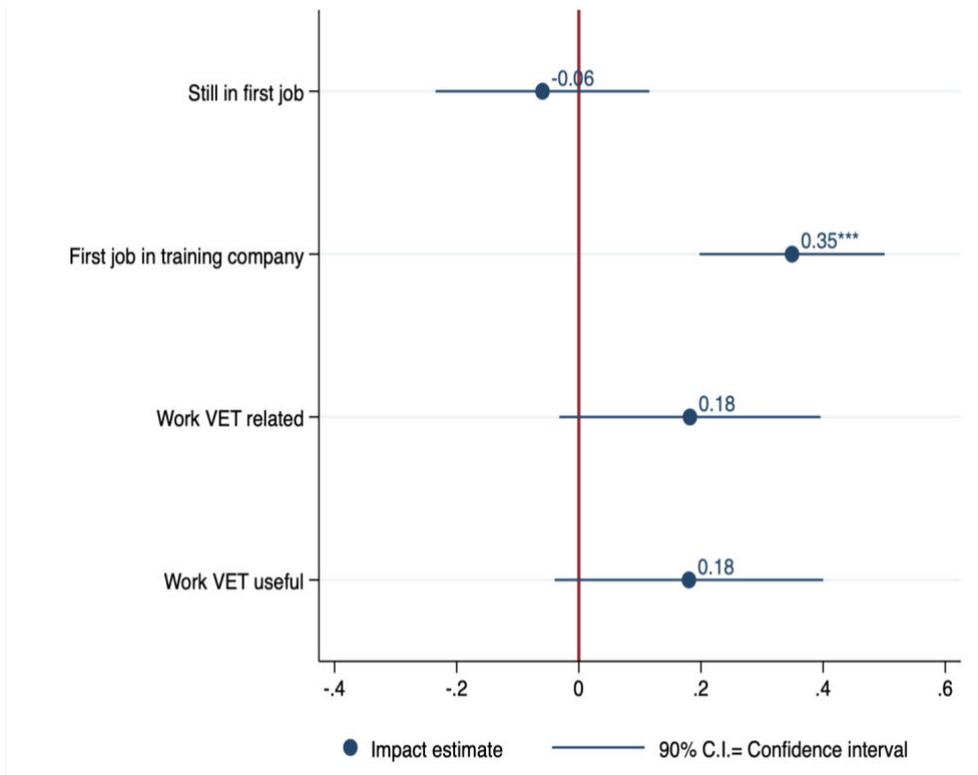


Figure 3. Impact estimates: Job conditions

Note: * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The impact estimate refers to the Diff-In-Diff column from Table 7.

Source: Author's calculations from survey administered in the project

In Figure 4 we present the differences between the different wage categories and we confirm graphically that wages are not different between the treated and comparison pupils.

We consider the contract conditions and job satisfaction in Figure 5. Treated pupils are 23 percentage points more likely to hold a written contract than comparison pupils. In terms of contract duration, we see that treated pupils are 12 percentage points more likely to have an unlimited contract, but this impact is not significant. Finally, treated and comparison pupils do not differ in terms of job satisfaction.

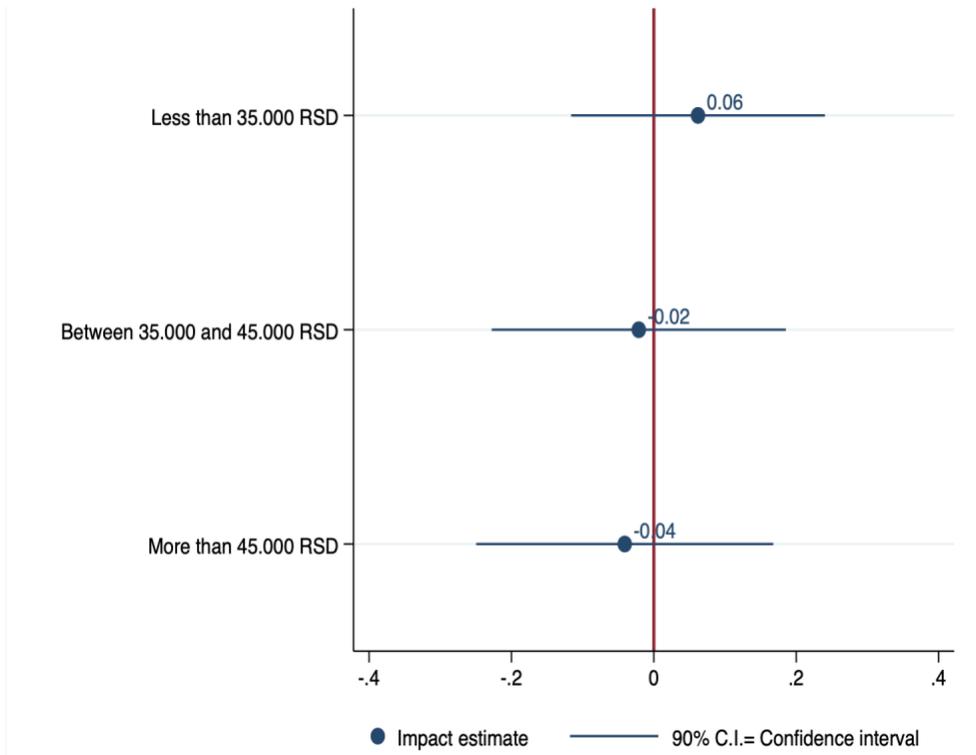


Figure 4. Impact estimate: Monthly wage

Note: significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The impact estimate refers to the diff-in-diff column from Table 7.

Source: Author's calculations from survey administered in the project

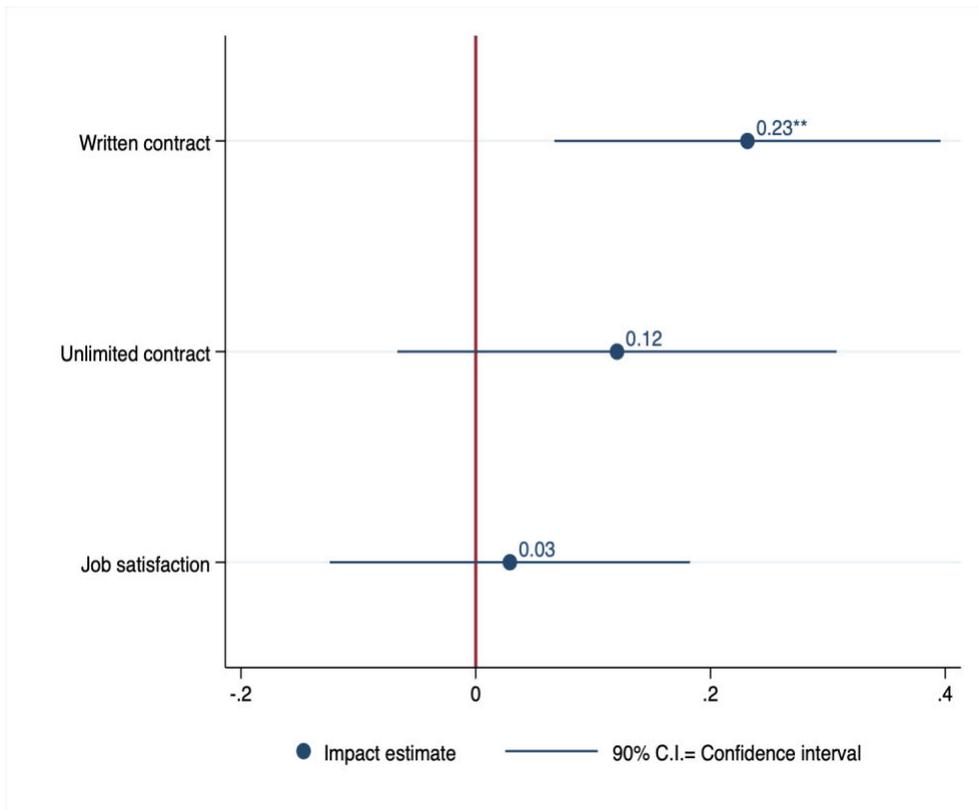


Figure 5. Impact estimates: Job conditions (contract and satisfaction)

Note: * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The impact estimate refers to the Diff-In-Diff column from Table 7.

Source: Author's calculations from survey administered in the project

Table 8 provides an insight into the share of the employed and unemployed/inactive searching for a job. Generally, graduates could be searching for a (better) job irrespective of their current labor market status. We do not find statistically significant differences in terms of the share of pupils searching for jobs between treated and comparison pupils. Among the 297 pupils not searching for a job, the two main reasons why they were not searching for a job are: (1) they are still in education or doing a practical training (65.32%), (2) they plan to start looking for a job at some later point of time (13.13%) and (3) they plan to start education or training (8.42%).

Table 8. Job search by employment status

School Profile	Treated		Comparison		Diff-In-Diff [(1)-(2)]- [(3)-(4)]
	Treated (1)	C1 (2)	C2 (3)	C3 (4)	
Searches for job - Employed	0.36	0.32	0.43	0.41	-0.07
Searches for job - Unemployed / Inactive	0.79	0.40	0.63	0.30	0.00
Number of pupils	115	287	72	249	
Total number of pupils	723				

Note: significant at 10%, ** significant at 5%, *** significant at 1%.

Source: Author's calculations from survey administered in the project

6. CONCLUSION AND DISCUSSION OF FINDINGS

This paper evaluates the impact of the introduction of modernised vocational profiles on pupils completing secondary school in Serbia. The analysis is based on originally collected survey data from the third cohort of the program.

The empirical analysis examines the effect of the modernisation of profiles on quality of educational outcomes, employment status and quality of jobs of the employed. We employ a rigorous difference-in-difference methodology that compares pupils of modernised profiles to comparable pupils within and across schools. Two main results follow from the analysis:

First, with respect to subjective measures of quality of education, we find that treated pupils were 24 percentage points more likely to give a good or very good grade for their secondary education, other important outcomes such as *School: Equipment and conditions*, *Readiness for work*, and *Likelihood of choosing again same educational profile* are larger for treated pupils, but the impact estimates do not reach statistical significance. Interestingly, treated pupils were 23 percentage points less likely to say that they plan to continue their education, presumably because they perceive they have the required skills for the labor market and/or they are happy with their current work.

Second, we do not find differences on employment rates between treated and comparison pupils. However, the bond between secondary school and thus pupils and the companies is stronger for treated pupils. This is reflected by the fact that treated pupils are 35 percentage points more likely to get employment

at the company where they did their practical training during school. Treated pupils are also 23 percentage points more likely to have a written contract and thus they are more likely to be formally employed. While the outcome of having an unlimited contract does not reach statistical significance, this outcome is larger for treated pupils. The relatedness and usefulness of their current work with respect to their educational background was graded higher by treated pupils, but these outcomes do not reach statistical significance. We do not find that the modernization of profiles affected the wages of treated pupils and their levels of satisfaction with the job. We do not find differences with respect to job search behavior between treated and comparison pupils

Overall, the rigorous analysis shows that treated pupils judged the quality of their education somewhat better. While the employment rate was not affected by the program, the jobs that they got were of higher quality than the jobs of their similar peers. The positive impacts from the evaluation of the second cohort are confirmed also for the third cohort.

The literature emphasises that evaluations of vocational education should also take a long-term perspective. The education should provide strong basic skills and practical training in vocational education should not be increased at the cost of general education. This is especially important as previous research has shown that vocational skills depreciate at a faster rate than general skills.

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