

4 LABOUR SHORTAGE AND VOCATIONAL EDUCATION

4.1 VOCATIONAL TRAINING

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The first plans concerning the restructuring of vocational education and training and higher education had emerged several years before complaints of shortage intensified. These plans – regardless of the reasons for which they were developed – however, were entirely in accordance with the criticism of education voiced by the Chamber of Commerce and Industry and other entrepreneurial forums concerning severe skilled worker shortage and also with their recommendations on increasing the importance of vocational training. Before starting to analyse the diagnosis and therapy developed by the Chamber and the Ministry, it is worth discussing three important but probably less well-known facts.¹

Vocational training losing importance?

Contrary to popular belief, secondary vocational education and training did *not* lose significance following the political changeover of the 90s, only its structure altered. Uncertified vocational training (VET) receded to the same extent as vocational secondary education (combined with a Matura and referred to as VSS henceforth) expanded.² As a result of the two trends the proportion of young people in an age-group entering the labour market with a vocational qualification has been roughly stable over the past twenty years. The proportion of young people with VET qualification dropped from 35–36 per cent to 32–33 per cent, while the share of those passing a vocational qualification in VSS (and some of them entering higher education and obtaining a degree) was higher in 2013 (nearly fifty per cent) than at any time since 1985, the start of the surveys of the study *Hajdu et al* (2015).

VET graduates in the labour market: who are they?

In the past twenty-five years, the occupational composition of VET graduates has changed considerably. A significant proportion of them already worked as unskilled or semi-skilled workers twenty years ago: according to the 1996 Wage Survey, 27 per cent of them worked as assemblers, machine operators or in elementary occupations. However, this had increased to 46 per cent by 2016 (including public works participants) in the entire economy and 52 per cent (excluding public works participants) at companies with more than one hundred employees, according to the Wage Survey.

Table 4.1.1 presents the recent developments of the trend in detail. The proportion of VET graduates working in public works schemes – primarily

¹ The chapter relies strongly on *Hajdu et al* (2015).

² The two main school types are referred to by their better-known names: *vocational school* (*szakiskola*) and *upper-secondary vocational school* (*szakközépiskola*). However, officially the former has been renamed as upper-secondary vocational school (*szakközépiskola*) and the latter as specialised upper-secondary general school or specialised gymnasium.

unskilled work – increased from 2.4 per cent to 6.2 per cent between 2011 and 2016. The share of those working in the primary labour market in elementary occupations, as assemblers or machine operators also rose slightly, while the share of those employed as skilled workers decreased from 48–50 per cent to 42–43 per cent. 8–10 per cent of these worked as technicians or in a clerical, office job during the whole period reviewed. Overall, the majority of graduates from VET are at present employed as unskilled or semi-skilled workers.

Table 4.1.1: The occupational composition of graduates from VET and VSS in 2011–2016, percentage

	2011	2012	2013	2014	2015	2016
Public works participant						
VET	2.4	3.7	5.4	3.0	5.7	6.2
VSS	1.1	1.5	2.1	1.1	2.7	2.7
Assembler, operator, elementary occupations						
VET	39.9	37.3	41.4	40.2	43.1	41.6
VSS	18.0	18.6	19.5	17.7	19.0	18.4
Skilled worker						
VET	48.0	50.0	45.0	47.2	43.2	42.3
VSS	24.1	20.6	23.5	25.8	24.4	25.3
Other						
VET	9.7	8.8	8.2	9.6	8.0	9.9
VSS	56.8	59.3	54.9	55.9	53.9	53.2
Total						
VET	100.0	100.0	100.0	100.0	100.0	100.0
VSS	100.0	100.0	100.0	100.0	100.0	100.0
The share VSS graduates among skilled workers	22.6	18.3	23.1	24.8	25.0	25.9

Source: Wage Surveys.

The figures are much better in the case of VSS graduates: the proportion of those participating in public works schemes is still very low and the proportion of those working as assemblers, operators and unskilled workers did not increase either. The share of those in skilled worker positions slightly increased, while the share of those in white collar jobs slightly decreased. As the final row of the table shows, the share of those with a Matura among skilled workers has reached 25–26 per cent in recent years.

The market value of a vocational qualification with or without a Matura

Even though employers state they primarily need vocational graduates who underwent practical training and were not burdened with the task of preparing for a Matura, they do not value such employees even in manual occupations as much as VSS graduates.

As *Table 4.1.2* indicates, as a result of the continuously increasing minimum wage, the wage advantage of all more educated groups decreased in 2011–2016 compared to those completing 0–8 grades. However, what is more significant for our analysis is the difference between the two major groups participating in manual skilled work.

Table 4.1.2: The wage advantage of VSS graduates in various occupational groups compared to those with a lower secondary qualification at most (0–8 grades) in 2011–2016 (percentage)

Qualification and occupation	2011	2012	2013	2014	2015	2016
Operators, assemblers and elementary occupations						
VET	9.2	5.7	7.9	7.3	4.4	4.9
VSS	25.6	21.1	18.0	17.8	18.5	17.6
Skilled work						
VET	12.2	9.2	11.8	13.3	10.9	10.6
VSS	25.1	24.6	23.2	20.7	20.9	21.7
Technicians, clerks, office jobs						
VET	39.2	32.9	36.1	30.9	35.1	37.9
VSS	61.4	50.5	52.2	46.6	55.5	50.9
Upper-secondary general school graduates	49.3	41.9	40.0	36.5	40.6	40.2
Higher education graduates	174.8	151.2	152.3	143.8	157.1	147.6

The figures show the wage advantage of those with various qualifications working in various occupational groups compared to those with a lower-secondary qualification at most (grades 0–8) in the primary labour market as a percentage. Wage advantages were calculated by regression models, controlled for gender, labour market experience, industries and sectors (private versus public sector), not including public works schemes, as a percentage, thus if the difference in logarithm is b , the figure in the table is e^b . All estimated parameters are significant at a 0.01 level, and the t-values are two or three digit figures.

Source: Wage Surveys.

The wage advantage of VSS graduates in *elementary occupations* was 16 percentage points over VET graduates in 2011 and was 12 percentage points at the end of the period; their wage advantage in *skilled labour* did not change much over the period (13 and 11 percentage points respectively) and decreased significantly only in *white-collar* occupations, from 21 to 13 percentage points. We did not include public works schemes in the comparison, since wages are not set by the market in that sector.

The differences at the end of the period are presented in more detail in *Table 4.1.3*. Overall, VSS graduates earned 27–28 per cent more than VET graduates in 2016. It was partly due to their more favourable occupational composition. When controlling for occupations (four-digit HSCO categories), there is still a roughly 6 per cent wage advantage, and when focusing on skilled work, the advantage is 8–10 per cent. When looking at the difference between those working at the same *employer*, the wage advantage is 15–16 per cent, partly because upper-secondary vocational school

graduates are more likely to be recruited or promoted to better paid jobs at individual firms.³

Table 4.1.3: The proportions of vocational school and upper-secondary vocational school graduates and the wage advantage of the latter over the former in 2016

Wage advantage	VET	VSS	Wage advantage of VSS over VET	95% confidence interval ^a	Number of cases
	Proportion, per cent				
Total wage advantage	22.2	18.4	27.3	26.6–28.0	255,327
Within occupations	22.2	18.4	6.0	5.5–6.5	255,327
– excl. HSCO 8–9 ^b	17.9	21.4	8.8	8.1–9.5	183,179
Within firm	22.2	18.4	15.6	15.3–16.2	255,327
In specific occupations					
Locksmiths, machining workers, welders ^c	70.0	13.7	12.9	9.8–16.0	5,618
Industrial mechanics ^d	49.5	25.4	11.9	8.3–14.0	5,798
Construction mechanics ^e	65.5	16.0	12.4	8.7–16.4	2,979
Social workers	9.6	25.8	25.1	18.2–33.5	860
Shop assistants ^f	40.1	35.4	5.1	4.0–6.2	9,860
HSCO 8–9 ^g	36.2	13.4	11.6	10.4–13.0	57,849

^a We can claim, with a less than 5% risk of error, that the wage advantage falls within these limits.

^b HSCO 8–9: Assembler, machine operator, other elementary occupations.

^c Locksmiths, machining workers, welders: locksmiths 50%, machining workers 22%, welders 18%, other 10%.

^d Industrial mechanics: motor vehicle mechanics 54%, electrical mechanics 19%, machinery repairmen 10%, other 17%.

^e Construction mechanics: electrician 41%, plumbers and gas fitters 35%, other 24%.

^f Shop assistants: shop assistant 81%, cashier 12%, other 7%.

^g Assembler or operator 50%, in elementary occupations 50%. Excluding public works participants.

Methods: the wage advantage was estimated by regression equations, which contained the following control variables: gender, labour market experience and its square as well as dummy variables standing for four-digit HSCO codes and anonymised employer codes when calculating within-occupation and within-firm wage advantages. The difference in percentage is e^b if the estimated logarithmic difference is b .

Source: Wage Survey, 2016.

When observing the most popular blue-collar occupations, it is conspicuous that upper-secondary vocational school graduates are employed in this segment at the same rate as their proportion in the total workforce. Their wage advantage as locksmiths, machining workers, welders as well as industrial and construction mechanics is 12–13 per cent, as social workers it is 25 per cent and even as shop assistants it is 4–6 per cent. Their wage advantage is also significant, 10–13 per cent, when working as unskilled or semi-skilled workers.

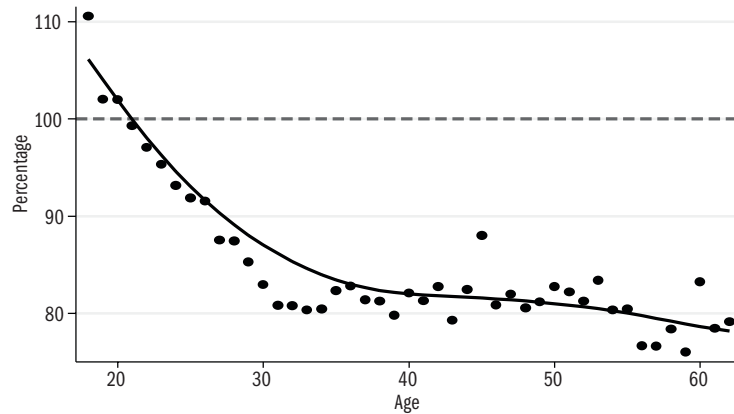
The wage advantage strongly depends on age. VET graduates entering the labour market earn somewhat more than VSS graduates of the same age but they already have a substantial wage disadvantage at the age of 25. This is

³ The confidence intervals are presented because the number of cases is low due to the breakdown to occupations.

not a new phenomenon and does not indicate the (allegedly) improving market perception of VET graduates: similar curves are presented by Hajdu *et al* (2015) for other years following the political changeover.

The wage disadvantage of vocational school graduates increases by age, which indicates the lack of transferability of skills acquired in vocational schools: because of competences improving adaptability, the Matura loses its market value at a slower pace than a vocational school certificate (*Figure 4.1.1*).

Figure 4.1.1: The wage of VET graduates compared to the wage of VSS graduates by single years of age in 2016



Source: Wage Survey, 2016. The smooth curve is estimated with non-linear (lowess) regression.

That the fast depreciation of the VET certificate is due to the low levels of cognitive skills is confirmed by not conclusive but important direct evidence from the ALL Survey (Adult Literacy and Lifeskills Survey), in which Hungary participated in 2008.⁴

Table 4.1.4 presents how the reading, literacy, document interpretation and simple numeracy skills assessed by ALL tests change by age among Hungarian manual workers who accomplished 11 or 12 grades. (The survey does not identify the VET qualification but typically workers with 11 completed grades have graduated from there, while those who completed 12 grades and employed as manual workers typically graduated from a VSS). The coefficients show by how many points the test results decreased, on a 0–500 scale, if the respondent is one year older.

The assessed basic skills deteriorate by age in both groups but the rate of deterioration is much greater among workers with a VET certificate. Among the former, test scores are typically 0.4–0.5 points lower when respondents are a year older, while among the VSS graduates, all but one effect are below 0.3, half of them are below 0.2 and half of the cases are not even significant at a 10 per cent level, and none of them is significant at a 1 per cent level. The

⁴ The evidence would be conclusive only if instead of a cross-sectional study, we were able to follow the changes in the skills of persons with differing qualifications for 30–40 years.

statistical tests presented in the last and the last but one column disaffirm the identity of the slope of the age-score curves in all cases.⁵

Table 4.1.4: Changes in ALL test scores according to age among manual workers who completed 11 or 12 grades

Dependent variable: test score	Grades completed: 11 grades		Grades completed: 12 grades		Wald F	Sign.
	Coefficient	t-value	Coefficient	t-value		
Literacy test						
1	-0.43***	3.78	-0.17	1.37	19.5	0.0000
2	-0.44***	3.94	-0.26**	2.30	10.7	0.0011
3	-0.36***	3.16	-0.10	0.87	19.3	0.0000
4	-0.45***	3.92	-0.23*	1.93	15.9	0.0001
5	-0.42***	3.81	-0.19	1.64	16.7	0.0000
Document interpretation tests						
1	-0.44***	3.55	-0.23*	1.73	10.1	0.0016
2	-0.48***	4.01	-0.31**	2.50	8.4	0.0039
3	-0.47***	3.89	-0.29**	2.27	8.7	0.0033
4	-0.47***	3.93	-0.27**	2.18	10.9	0.0010
5	-0.40***	3.23	-0.26**	2.08	4.5	0.0340
Numeracy skills tests						
1	-0.28***	2.61	-0.06	0.50	15.6	0.0001
2	-0.40***	3.56	-0.12	1.05	24.4	0.0000
3	-0.44***	4.12	-0.24**	2.17	11.8	0.0006
4	-0.32***	2.96	-0.09	0.79	17.6	0.0000
5	-0.17**	2.56	-0.05	0.41	16.1	0.0001

Note: Adult Literacy and Lifeskills Survey (ALL, 2008), Hungarian subsample, 1206 persons.

Source: Author's calculation using the microdata of the Hungarian subsample of the ALL survey.

The left-side of the equations contained the score of one of the tests, while the right side contained the interactions of age and educational attainment level (11 or 12 grades). The coefficients show by how many points the test results decreased, on a 0–500 scale, at a given educational attainment level if the respondent is one year older. The sample includes persons who completed 11 or 12 grades and were working as manual workers at the time of the survey (their ISCO1 HSCO1 code was higher than 4). The standard errors, used for the t-values were estimated using the 30 replication weights included in the survey and the jackknife method. The Wald test measures at what significance level the coefficients of the two groups may be considered different.

Only part of the sample lends itself for analysing how the measured cognitive skills are valued by the market, because data on wage is only available for half of the respondents of the Hungarian sample of ALL.⁶ According to the regression on available data (Table 4.1.5), the higher score was associated with higher wages, even when controlling for education attainment and age: the

⁵ For more details on the ALL survey, see *OECD and Statistics Canada* (2005, 2011), *Statistics Canada* (2011), Köllő (2014).

⁶ Data on wage is lacking more often in the case of men but its availability is independent of age and educational attainment level.

elasticity of wage to the test score is positive, with the point estimate being 0.43 (although the confidence interval is rather wide: 0.05–0.8).

Table 4.1.5: The impact of the average score achieved in ALL on monthly wages among Hungarian workers who completed 9–12 grades

Dependent variable: the logarithm of monthly wage	Coefficient	t-value	Confidence interval
The logarithm of average test score	0.43	2.2	0.05–0.80
Educational attainment (year)	0.11	3.3	0.04–0.18
Labour market experience (year)	0.07	3.3	0.02–0.07
-its square (x100)	-0.05	3.2	-0.08–0.02
Constant	7.00		

Note: The number of cases is 619 and the fit of the function is 0.045. The sample includes persons who completed 11 or 12 grades and were working as manual workers at the time of the survey (their ISCO1 HSCO1 code was higher than 4). The standard errors, used for the t-values were estimated using the 30 replication weights included in the survey and the jackknife method. Confidence interval: we can claim, with a less than 5% risk of error, that the coefficient falls within these limits.

Source: Author's calculation using the microdata of the Hungarian subsample of the ALL.

On the reforms of vocational education

The above findings call into question whether Hungarian companies have a considerable excess demand for VET graduates in order to fill skilled worker jobs. At present, half of vocational school graduates are employed as unskilled or semi-skilled workers. Wage levels do not indicate that firms would value VET graduates more than VSS graduates in any occupations. On the contrary, the latter are better paid even in traditional skilled manual occupations (machining worker, locksmith, welder, mechanic) by 12–13 percentage points, and nor was the situation affected by the slight increase in the relative wages of skilled workers with a vocational school certificate after 2011.

This applies to the workforce trained in the *current* system and to the *current* standards of vocational training, and apparently the corporate sector does not believe in securing better employees from this supply by raising wages.

The scepticism towards the average quality of vocational school graduates of the current system is highly justified. VET schools perform worse than VSS and upper-secondary general schools in developing the most important basic skills of pupils, even when controlling for test scores achieved in lower-secondary education and for social background. In the case of pupils with average skills, in the standard deviation of the test scores in grade 8 (–0,5, +0,5), VET schools contribute *one-third* of standard deviation less to the mathematics and literacy skills of pupils than VSS schools (Hajdu *et al*, 2015). Grade repetition and dropping out is widespread (Kertesi–Kézdi, 2010; Fehérvári, 2015).

Based on the findings, the most important question about “skilled worker shortage” is whether the current reforms to secondary vocational education

and training provide a solution to the rapid skills obsolescence of vocational school graduates and whether the individual (and society in general) loses the value provided by this school type. As the above tables suggest, this would primarily require appropriate resilience and learning skills, which are based on the basic skills necessary for learning.

How do reforms implemented in secondary vocational education after 2010 serve this purpose? These reforms included changes in the student proportions between VET and VSS to the advantage of the former; the shortening of VET, curtailing general education within VET; relaxing the requirements to be met by VET teachers; placing VETs under the control of the Ministry for National Economy and reducing the compulsory school age – in line with the vision that the Hungarian economy needs less general education and more “skilled workers fit for fighting” and that the education system should be better adapted to “labour market demand”.

Hungarian reforms are modelled on the “German-style” dual VET, which is also characteristic of the Nordic countries. However, pupils enter these systems with considerably more general education and their graduates are much less restricted to the world of skilled manual labour than in Hungary.

In *Germany*, vocational school pupils start training for their occupation after 7,155 or 7,950 hours of general education (depending on the *Länder*), while in Hungary they start it after 5,742 hours (*Hajdu et al*, 2015). For a better illustration of scale, in terms of the length of general education it is as if Hungarian VET pupils attended basic (primary and lower-secondary) school for ten or eleven years instead of eight years, or after VET they attended a twelfth general upper-secondary grade and one or two more grades in college or university. Following the reduction in the number of general education lessons in VET, Hungarian pupils have had less of this education when entering the labour market, than German pupils had *before* starting VET (*Varga*, 2017).⁷

In *Denmark*, another country regarded as a role model, the three-grade, practical vocational training, with a strong participation of enterprises, is based on a 9-grade basic school and often another, preparatory, grade between the two. Due to this and the quality of education, there was an enormous difference between Hungarian and Danish vocational school graduates already before the radical reduction of general education in Hungary. The Danish graduates of apprenticeship education and training are markedly better at writing, reading and counting and perform complex work in a much higher proportion – the more intensive adult education and training also plays a role in this. Two-thirds of them speak English, while this figure is less than one per cent for the Hungarians. The Danish vocational training is far from aiming solely at producing “skilled workers fit for fighting”: nearly forty per cent of vocational school graduates work as technicians, clerks, office workers, low- or mid-level managers or entrepreneurs. In Hungary,

⁷ *Varga* (2017) found that following the reforms, the total number of general education lessons of Hungarian vocational school pupils *after* the completion of the school is still 737 or 1,532 lessons lower than the number of general education lessons German pupils had *before* entering VET.

the proportion of the upwardly mobile is only 10 per cent (see *Hajdu et al*, 2015 and *Table 4.1.1*).

Vocational training reforms will probably increase the supply of vocational school graduates in the short run, trained to the current standards, without forcing enterprises to raise wages but in-depth curricular reforms, updating the skills of teachers and renewing the teaching staff will require a longer time. Even if this takes place, the length of vocational training will decrease and the average standards of quality are likely to decline, especially regarding the development of skills needed for adaptation, over a lengthy transitional period. This study does not aim at determining whether the price paid for fulfilling the current demand of employers (half of which is for skilled, the other half of which is for unskilled and semi-skilled workers) is too high. Nevertheless, it is safe to assume that there is such a price, which is paid by those concerned and also by society indirectly through deteriorating employability, lower wages and a faster obsolescence of skills acquired in education over a shorter or longer period.

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