2.4 THE EFFECT OF THE 2013 VOCATIONAL EDUCATION REFORM ON STUDENT ACHIEVEMENT

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Introduction

In the autumn of 2013 a reform of the Hungarian vocational education system took place, the main purpose of which was to make vocational education more practically oriented. The reform affected vocational schools, i.e. the upper-secondary track without the final maturity exam (*érettségi vizsga* in Hungarian). These changes came with the reduction in the number of theoretical classes, especially in the first two years. The higher tracks, general secondary education and vocational secondary education were only slightly or no affected by the reform.

The bill that established the reforms was passed in 2011 and started to have an effect from September 2013.[1] The earlier four or five years long vocational programmes which did not have the final maturity exam at the end of the programme were replaced by three year-long dual educational programmes, in which students had practical classes from the onset, and the opportunity of an apprenticeship contract with a firm from 9th grade was created.[2] Therefore, time spent in practical vocational training was increased. However, both vocational and general theoretical education has decreased, and especially the number of general education classes has lessened significantly (*Bükki et al*, 2014). Following the reform, the name of the vocationally oriented tracks was changed.

Before the 2013 reform, in the four year-long programme, general education subjects took place only in the first two years, but in those two years both 'Mathematics' and 'Hungarian Language and Literature' were taught in 3 classes of each per week, and foreign language and science were included in the curriculum as well. Following the 2013 reform in 9th grade both 'Mathematics' and 'Hungarian Language and Literature' had only 2 classes of each per week, 1 class of each per week in 10th grade, and in the final, 11th grade they were not included at all in the curriculum.[3] So, following the reform students had 1 less Maths and 1 less Literature class per week in 9th grade, and 2 less of each in 10th grade compared to the pre-2013 levels.

As communicated to the public, the primary goal of the reform was for the vocational students to gain more experience in real-life workplaces, so they can enter the labour market more easily after their education. During the planning of the reform the German vocational education system was taken as the example, where the number of general, academic classes is also minimal, and the emphasis is on practical training, which is mostly done by firms (*Dogossy*, 2016). It is important to note however, that while German students start their vocational education after attending 7155, but in certain regions even 7950

1 The CLXXXVII. Law of 2011 on vocational education.

2 The reform of 2013 was not unprecedented, in a share of vocational schools in 2010 the maintainer could have introduced so called "early vocational" programmes, which lasted also for 3 years and had a similar structure to the one that was introduced in the reform.

3 CXC law of 2011 on public education, 8th supplement of the 51/2012. (XII. 21.) EMMI regulation.

general education classes, this number in Hungary is only 5742 (*Hajdu et al*, 2015). So, a Hungarian student participating in vocational education spends about two or three years less with general education subjects, than his German counterparts. Another goal of the reform was to create an educational structure more in line with the demands of the economy, to have a more transparent and cost-effective operation, and to keep the unprivileged students in schools and to help them catch up. However, keeping the youth in schools was made harder by another reform, in which the government lowered the compulsory schooling age from 18 to 16 after 2012 for those who had completed 9th grade.[4]

According to the literature important differences might arise if they improve occupationally specific skills of students graduating from public education at the expense of their general skills. Although they may find a job that fits to their qualifications more easily when they enter the labour market (*Level et al,* 2014, *Ryan*, 2001, *van der Velden–Wolbers*, 2003), this advantage in the long run is overturned and those with a more general education find themselves in a better position (*Hanushek et al*, 2017). Due to the lack of general skills, graduates won't be able to adapt to the changing labour market environment, so they become unemployed more easily, or can obtain a job only for lower wages. However, the lengthening of the duration of secondary educational vocational programmes doesn't necessarily provide benefits even in a younger age group (*Oosterbeek–Webbink*, 2007, *Hall* 2016).

In this subsection we examine the effect of the 2013 reform on mathematics and reading by comparing the changes of test scores between the 8th and 10th grade of cohorts before and after the reform. Reading and mathematics competencies are important elements of general skills, so their decrease might mean – according to the literature – that in the long run the labour market position of the given students might worsen.

Analysis

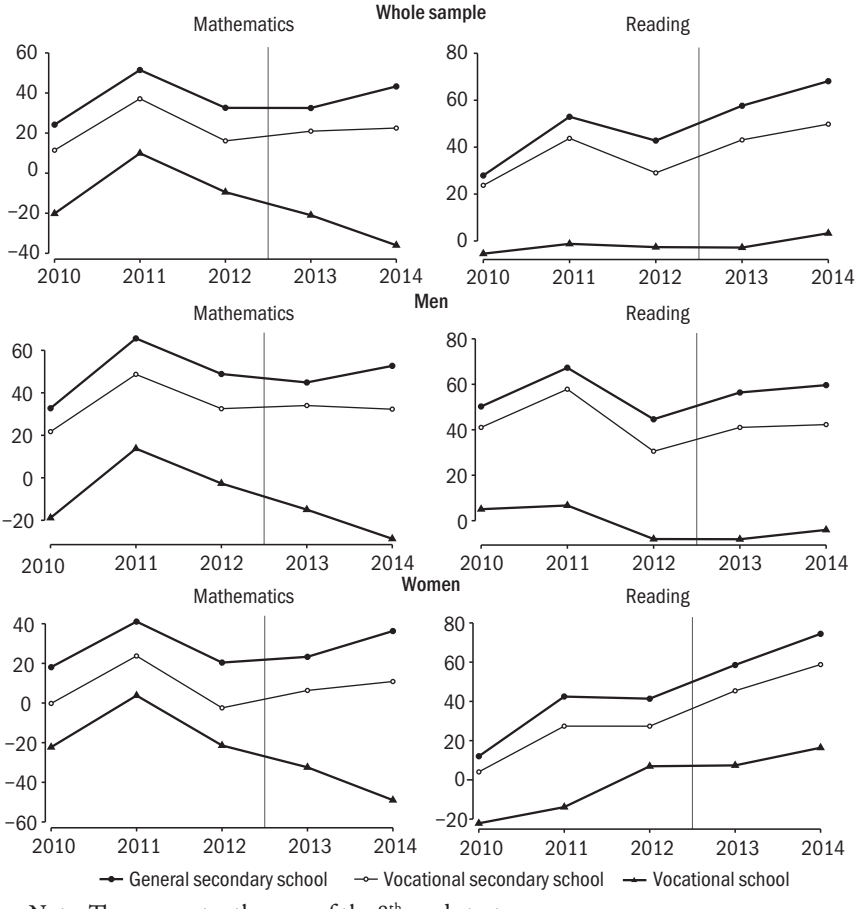
For our analysis we use 8th and 10th grade test scores from the National Assessment of Basic Competencies programme from 2010 until 2017. From 2010 the results were evaluated on the same scale, which makes the comparison of different years' results possible. The effect of the reform is examined on the cohorts which commenced their 8th grade between 2010 and 2014. The average score in the whole sample every year is around 1600, and the standard deviation is around 200.

Our independent variable is the change in mathematics and reading scores between 8th and 10th grade. Our sample also contains students who had to repeat a year on 9th or 10th grade and had to do it only once. In the case of students repeating a year in the 10th grade we considered their earlier test result. We excluded vocational education programmes for special education needs students from the sample.

4 CXC law of 2011 on public education.

Figure 2.4.1 shows the average score changes from 8th to 10th grade for both mathematics and reading for the whole sample, and then divided for men and women. After the introduction of the reform the difference between those, whose programme concludes with a maturity exam and those whose doesn't, grows already in the first year. The effect of the reform is more apparent with mathematics test scores, where the score change of those in a vocational school is not only smaller compared to students in the other two educational forms (vocational secondary and general secondary school), but it is becoming smaller even to previous values of this school type. It can be easily observed from the figure that reading and mathematics points of cohorts affected by the reform worsen compared to the students of the other two schools.

Figure 2.4.1: Average test score change between the 8th and 10th grade for different school types. 2010–2014



Note: The year notes the year of the 8th grade test.
Source: Authors' compilation.

We are going to estimate the effect of the reform by difference-in-differences method. In our analysis we are going to compare the vocational school students' (treated group) performance change between the pre and post-reform years with the performance change of the vocational secondary school students (control group) in the two periods. (We basically get the same results if we include general secondary school students in the sample.) Supposing that all other factors affecting the test scores – including all the other education policy changes – had a similar effect on the students in the two tracks, the estimates show the causal effect of the reform.

The dependent variable is the test score change, i.e. the difference of 10th and 8th grade points. The main explanatory variables are the dummy variables noting the vocational school, the after reform period, and the interaction of these two. As a control variable we use in our estimation the first, second, and third power of the 8th grade mathematics and reading test scores, the gender of the students, whether the students have special educational needs or have a disadvantageous status, schooling of mother and father, the number of books at home, and fixed effects concerning the cohorts and schools. Apart from the test scores every variable is a dummy variable in the model. Missing values were replaced by typical values and the missing values are noted by a separate dummy variable. The effect of the reform is shown by the interaction variable 'vocational school x reform' (Table 2.4.1).

Table 2.4.1: The effect of the vocational school reform on test score change between the 8th and 10th grade

	Whole sample		Men		Women	
	mathematics	reading	mathematics	reading	mathematics	reading
	(1)	(2)	(3)	(4)	(5)	(6)
Vocational school × Reform	-19.48***	-9.823***	-15.40***	-4.094**	-23.81***	-13.28***
	(1.733)	(1.494)	(2.068)	(1.852)	(2.581)	(2.105)
Reform	14.17***	11.57***	8.638***	-4.333***	22.19***	31.78***
	(1.203)	(1.041)	(1.496)	(1.354)	(1.679)	(1.397)
Vocational school	-64.97***	-73.41***	-74.53***	-81.11***	-49.82***	-62.53***
	(1.160)	(1.012)	(1.372)	(1.258)	(1.643)	(1.343)
R^2	0.362	0.308	0.337	0.321	0.415	0.320
Number of observations	199,975	200,097	112,754	112,780	87,221	87,317
Number of schools	25,477	25,482	19,479	19,482	17,143	17,150

Note: Unweighted OLS estimates.
Control variables: first, second, and third power of the 8th grade test scores in both fields, gender, special educational need and disadvantageous status, categories of schooling of mother and father, categories of the number of books at home, categories of the 8th grade test's year, and the dummy variables noting the missing values of the control variables.
Standard errors clustered at the school level in parenthesis.
Significant at a ***1 per cent, **5 per cent, *10 per cent level.
Source: Authors' compilation based on *NABC* data for 2010–2017.

The results confirm our conclusion, drawn based on *Figure 2.4.1.* After the reform test scores decreased in both fields, but the reform had a bigger effect on maths score changes.

Test score change of vocational schoolers between 8th and 10th grade was 19.5 points smaller due to the 2013 reform. For men this change was slightly smaller (–15.4 points), for women it was bigger (–23.8). The reform had a smaller effect on the change of reading scores, –9.8 points on the entire sample, –4.1 for men, and –13.3 for women. The cause of this difference can be that students use their reading skills more outside the classroom than their mathematics skills, so supposedly school has a stronger effect on the latter.

According to the estimated effects we can say that before the reform the average difference between vocational schools and vocational secondary schools in mathematics was approximately 180, in reading 200 points. Our results suggest that due to the effect of the reform this difference grew by more than 10% in mathematics, and by 5% in reading.

The estimation of the reform's effect can be biased, since from 2012 the compulsory schooling age was decreased from 18 years to 16 years, and therefore the composition of students in 10th grade could have changed.[5] We can expect that mostly vocational school students older than 16 years old will fall out of school due to this change. Since students with worse skills have a higher chance of dropping out, we can expect the average scores of vocational schoolers to be better after 2012 than before. So, this change can distort the estimations.

However, data shows that this is not behind the results. The reduced compulsory schooling age was introduced first for those entering secondary education in 2012. So, the cohort that was in 8th grade in 2012 was affected by the lowered compulsory schooling age, but not by the vocational education reform. Recalculating the estimations for the sample including only 2012 and 2013 cohorts yields basically unchanged results, so the reform decreased students' performance even with the same age limit.

Conclusions

To sum up, we can say that the 2013 reform worsened the mathematics and reading skills of those studying in vocational education concluding without the maturing exam, especially in mathematics and to a greater extent in the case of women. Although our analysis cannot answer the question whether these students can find a job more easily after school, we see that after two years of vocational education the general skills of students are worse after the reform than before, and that this effect is significant. Our interpretation is that this deterioration happened due to the decrease in general education classes. Furthermore, it is likely that even if the more practice-oriented education helps students to find a job quickly following graduation, the decreasing general skills will worsen their position on the labour market in the long run.

5 The estimation might be biased due to a change in changing school choice decisions, and therefore the composition of students in vocational and mixed schools changed significantly However, this is not very likely since none of the average values of individual characteristics changed to a notable extent.

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