Patterns of Integration: Low-Educated People and their Jobs in Norway, Italy and Hungary

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Abstract. The paper compares the distribution of jobs by complexity and firms' willingness to hire low-educated labour for jobs of varying complexity in Norway, Italy and Hungary. In investigating how unqualified workers can cope with complex jobs, it compares their involvement in various forms of post-school skills formation. The countries are also compared in terms of the proportion of small businesses, which, it is assumed, manage and tolerate the losses from functional illiteracy more than large firms do. Unskilled Norwegians benefit from synergies that exist between work in complex jobs, post-school skills formation and civil integration. Italy has an abundant supply of simple jobs and its small businesses employ unqualified workers even in complex jobs. Inadequate post-school skills formation and the lack of a sizeable small-business sector set limits on the inclusion of low-educated Hungarians.

Keywords: *skills, skill requirements, unemployment, firm size*.

JEL:J21, J24

1 Introduction

The gap between high- and low-educated people in terms of their job prospects is nowhere so wide as in Central and Eastern Europe (CEE). The region's persistent failure to provide its unskilled population with work creates a risk of destructive social fragmentation, erosion of the legal and market institutions, and slower growth, through mechanisms discussed in Easterly et al. (2006) and elsewhere. This paper seeks to contribute to a better understanding of the problem by comparing Hungary (representing the CEE region) to Norway and Italy, two countries that integrate their low-educated populace more or less successfully, but in characteristically different ways.[1]

The paths of unskilled employment and wages during the post-communist transition are well documented (Svejnar 1999), but our knowledge of other components of the outcome is limited; and we know particularly little about what kinds of jobs are filled by the lucky few who have remained in employment. This paper draws attention to this aspect of the cross-country differentials using elementary methods but unique data.

The analysis is based on the Adult Literacy and Life Skills Survey (ALL, 2003–2008), with occasional reference to the International Adult Literacy Survey (IALS, 1994–1998), in which the three countries also participated. The skills surveys include information on the skills content of jobs, the population's measurable skills, and people's engagement in informal learning and civil activities, which can enhance their employability. The samples are big enough to study separately large firms (where formal written communication is essential) and smaller companies.

Following a brief discussion of the literature and the data in Sections 2 and 3, the paper looks at how two factors contribute to unskilled employment in the countries under examination: the distribution of jobs by their literacy, numeracy and communication requirements (complexity, for short); and firms' willingness to hire low-educated workers for jobs of varying complexity. A similar decomposition is conducted to assess the contributions of small and large firms (Section 4). Section 5 focuses on the question of how it is that so many low-educated Norwegians and Italians are capable of doing skills-intensive jobs. It looks at the engagement of low-educated adults in skills-enhancing activities, on the one hand, and at the importance of small businesses, on the other. Section 6 draws some lessons for Hungary, where the drivers of unskilled employment that are found to be important in the two other countries are largely missing.

In Norway, the ability of low-educated workers to undertake complex jobs is enhanced by their large-scale participation in adult training, informal learning activities, social, political, cultural, sports and religious organizations, community groups and voluntary work. Norway seems to exploit the synergies between post-school skills formation, work in skills-intensive jobs and civil integration.

The Italian economy absorbs the country's sizeable low-educated population at a rate that substantially exceeds the Hungarian level in the case of men while the absorption rates of

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[1] This analysis is based on the Statistics Canada Adult Literacy and Life Skills Survey database acquired in December 2012. All computations, use and interpretation of the data are entirely the author's. The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007–2013) under grant agreement 'Growth–Innovation–Competitiveness: Fostering Cohesion in Central and Eastern Europe (GRINCOH)'. The author would like to thank Michael Landesmann, Gábor Kézdi, Ágnes Simonyi and seminar participants in Budapest and Vienna for their helpful comments.

women are roughly equal in the two countries. The employment rate for both genders is significantly higher than anywhere in CEE, especially if we limit attention to the population attached to the labour market. Low-educated Italians have poor measurable skills, even compared to their Hungarian counterparts, and their participation in skills-enhancing activities is nearly as infrequent as among Hungarians. The explanation for the high rate of unskilled employment appears to lie elsewhere. The Italian economy operates a large number of very simple jobs, and the country's sizeable small-firm sector has a high propensity to employ low-educated workers even in complex work. This, the paper speculates, is explained by small companies' ability to minimize the need for formal written communication and their acceptance of losses resulting from skills mismatch.

In Hungary, the low educated cannot rely on the traditional small-firm sector, which was eliminated under state socialism and has been unable to recover since. Low-educated people participate only infrequently in the kind of adult training and civil activities that could develop their cognitive and non-cognitive skills. This severely restricts the number of jobs available to them, while their exclusion from work limits their links to the rest of society. Last but not least, both their non-employment and their social isolation constrain them in skills formation.

2 Unskilled employment in Central and Eastern Europe

We have a variety of explanations for why unskilled employment probabilities are below average in almost all developed and emerging market economies. Many of them see the problem in terms of country-specific institutions and policies, with the usual suspects being the minimum wage, benefit generosity, poverty traps created by poorly designed tax systems, and inadequate active assistance. These institutions certainly explain part of the variation across CEE countries, but they help little in explaining why the countries fail *as a group*.

Data from the EU Labour Force Survey (EU LFS) suggest that the East–West mean differential in the unskilled employment-to-population ratio (24.5 percentage points in 2008) is significantly larger than the within-region variances (8.9 for the CEE and 9.5 for non-CEE countries). A *country-level* univariate regression with only a CEE dummy on the right side explains 61 per cent of the variance in unskilled (International Standard Classification of Education (ISCED) 0–2) employment rates across the Eurostat countries. A univariate logit estimated for the pooled European sample of low-educated *individuals* correctly classifies 72.7 per cent of males, 54.4 per cent of females and 59.4 per cent of all observations. Only in Romania and Slovenia – the top performers in the region in this respect – do the absolute and relative employment rates of the unskilled exceed Belgium's, the laggard within the EU-15. All other CEE countries score worse than any of the old Member States, with the ratio of unskilled to skilled employment rates falling short of 0.45 in Bulgaria, Estonia, Hungary and Latvia; 0.4 in the Czech Republic and Poland; and 0.35 in Lithuania and Slovakia.[2]

The CEE countries are all affected by skill-biased technological change (SBTC), but that alone can hardly explain the region-wide collapse in demand for workers with a *primary education*

[2] Köllő (2013) presents a set of charts underlying the above figures. The regression relates to both genders in 10 CEE countries and 19 non-CEE countries, with the coefficient for the CEE dummy being -0.24 and the standard error 0.035. In the logits, the marginal effects of living in a CEE country are -18, -5 and -12 percentage points for men, women and both genders, respectively. The data relate to the population attached to the labour market – that is, excluding full-time students and persons older than 35 with no work experience. See Section 4 of this paper for a justification of the latter restriction. Similar regressions for the medium- and high-educated population yield insignificant parameters and zero fit.

background, particularly as that is not exactly what the SBTC literature is looking at. Most papers are concerned with the effects of information technology and research and development (R&D): some 41 out of the 78 empirical SBTC papers reviewed in Sanders and ter Weel (2000) look at the impact of computers and IT, and 23 address the effects of R&D. Furthermore, the literature is primarily concerned with the impact of technological change on high-school versus college graduates, and even those papers studying the production versus non-production division deal with demand for relatively skilled labour. In their account of what makes a production worker in US manufacturing, Berman et al. (1998) show that even back in the mid-1990s, 58 per cent of production workers had completed high school, 30 per cent had some college, and 8 per cent had a college or university background.[3]

The unequivocally poor performance of the region's unskilled labour markets requires explanations which locate the problem in the common legacies and contemporary histories of those countries, rather than in their highly diverse national labour market institutions and/or worldwide developments. One can indeed find a series of common points with implications for the composition of jobs by skill content, firms' incentives to hire unskilled applicants, people's capacity to start small businesses and civil integration.

First, the post-communist transition destroyed a multitude of simple jobs in the wake of de-industrialization, the demise of agricultural co-operatives and growing import competition. Both domestic privatization and foreign direct investment (FDI) had a detrimental effect on the share of blue-collar workers (see Earle and Telegdy 2012 and Commander and Köllő 2008, who used matched employer–employee panels from Hungary and Romania). Competition in product markets also undermined what Ellman (1979) characterized as the 'labour intensive variants of capital intensive technologies': the implementation of the productive capacity without additional elements like the mechanized transport of materials, components and products; feeding systems; control appliances; air conditioning and automated packing. For the state 'this dualism had the advantage of combining modern technology with some savings in scarce investment resources' (ibid., p. 14) and for firms the quantity-oriented projects promised a better position in the race for centrally allocated funds. As a consequence, firms employed an unusually high number of auxiliary labourers in order to keep the production process afloat. These technologies disappeared shortly after the start of transition, as they resulted in goods of inferior quality.

Second, the transition devalued the skills of many vocationally trained workers, thereby increasing the supply of (effectively) unskilled labour and implying a massive substitution of low-educated workers for vocational school graduates in elementary occupations (Kézdi et al. 2009).

Third, part of the common heritage is the tiny size of the small-firm sector, by comparison with countries with a similar level of development. In terms of self-employment, the gap is enormous, as is shown in Maloney (2004), who compares self-employment in the Czech Republic, Hungary and Poland versus countries with similarly productive wage-labour sectors. The data depict the three CEE countries as major outliers in the mid-1990s. Maloney's figures are slightly biased, because family-owned farms and shops in several CEE countries operate as unincorporated companies. However, the proportion of unskilled workers employed in small establishments (irrespective of ownership) is still far below the levels observed outside the club of the most

[3] The recent increase in demand for genuinely low-educated workers in developed market economies, discussed in the *job polarization* literature by Autor, Levy and Murnane (2003), Manning (2004) and Acemoglu and Autor (2012) among others, has not yet reached the CEE, or its impact has so far been offset by negative effects in the tradable sector.

developed Western and Northern countries. While a relatively high proportion (46 per cent) of low-educated Poles work in businesses employing fewer than 20 workers, in other CEE countries the figures are significantly lower: 17 per cent in the Czech Republic and 27 per cent in Hungary and Slovenia, compared to 62 per cent in Chile, 57 per cent in Italy and 50 per cent in Bermuda.[4]

Last but not least, the CEE countries as a whole lag behind Western and Northern Europe (though less behind Southern Europe) in terms of participation in civil activities (Pichler and Wallace 2008) and adult education (University of Florence 2010). According to the latter source, low-educated adults' participation in formal and informal training amounts to 10 per cent in the CEE on average, compared to 42 per cent in the North of Europe and 23 per cent in the West (though only 12 per cent in the South).[5] In Croatia, Hungary, Latvia, Lithuania and Poland, the rates fall short of 10 per cent. In eight of the nine CEE countries, the rates are lower than in Portugal, the laggard in the EU-15, excluding Greece and Italy, where participation is just as infrequent as in the worst-performing CEE countries.

By addressing the above-mentioned aspects of the unskilled labour market, this paper does pioneer work in unexplored fields of the international skills surveys. The studies using IALS data mostly deal with the levels and distributions of literacy performance and their linkages with wages. Micklewright and Brown (2004) discuss methodological problems arising in the IALS and school-based skills surveys. Micklewright and Schnepf (2004) study the consistency of the results of different skills surveys in English-speaking countries versus the rest of the world. Devroye and Freeman (2001) and Blau and Kahn (2005) compare the skills and wage distributions of Americans, compared to Europeans, using a continuous wage variable (unavailable in the public files). Denny et al. (2004) and Carbonaro (2006) estimate augmented Mincer-type wage equations using a quintile position variable on the left side and literacy indicators on the right. McIntosh and Vignoles (2001) estimate both wage regressions and employment probits with literacy test scores on the right hand. Since the micro-data of ALL became publicly available only at the end of 2012, to the best of the author's knowledge academic research has not yet produced published results. For the moment, only the summaries (OECD and Statistics Canada 2005, 2011) and a few descriptive country reports are available.

3 Data and measurement of the key variables

This paper basically relies on the rich background questionnaire of the ALL, which provides a wealth of information on the respondents and their jobs. The three countries were surveyed within the framework of IALS in 1998, and within the framework of ALL in 2003 (Norway and Italy) and 2008 (Hungary). We use both IALS and ALL for statistics on the size of the low-educated population and employment. Further systematic comparison of the data is rendered impossible because of changes in the measurement of workplace literacy requirements and firm size, as well as because of a lack of data on civil activities in IALS. Therefore we rely on the ALL data in the rest of the paper, with only occasional reference to IALS.[6] The key variables used in the paper are the following:

Educational attainment is measured as years in school, not counting repeated years. As is shown in Table 1, Italy has a large unskilled population, amounting to more than 50 per cent in 1998

[4] IALS data except for Bermuda (ALL). Calculations by the author.
[5] The data exclude Romania and Slovakia and cover 12 of the 15 old Member States. The figures are unweighted averages of the country-level data on participation in the 12 months prior to interview.
[6] On the IALS see OECD and Statistics Canada (2000, 2001).

and about 6 percentage points lower than that in 2003. The unskilled share also fell from 28 to 25 per cent in Hungary between 1998 and 2008. In these two countries, the unskilled shares based on years in school are similar to the figures obtained using ISCED. This is not the case in Norway, which adopted the internationally accepted classification procedure for ISCED only in 2006.[7] Therefore we use the school year-based definition, which indicates a 20 per cent share for Norway in both surveys.

Table 1: The population share of low-educated adults (per cent)

	Norway	Italy	Hungary
Low educated = 0–10 years in school, not counting repeated years[a]			
IALS	19.0	52.4	28.6
ALL	20.5	46.1	24.6
Low educated = ISCED 0–2			
IALS	11.7	55.2	28.3
ALL	12.6	48.7	24.7

The data relate to the population aged 15–64, excluding students and persons who are older than 35 and have never worked. N= 8,874 (IALS) and 14,187 (ALL). a) Based on question *a1* in both surveys, except for Norway in the IALS (*a8no*).

The justification for setting the upper limit of 'low education' at 10 years is that the proportion of respondents classified as ISCED 0–2 rises steeply in both Italy and Hungary when we move from 11 years in school to just 10. (The data for Norway are missing, as was mentioned.)[8] Furthermore, as is shown in Appendix Figure A1, this is the point where the Hungarian education–employment profile starts to deviate from those of the comparator countries.

Table 2:Employment rates of the low educated using alternative definitions of employment

	IALS			ALL		
	Norway	Italy	Hungary	Norway	Italy	Hungary
Employment-to-population ratios (per cent)[a]						
Employment rate[b]	68.5	58.4	36.7	69.8	60.8	33.9
FTE employment rate[c]	57.9	61.3	40.5	63.4	59.5	34.1
Had paid job in year t-1	78.7	62.2	43.6	77.4	63.0	42.4
Relative to the high educated (those with 11 or more years in school = 1)						
Employment rate[b]	0.79	0.76	0.50	0.81	0.74	0.49
FTE employment rate[c]	0.74	0.84	0.51	0.79	0.76	0.49
Had paid job in year t-1	0.83	0.77	0.55	0.85	0.67	0.57

a) Employment is compared to the population aged 15–64, excluding full-time students and persons who are older than 35 and have never worked. b) Employed at the time of the interview c) FTE stands for full-time equivalent employment. Each person contributes to FTE with $h/40$ units, where h denotes weekly working hours. N= 8,874 (IALS) and 14,187 (ALL).

Employment is measured by status at the time of interview. According to this indicator, Norway has a 30–35 percentage point advantage over Hungary, while Italy is halfway between the other two. An alternative measure (employed at least once in the 12 months prior to the interview) shows similar patterns. In terms of full-time equivalent employment, Italy draws closer to Norway, while Hungary's disadvantage diminishes but remains substantial (Table 2). Since this paper is concerned primarily with the issue of social inclusion, it draws the dividing line between *no work* and *some work* and makes no distinction between full-time and part-time employment. While it is true that part-time work generates lower income, it nevertheless delivers a series of non-pecuniary benefits, such as a structured everyday life, social contacts,

[7] As a result, the ISCED 0–2 share jumped immediately from 10 to 20 per cent (EWCO 2009).
[8] The high educated completed 13.5–13.8 years in school in the three countries, on average, while the low educated had longer records in Norway (8.8 years) than in Hungary (8.1 years) or Italy (7.2 years).

appreciation, self-esteem and the feeling of usefulness.[9] From the two indicators measuring the *incidence* of work, we choose the first (employed at the time of interview), in order to maintain comparability with LFS-based and other stock-type data.

Measuring the cross-country differences with the *unemployment rates* would leave the picture unaffected: in the IALS, the unskilled unemployment rates amount to 5.2, 9.9 and 27.1 per cent in Norway, Italy and Hungary, respectively, while the corresponding figures in ALL are 5.9, 15.2 and 36 per cent (1.3, 1.7 and 3.3 times the skilled unemployment rates), respectively.

Workplace literacy requirements. The ALL interview had 17 questions about the frequency of reading, writing and quantitative tasks in the workplace. I dichotomized these variables by setting their value to 0 for respondents who answered that they 'never or rarely' engaged in the given activity. Other options were 'more than once a week' and 'less than once a week', with the latter option chosen by a tiny minority of respondents. Attaching this minority to one or other of the two large groups has no effect on the qualitative results.

Table 3: Literacy-related tasks in the workplace (ALL)

	Effect on skilled share[a]	Effect on earnings[b]	Factors[c]
Writing letters, memos, e-mails	5.8	0.15	1
Reading letters, e-mails	5.4	0.15	1
Reading manuals, books, catalogues	4.5	0.14	1
Reading reports, journals	4.2	0.11	1
Using statistical data to reach conclusion	3.9	0.17	1
Reading diagrams or schematics	3.6	0.18	1
Writing reports, articles, magazines or journals	3.2	0.14	1
Writing manuals or reference books, catalogues	2.8	0.09	1
Managing time or preparing timetables	2.6	0.13	1
Writing directions or instructions	2.6	0.09	1
Reading directions or instructions	2.5	0.10	1
Calculating prices, costs or budgets	2.1	0.12	2
Reading bills, invoices, spreadsheets	2.0	0.11	2
Counting or reading numbers for tracking	1.9	0.10	2
Writing bills, invoices, spreadsheets or tables	1.9	0.05	2
Giving or following directions using maps	1.7	0.09	1
Measuring or estimating the size/weight of objects	0.9	0.00	2

a) Odds ratios from logits. Dependent variable: the worker employed in the job has 11 or more years in school. Explanatory variables: the given task is performed more than once a week, tenure, small firm, part time, occupation dummies, country dummies. Estimation sample: pooled sample of employed workers. All coefficients are significant at 1 per cent level.
b) Ordinary least squares (OLS) regression coefficients. Dependent variable: monthly gross earnings normalized for the country means. Explanatory variables: the given task is performed more than once a week, gender, experience, experience squared, years in school, occupation dummies, small firm, part time, rural. Estimation sample: pooled sample of employed workers. All coefficients are significant at 1 per cent level,except for measuring objects.
c) Assignment to two principal factors depending on factor loadings. Note that for 'giving or following directions using maps' the two factor loadings are very close to each other.
N= 10,288 (skill shares), 7,801 (wages) and 10,531 (factors).

Table 3 gives a list of the tasks in question, ordered by their effect on the share of high-educated workers in the pooled sample of ALL. This effect was estimated by regressing a high-educated dummy on a set of controls with the literacy tasks entered one by one.[10] Effects on earnings were

[9] See Jahoda (1979) for a profound discussion of these benefits.
[10] Entering the 17 tasks together results in many insignificant coefficients because of collinearity and limited size of the sample. The controls include tenure, firm size and dummies for part-time jobs, occupations, agriculture and countries.

estimated in a similar way. Finally, the last column of the table shows the outcome of a principal factor analysis of the 17 items. Skills requirements typical of trade and services (such as the reading and writing of bills and invoices, calculating prices, costs and budgets, measuring the size or weight of objects and reading numbers for tracking) have high loadings in the second factor, and these items also have a weak effect on the skill share and wages.

In order to keep the amount of statistics to a tolerable level, we characterize the complexity of a job as the number of literacy tasks (Type1, Type 2 and overall). In Köllő (2013) we also use the weighted sum of tasks, using the coefficients of the wage regression as weights, which leads to identical qualitative conclusions.

Firm size. We distinguish between small and large firms (0–20 versus more than 20 employees). While the twenty-worker limit is rather high, a further breakdown within the small-firm category is not available. More than a third of those working in small establishments are self-employed in the three countries together: 45 per cent in Italy, 23 per cent in Hungary, but only 5 per cent in Norway. For reasons discussed in Section 2, we treat small-firm employees and the self-employed as a single group, but shall bear the distinction in mind in the interpretation of the findings.

Occupations and sectors are coded using International Standard Industrial Classification (ISIC) and International Standard Classification of Occupations (ISCO) codes. The one- and two-digit sector codes and the two-digit occupation codes are missing for Hungary. In Norway, the one-digit sector code has no value for agriculture, despite the fact that agricultural occupations do occur. For this reason, we have relied on a combination of the sector and occupation codes: all cases with occupational and/or sector codes indicating attachment to farming are separated using an 'agriculture' dummy.

Literacy skills are approximated to the mean of the five plausible values for reading, writing and quantitative skills, respectively, adding imputation errors. The latter is required because each respondent was asked to fill in only a part of the literacy tests, and the 'plausible values' for their test performance were estimated by Statistics Canada, relying on item response theory. In calculating imputation error, we follow the procedure proposed in Statistics Canada (2011, p. 85).

Norwegians performed better in the tests than did Hungarians – and especially Italians. In the prose tests, for instance, the estimated sample means of the five plausible values fall between 288 and 289 points in Norway, 268 and 269 in Hungary, and 225 and 228 in Italy. The gap between high- and low-educated respondents is narrower in Norway than in Italy and Hungary (Table 4).

Table 4: Estimates of average test scores and the disadvantage of low-educated people in ALL
(The sum of sampling and imputation error variance estimates in parentheses)

	Prose			Document			Numeric		
	Norway	Italy	Hungary	Norway	Italy	Hungary	Norway	Italy	Hungary
Levels[a]	258	204	240	260	201	211	254	211	238
	(2.8)	(1.7)	(2.8)	(1.7)	(1.8)	(1.5)	(2.8)	(3.6)	(2.4)
Gaps[b]	-32	-42	-35	-34	-40	-39	-33	-39	-44
	(3.7)	(3.6)	(3.7)	(4.8)	(6.4)	(4.1)	(4.1)	(2.6)	(2.0)

a) Means of the five plausible values and overall error variance calculated as suggested in Statistics Canada (2011, pp. 85–86).
b) Coefficients of the low-educated dummy in OLS regressions with jackknife standard errors controlled for gender, age, age squared, rural residence and migrant status. The error variance was calculated as suggested in Statistics Canada (2011, pp. 88–90).
N=15,198.

A critical remark is due at this point. Several findings make the observer suspicious about cross-country comparisons by absolute test performance: it is hard to believe, for instance, that Norwegian labourers employed in elementary occupations have higher cognitive skills (268 points) than do Italian professionals (266 points). It is also doubtful whether the absolute level of test performance can improve as admirably, in each and every birth cohort, as it seems to in Hungary, according to the IALS versus ALL data (Köllő 2013). In all probability, the absolute measures are affected by the quality of the questionnaire's translation, familiarity with testing, and the situations described in the tests, as well as by the rigorousness of supervision. Therefore we have avoided a detailed cross-country comparison of test scores, though we do not question the fact that Norwegians perform better than Hungarians, who have a slight advantage (if at all) over Italians.

Wages. Wages have been recorded in ALL, but the data are missing for 40 per cent of employees in both Italy and Hungary (only 1 per cent in Norway) and are not used in the paper, except for the pooled-sample estimate presented in Table 3.[11]

Calculating standard errors. Statistics Canada (2011) proposes the calculation of sampling variance for all statistics, and the data file offers 30 replicate weights to make this possible. In multivariate models I follow the jackknife procedure suggested in the Statistics Canada manual. I also evaluate sampling errors in tables when the group means fall close to each other. In several cases, however, the cross-country and between-group differentials are enormous, compared to the sampling errors. The adjusted estimates (mean ± jackknife standard error) for the unskilled employment rates, for instance, fall between 67.7 and 71.5 for Norway, 47.6 and 49.9 for Italy, and 31.9 and 35.2 for Hungary. In this and similar cases, one can be confident that the observed sample means indicate statistically significant differences. Therefore, in order to keep the amount of statistics within limits, in such cases we do not attach sampling variance to the observed means and cell proportions.

Treating missing values. We apply case-by-case deletion of missing observations. Restricting the analysis to respondents for whom all variables that appear in the paper are non-missing would imply a major loss of observations.

Sample size. After excluding students and persons older than 64, we are left with 4,493 observations in Norway, 5,830 in Italy and 4,875 in Hungary. For the low educated, the figures are 981, 2,927 and 914, respectively.

4 Who employs low-educated workers?

This section looks at the employment-to-population ratios of low-educated people (4.1) and their share in employment conditional on job characteristics (4.2). This is followed by decompositions of the unskilled employment ratios in order to distinguish between the effects of job composition (by complexity) and the within-group shares of low-educated workers (4.3). A similar decomposition is made by firm size (4.4).

4.1 Employment-to-population ratios

[11] The available sources suggest that the relative cost of unskilled labour is lowest in Hungary. The net wages of low-educated workers relative to secondary-school graduates are 76, 77 and 73 per cent in Norway, Italy and Hungary (Eurostat 2013), while the tax wedges on low and average pay are 34 vs. 37 per cent, 43 vs. 45 per cent and 43 vs. 51 per cent, respectively (OECD 2013).

Table 5 reports regression-adjusted employment-rate differentials between low- and high-educated people in several sub-populations. The effect of low education is controlled for age, age squared, rural residence and immigrant status, and the equations are estimated for both genders and for men and women separately.

The estimations for women and both genders are repeated after excluding people older than 35 who reported never having worked. Slightly less than 5 per cent of the pooled sample belongs in this category, of which 93 per cent are not looking for a job, 89 per cent are female, 81 per cent are low educated and 97 per cent are Italian. Low-educated Italian women constitute the dominant group (86 per cent) within the excluded population. The intention is to focus attention on the population that is attached to the labour market, on the best guess that the vast majority of those who did not work in the first 15–20 years of their post-school lifetime, and who are not looking for jobs now, are unlikely to enter the labour market at a later date. This is tantamount to regarding the level of unskilled employment as given and considering gender differentials a distributional issue – a simplistic approach in historical perspective, but acceptable at a given point in time. To the extent that this reasoning is correct, the last row of Table 5 provides the first best estimates of the employment gaps between high- and low-educated people, showing little difference between Norway and Italy, but a wide gap between either of those countries and Hungary.[12]

Table 5: Average partial effect of low education on employment after logit (per cent)

	IALS			ALL		
	Norway	Italy	Hungary	Norway	Italy	Hungary
Total	-12.0	-14.0	-22.7	-10.9	-26.6	-30.9
	(2.4)	(2.2)	(2.8)	(1.9)	(1.8)	(2.1)
Men	-6.9	-2.8	-22.6	-5.9	-9.7	-34.5
	(2.9)	(3.2)	(3.0)	(2.1)	(1.9)	(3.3)
Women	-17.3	-23.4	-23.1	-17.1	-35.5	-27.9
	(3.5)	(2.4)	(2.6)	(3.4)	(2.7)	(2.8)
Women (adj.)[a]	-17.1	-21.4	-22.8	-17.1	-28.1	-27.7
	(3.6)	(2.9)	(2.6)	(3.4)	(3.1)	(2.8)
Total (adj.)[a]	-11.9	-11.9	-22.4	-10.9	-18.3	-30.4
	(2.4)	(2.4)	(1.9)	(2.0)	(1.7)	(2.2)

Jackknife standard errors in parentheses. Dependent variable: employed at the time of interview. Controlled for age, age squared, rural residence, migrant status and gender (in the first and last rows). Low educated = 0–10 years in school. Average marginal effects have been calculated with Stata's *margeff* procedure. a) Persons older than 35 who never worked before are excluded. N=14,487.

The parameters for Norway indicate an 11–12 percentage point disadvantage among the low educated (6–7 per cent for men and 17 per cent for women) in both IALS and ALL that is robust to the exclusion of the unattached population. In Hungary, the gender differentials are small and

[12] The cross-country comparisons are admittedly biased by omitted information on ability. Italy has an exceptionally large low-educated population, implying that the median unskilled person is located higher in the ability ranking. Since ability affects employability through channels other than schooling, our regressions overestimate the education-specific employment differentials. The upward bias is stronger in Norway and Hungary than it is in Italy. The test scores do not help to correct the bias, as they are endogenous in an employment equation.

the estimates are practically equal for the total and the restricted samples, but the data indicate a major deterioration over time: the disadvantage faced by unskilled males grew from 23 percentage points in 1998 to 35 in 2008, and the skilled–unskilled gap widened from 22 to 30 points in the whole population. A similar deterioration is observed among Italian women over a five-year period. This is probably explained by the massive inflows to the working-age population of young women with a college and university background, and the outflows of 'mammas' who have spent their entire post-school lifespan inactive (though working hard at home). The gender differentials are large even in the restricted sample: the skilled–unskilled gaps were 3 per cent for men, but 21 per cent for women in the IALS; this had grown to 10 per cent and 28 per cent by the time of ALL. The total low-educated population's disadvantage grew from 14 to 27 percentage points, while in the restricted sample the magnitude of change was much smaller: a rise from 12 to 18 percentage points.

4.2 Unskilled shares

For an overview of the unskilled shares, Table 6 presents estimates from a logistic regression in which the units of observation are job–worker matches, which were created in the past *and* survived until the date of the interview. The covariates are exclusively job specific or employer specific. The dependent variable is 1 if the worker employed in the job is low educated and 0 otherwise. For reasons discussed in Section 3, the focus of attention is restricted to ALL.

Table 6: The probability of employing a low-educated worker conditional on job characteristics (ALL)
Average partial effects after logit, per cent

Dependent variable: the worker employed in the job is low educated (had 0–10 years in school)

	Norway	Italy	Hungary
Age of the match (tenure) in years	0.8***	0.6***	0.1***
	(14.2)	(11.3)	(2.7)
Number of literacy tasks	-2.0***	-3.2***	-1.7***
	(11.3)	(25.8)	(15.5)
Small firm (fewer than 20 workers)	0.5	10.3***	-1.7**
	(0.3)	(7.7)	(2.2)
Firm size unknown	..	-4.8**	0.4
	..	(2.3)	(0.4)
Managerial job	-17.4***	-23.6***	-19.1***
	(4.0)	(7.0)	(13.4)
Professional job	-15.3***	-21.2***	-8.6***
	(7.9)	(14.5)	(13.5)
Semi-skilled job	-9.0*	-6.4*	-2.1
	(1.9)	(1.7)	(1.1)
Occupation unknown	-18.2***	-25.4***	-15.6***
	(4.6)	(8.3)	(10.5)
Agriculture	7.1*	16.2***	22.2***
	(1.7)	(5.5)	(5.3)
Part-time job	-2.3*	-7.7***	-1.4
	(1.8)	(6.6)	(1.4)
Number of observations	3626	3260	2712

Significant at the *) 0.1 **) 0.05 ***) 0.01 level. Z-values based on jackknife standard errors in parentheses. The equations were estimated with survey logit allowing for sampling error, using the 30 replicate weights offered in the ALL micro-data file. The average partial effects were calculated with Stata's *margeff* procedure. The reference category for occupations is non-agricultural elementary occupations. Agriculture was defined on the basis of ISIC and ISCO codes: ISIC1=A and/or ISIC2=0100 and/or ISCO = 1211, 1311, 6000–6210 or 9200–9213. N=9,972.

Starting with the least surprising results, managerial and other skilled jobs employ significantly fewer low-educated workers, and the unskilled shares are practically equal in elementary and semi-skilled occupations, such as assembly work. The unskilled share is substantially higher in agriculture than elsewhere, especially in Italy and Hungary. Finally, part-time jobs employ fewer low-educated workers in all countries, but this result is significant only in Italy and (less so) in Norway.
In both Norway and Italy, the unskilled shares rise steeply as we move towards older matches (longer tenure). This is not the case in Hungary, where the average partial effect of tenure amounts to only one-sixth and one-eighth of the magnitudes estimated for the other two countries. This result, together with some further data, suggests that the pre-transition jobs of low-educated Hungarians had a low probability of surviving until 2008, and that their jobs are short-lived today.[13]

Literacy tasks required in the job have a strong negative effect on the unskilled share in Norway and Italy, and a weaker effect in Hungary. In other words, in Hungary the unskilled share does not increase as steeply as we move towards simple jobs – a pattern discussed in detail in Section 4.3. Small firms employ more unskilled workers in Italy (10 per cent more) and fewer in Hungary (2 per cent fewer) than do large firms, while the respective coefficient for Norway is zero. The contrast between Italy and Hungary will also be discussed later, in Section 4.4.

4.3. Decomposition by job complexity

In order to disentangle the effects of job composition by complexity and employers' willingness to employ low-educated workers (given complexity), I decompose the unskilled employment-to-population ratio in the following way,

$$(1) \quad \sum_{j=1}^{17} \frac{E_j^L / E_j}{P^L / P} \cdot \frac{E_j}{P} = \sum_{j=1}^{J} \varphi_j \Omega_j = \frac{1}{P^L} \sum_{j=1}^{J} E_j^L = e_L$$

where E_j stands for the number of employed persons in jobs requiring j=0,1,...,17 literacy tasks, L refers to low-educated people, while P and P^L denote the size of the total and the low-educated populations. The first term in the first expression (φ) measures the representation of the low educated in j-type jobs, with φ_j=1 meaning that their share in j-type employment is equal to their population share. We might call φ a *share effect*. The second term (Ω) measures the ratio of total employment in j-type jobs to the total population attached to the labour market. This might be called a *size effect*, which indicates how many j-type jobs are 'at the disposal' of the entire labour force. The product of the share effect and the size effect ($\varphi\Omega$) measures the total contribution of j-type jobs to the unskilled employment-to-population ratio e_L.

The results are presented in Figure 1. show the distribution of jobs by complexity and the share of low-educated workers by job complexity, also indicating their population share. Figure 2 does the same by restricting attention to Type 1 literacy tasks, typical of white-collar positions. Finally, Figure 3 looks at the total contribution of jobs distinguished by the number of all and Type 1 literacy requirements.

[13] The unskilled share is only 14 per cent in matches older than 20 years in Hungary. It varies in a range of between 12 and 14 per cent in 2–20-year-old matches and reaches its highest level (19 per cent) in the youngest jobs with less than 2 years' tenure.

In Norway, the modal job involves ten different literacy-related activities. By contrast, in both Italy and Hungary the dominant group of jobs requires no literacy tasks (that are present in our list) at all. The Italian economy operates a particularly large number of very simple jobs. Otherwise the curves for these two countries fall close to each other, though the point estimates are always higher for Italy (Figure1).

Figure 1
Figure 2
Figure 3

Estimates of the share effect show that many low-educated Norwegians undertake complex jobs: their proportion exceeds their population share in the domain of 0–8 literacy tasks, in contrast to Italy and Hungary, where low-educated people are under-represented in jobs that require more than three tasks. Compared to Hungarians, low-educated Italians have a higher share in all categories of jobs (Figure 1). This is particularly the case if we restrict attention to Type 1 tasks (Figure 2).

Finally, estimates of the total contributions in Figure 3 suggest that in Norway the bulk of unskilled employment comes from jobs requiring 6–11 different literacy tasks. In Italy, simple jobs demanding no literacy and numeracy at all play the most important role, with the contributions steadily decreasing as we move toward complex workplaces. Hungary follows a similar pattern in qualitative terms, but the contributions are smaller at almost all levels of complexity.[14]

4.4 Decomposition by firm size

Table 7: Accounting for the role of small firms in unskilled employment (ALL)

	Norway	Italy	Hungary
Size effect: jobs/ population (Ω)			
Small firms	16,1	33,1	19,4
Large firms	53,8	34,1	34,8
Firms of unknown size	12,9	5,0	5,3
Share of the low-educated (E^L/E)			
Small firms	16,6	45,5	10,6
Large firms	16,6	33,1	14,8
Firms of unknown size	20,7	33,2	20,5
Share effect: share in employment/share in population (φ)			
Small firms	0,81	0,99	0,43
Large firms	0,81	0,72	0,60
Firms of unknown size	1,00	0,72	0,83
Total contrubutions (φΩ)			
Small firms	13,1	32,7	8,5
Large firms	43,7	24,5	20,9
Firms of unknown size	13,0	3,6	4,5
Employment rate of the low-educated (e_L)	69,8	60,8	33,9

Number of observations: Norway: 4486, Italy: 5147, Hungary:4854.

[14] The patterns arising in Figure 1 remain valid if we weight the literacy tasks by their effects on wages. The results (Köllő 2013) paint the same picture as we see here: Norway offers much more complex jobs than either Italy or Hungary, and Italy provides more simple jobs than does Hungary. The unskilled share is much lower in Hungary than in Italy or Norway and does not increase steeply as we move toward simple jobs.

The results of a similar decomposition by firm size are presented in Table 7. Small-firm density is by far the highest in Italy, and so is the share of low-educated workers in both absolute and relative terms. The contribution of small firms to unskilled employment is small in Norway; somewhat higher in Hungary; and is decisive in Italy.

5 How can low-educated workers undertake skills-intensive jobs?

This section discusses three mechanisms that potentially explain how the gap between skills requirements and low education can be bridged. First, we present data on adult training, informal learning and civil activities, which potentially develop both cognitive and non-cognitive skills. This is followed by a study of how cognitive skills (as measured by the literacy test scores) rise as we move toward more complex jobs, on the expectation that a stronger association hints at either more effective selection or a higher degree of learning by doing. Finally, the section speculates on how Italian small firms and sole proprietorships can manage the skills deficiencies of those involved in the business.

5.1 Adult training, informal learning and civil integration in Norway

In the preceding sections we found that low-educated Norwegians often make it into skills-intensive jobs: the vast majority of them (80 per cent) are employed in workplaces that require four or more literacy-related tasks, and more than 50 per cent are in jobs that involve seven or more tasks. The respective figures are only 36 per cent and 19 per cent in Italy, and 22 per cent and 9 per cent in Hungary.

Table 8: Potential sources of skills – selected indicators (ALL)

	Participation rates[a]			Relative to the high educated		
	NO	IT	HU	NO	IT	HU
Adult training						
Took training in last 12 months	33.4	5.7	5.7	0.58	0.22	0.29
Informal learning activities						
Visits trade fairs, professional conferences	20.2	8.7	2.5	0.49	0.32	0.13
Attends lectures, seminars, workshops	28.1	3.7	4.6	0.44	0.15	0.19
Reads manuals, reference books, journals	51.6	16.9	10.4	0.57	0.35	0.31
Museums, art galleries, etc.	19.0	9.2	1.9	0.53	0.32	0.13
Uses PC/internet, not part of a course	43.2	8.6	3.4	0.54	0.21	0.14
Uses video, television, tapes to learn	34.6	13.7	7.6	0.71	0.51	0.43
Learns by watching, getting help/advice	63.5	22.0	11.5	0.75	0.49	0.35
Learns by trying things out, practice	86.3	23.3	13.5	0.89	0.51	0.36
Learns by being sent to an organization	16.2	2.9	6.3	0.58	0.23	0.55
At least one item in the above list	*90.3*	*40.6*	*27.6*	*0.94*	*0.53*	*0.48*
Other sources of literacy						
Reads newspapers[b]	99.3	76.1	80.1	1.00	0.82	0.84
Reads magazines[b]	99.3	73.8	67.8	0.95	0.78	0.74
Reads books[b]	86.6	38.5	43.8	0.90	0.51	0.55
Uses a computer[b]	76.7	24.4	28.9	0.79	0.35	0.38
More than 24 books at home	85.3	44.4	57.5	0.97	0.58	0.66
Work as a source of literacy[c]						
Index for all tasks	5.7	2.5	1.0	0.64	0.36	0.21
Index for Type 1 tasks	4.0	1.5	0.7	0.63	0.29	0.18
Index for Type 2 tasks	2.2	1.0	0.6	0.73	0.42	0.34

a) Per cent, except for the last three rows. b) At least occasionally c) Employment rate times the mean number of job-related literacy

tasks (all, Type1 and Type2) performed by those in employment. The number of observations varies from row to row.

Educational attainment alone is unlikely to explain this sharp contrast: the median Norwegian low-educated person had had nine years at school, as opposed to the eight years completed by Italians and Hungarians. Furthermore, the Norwegian educational system does not perform particularly well according to the PISA tests for 15-year-old students. In the year of the ALL survey (2003) Norway was ranked 12nd in reading but only 28th in science, 22nd in maths and 24th in problem solving out of 40 countries. Italy came 29th, 27th, 31st and 31st and Hungary was 25th, 17th and 25th and 20th.[15]

Norway's success could better be described as a kind of 'high equilibrium', in which adult training, informal learning activities and integration into civil society generate skills and allow access to skills-intensive employment, which, in turn, is a source of cognitive and non-cognitive competencies and a route to social inclusion. The question of causation remains unresolved with the cross-sectional data to hand – what the data can show is how dramatic the cross-country differences are in *all* dimensions of post-school skills formation.

First, there is clear-cut disparity in the intensity of *adult training*. As Table 8 shows, no more than 5.7 per cent of unskilled Hungarians and Italians participated in formal training in the 12 months prior to the ALL interview as opposed to 33 per cent of Norwegians. These rates amount to 29 per cent and 22 per cent of the levels measured for high-educated adults in Hungary and Italy, but 58 per cent in Norway.

Second, low-educated Norwegians engage in *informal learning activities* at rates that exceed the Italian and Hungarian levels by factors of between two and six. The ALL questionnaire has nine questions on such activities, ranging from visiting fairs and workshops to learning by doing. While nearly all low-educated Norwegians (90 per cent) are involved in at least one of these activities, the same is true of only 40 per cent and 27 per cent of Italians and Hungarians, respectively. The gap between low- and high-educated Norwegians is minimal in the field of learning by doing and following personal advice, and is significantly narrower than in the other two countries in the fields of reading and attending events.

Third, a similar gap can be observed in terms of reading books, using a computer and having books at home. In this respect, the Norwegian levels are 2–3 times higher than the Italian and Hungarian ones, and the distances between low- and high-educated people are minimal (books) or small (computer). The cross-country differences in reading newspapers and magazines are less striking, but even in this case the Italians and Hungarians lag behind by 20–30 percentage points.

Last but not least, there is a substantial difference in the role of *work as a source of literacy*. We approximate the feedback from work to the skills of the average low-educated person by creating an index that takes into consideration the employment probability, on the one hand, and the complexity of the jobs undertaken, on the other. The product of the employment rate and the mean number of literacy-related tasks at work (in other words, the share of the population exposed to literacy requirements times the degree of exposure) roughly captures the strength of the feedback in question. As is shown in the last block of Table 8, there is a fivefold difference between Norway and Hungary, and a more than twofold difference between Norway and Italy in this respect. The gap is particularly wide in the case of Type 1 tasks.

[15] See PISA country rankings at http://en.wikipedia.org/wiki/Programme_for_International_Student_Assessment

Labour market success depends on both cognitive and non-cognitive skills, such as interpersonal and communication skills, dependability and conformity, as demonstrated in a series of studies ranging from an early work by Bowles and Gintis (1976) to more recent papers like Heckman and Rubinstein (2001) and Heckman et al. (2006). While the ALL survey does not address non-cognitive skills directly, it does provide information on activities that are known to develop them. Social encounters in which the low educated interact with high-educated people, share common goals and work together to reach them are all typical engines of development. The ALL survey has a dozen questions on such activities, including participation in political, cultural, sports, religious and community groups, fundraising, charity and other volunteer activities. Table 9 collects the data on participation by unskilled people.

Apart from involvement in worship groups (where Italy takes the lead) and charity groups (where Italians and Norwegians score similarly), we observe a wide gap between unskilled Norwegians and Italians, and also between Italians and Hungarians. In Norway, 60 per cent and 50 per cent of the unskilled participate in at least one type of civil organization and in volunteer work, while the respective rates are 22 per cent and 19 per cent in Italy, and 12 per cent and 14 per cent in Hungary.

Table 9: Low-educated people's participation in selected activities (ALL)

	Participation rates (per cent)			Relative to the high educated		
	NO	IT	HU	NO	IT	HU
Participation in organizations/groups						
Political	6.9	2.0	0.9	0.71	0.31	0.45
Sports or recreation	25.0	8.5	1.9	0.61	0.44	0.24
Cultural, educational or hobby	17.5	4.4	2.1	0.63	0.33	0.26
Service club	16.8	4.2	n.a.	1.05	0.49	n.a.
School or community group	20.2	4.6	1.9	0.74	0.67	0.39
Group of worship	7.8	8.5	4.6	1.03	0.75	0.80
Other group, organization	19.3	2.1	3.3	0.99	0.38	0.59
At least one item in the above list (except for service clubs)	*60.1*	*21.5*	*11.7*	*0.82*	*0.54*	*0.51*
Working as a volunteer						
Fundraising	13.4	6.5	3.5	0.69	0.57	0.58
Unpaid member of a board	22.0	2.8	2.2	0.71	0.54	0.35
Coaching/teaching or counselling	9.0	1.7	0.1	0.49	0.19	0.02
Collecting food/goods, charity	8.5	7.5	1.8	0.98	0.61	0.42
Any other activity as a volunteer	12.3	2.0	2.3	0.76	0.28	0.57
At least one item in the above list	*51.8*	*19.1*	*14.3*	*0.77*	*0.55*	*0.49*

The number of observations varies from row to row.

The skilled–unskilled gap is markedly narrower in Norway than in the other two countries, while Italy and Hungary score similarly in some fields (cultural, educational and hobby organizations, religious groups and fundraising) and Hungary leads in some others (involvement in unspecified groups and unspecified volunteer activities).

Table 9 and the 'informal learning' block of Table 8 distinguish a total of 20 activities that potentially contribute to the development of cognitive and non-cognitive skills. As Table 10 shows, practically all low-educated Norwegians participate in at least one of these activities. The 4.4 per cent share of non-participants compares to 49.3 per cent in Italy and 63.5 per cent in Hungary. Up to 41.1 per cent of the Norwegian low educated are involved in six or more activities, compared to 7.1 per cent of the Italians and 2.0 per cent of the Hungarians.

Table 10: The distribution of low-educated people by participation in skills-enhancing activities
(Activities listed in Table 9 and the informal learning activites listed in Table 8)

Number of activities, in which the respondent participates	Norway	Italy	Hungary
0	4.4	49.3	63.5
1	5.0	15.3	16.4
2	10.2	10.0	7.8
3	11.0	8.2	5.5
4	14.5	5.3	2.7
5	13.8	4.8	2.1
6 or more	41.1	7.1	2.0
Total	100.0	100.0	100.0

5.2 Efficient selection and/or learning by doing?

Efficient screening and selection is a plausible explanation for how some low-educated workers can hold down complex jobs. As a direct test of this assumption, one might look at the measurable skills of newly hired and fired workers. Since this is not possible with the data to hand, we compare the test scores of workers employed at different levels of job complexity. This is a second-best option, because workers who are in complex jobs might also have accumulated their literacy skills via on-the-job training, and the data in Table 11 do not disentangle these two mechanisms.

As is shown in the table, the test scores of low-educated workers rise rapidly as we move toward more complex jobs in all countries, but the correlation is markedly stronger in Italy than in Norway and Hungary. This finding is consistent with the expectation, in that the scope for screening, selection and self-selection for demanding jobs is wider in a country with a large low-educated population. The findings, in principle, might also reflect the fact that unskilled Italians learn more efficiently by performing complex tasks; but it is hard to find arguments for such an assumption.[16]

Table 11: The test scores of low-educated workers regressed on the complexity of their jobs

	Norway	Italy	Hungary
Number of literacy tasks	0.0459***	0.0707***	0.0414***
	(0.0072)	(0.0089)	(0.0184)

OLS regression coefficients with jackknife standard errors in the parentheses. Dependent variable: mean of the 15 plausible values for the prose, document and quantitative tests relative to the country mean. Explanatory variables: number of literacy tasks standardized to have zero mean and unit standard deviation in the pooled sample, gender, experience, tenure, rural residence and migrant status. N=10,040. ***) Significant at the 0.01 level.

[16] Recall that the mean test scores are calculated from a set of predicted 'plausible values'. Since they appear on the left-hand side of the equations, the proper procedure would be to estimate 45 equations (15 for each of the three fields of testing) by country and look at the variance of the coefficients. As the differences between Norway and Hungary are insignificant anyway, and as the coefficients for Italy are markedly higher, we do not account for imputation error in this case.

5.3 Small firms in Italy

Italy's relatively high unskilled employment rate is, to a large extent, explained by the existence of a sizeable small-firm sector and by its higher-than-average propensity to hire unskilled workers. Equally important, many unskilled Italians are able to run businesses as self-employed. The data suggest that Italian small businesses can successfully manage, or at least tolerate, the gap between skills and skill requirements. As Table 12 shows, the skill shares are similar in large and small firms in jobs that require no literacy tasks at all, but a wide gap opens up as we move toward complex jobs.

Potential explanations for this observation could be that (i) low-educated Italians who are selected, or who select themselves, for small firms have higher-than-average proficiency levels; (ii) they participate more intensively in post-school skills-enhancing activities.

Table 12: The share of low-educated workers in Italy, by firm size and the number of literacy tasks
(Point estimates and confidence intervals based on jackknife standard errors, per cent)

	Point estimates of the unskilled share		95 per cent confidence intervals	
Literacy tasks	Large firms	Small firms	Large firms	Small firms
Zero	72.2	73.7	64–80	66–81
1–4	49.6	69.5	44–56	62–77
5–10	24.4	36.3	20–29	31–41
11–17	11.9	18.9	8–16	14–24

N=3,995.

The first of these two assumptions is tested in Table 13 by comparing the literacy performance of low-educated Italians employed in small and large businesses. (The overall error variance estimates were computed as the sum of the sampling variance estimates for the first plausible values and the imputation variance, following a shortcut method proposed in Statistics Canada 2011, p. 86.) At the given sample size, we find no evidence of 'creaming': the literacy score estimates can be considered statistically equal in view of the overall error variances. Likewise, all attempts to find differences across firm size in terms of skills-enhancing activities listed in Tables 8 and 9 have failed.[17]

Table 13: The test performance of low-educated Italians employed in small and large firms

	Large firms		Small firms	
Fields of testing:	Mean	Overall error variance	Mean	Overall error variance
Prose	210	6	211	5
Document	208	9	212	4
Numeric	220	3	219	3

N= 1,356 (618 in large firms and 738 in small firms).

There are two plausible-looking explanations for small firms' tolerance of a gap between skills and skills requirements. The first might refer to a small firm's ability to overcome skill deficiencies through helpful interpersonal communication, such as is unavailable on a similar scale in large organizations. The second explanation questions the assumption that the skills gap is *successfully* managed. More often than not, small firms are considered less productive than large companies in terms of both labour productivity and total factor productivity (see

[17] We do not present the negative findings on this issue.

Economist 2012 for the mainstream argument; but also Dhawan 2001 and Diaz and Sanchez 2008, among others, for opposing empirical evidence). To the extent that it happens at all, the skills gap is bridged at the cost of inefficiencies, and can even be one of the causes of lower productivity. Obviously, the data at our disposal are insufficient to test which of these scenarios is closer to the reality.

6 Conclusions for Hungary

This paper has sought to contribute to our understanding of why the post-communist countries have jointly failed to integrate their low-educated populations. High unskilled unemployment and relatively low unskilled wages cast doubt on whether this failure can be explained by disincentives that result in excessively high reservation wages and withdrawal from the labour market. Minimum wages, benefits and taxation are unlikely to account for the region-level failure, given the within-region heterogeneity of labour market institutions and practices.

The data on how low-educated workers and jobs are matched in two other countries – where the majority of the unskilled do succeed in making it into employment – point to deficiencies that stem directly from the common past of the former state-socialist countries. First, while the Hungarian economy offers many simple jobs relative to Norway, it offers far fewer simple jobs than the Italian market. Second, skills obsolescence results in unskilled workers facing strong competition from vocationally trained workers even in simple jobs. Third, the unskilled cannot rely on a network of family-owned and family-managed small firms – a shelter for many unqualified Italians. Fourth, the unskilled are in a state of social isolation, which prevents them from accumulating the proper competencies required in the skills-intensive jobs of large organizations.

The dilemma of which of the successful 'archetypes' of social inclusion should be followed has been present in the political debates throughout the region ever since the start of the transition. Twenty years on, it would seem that the efforts to rebuild a traditional economy have failed. Restitution, voucher privatization, compensation for confiscated property and massive support for small and medium-sized enterprises may have contributed to the formation of a more balanced economic structure, but they have not recreated that which the traditionalist schools and parties were dreaming of. There is not really any route available, other than the one leading 'northwards' – better schooling, more adult training and civil integration, as well as efforts to create a channel by which work can contribute to skills development by bringing the unskilled 'in from the cold' through targeted programmes and wage subsidies.

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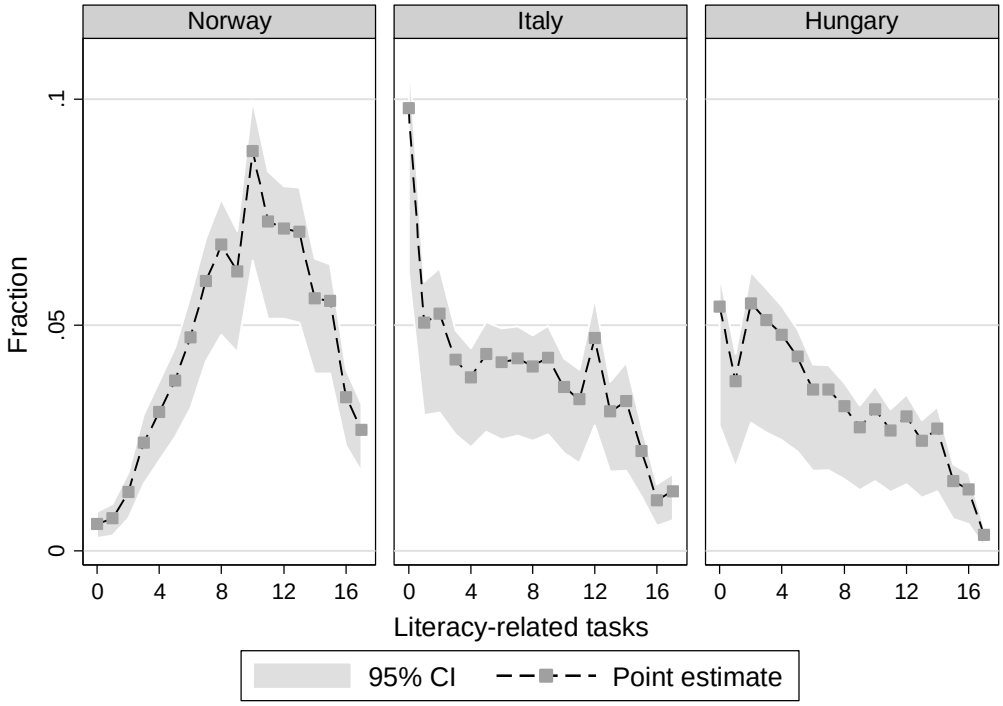
Figure 1: The distribution of jobs by complexity

1(a) Distributions by all literacy-related tasks



1(b): Distributions by Type 1 literacy-related tasks

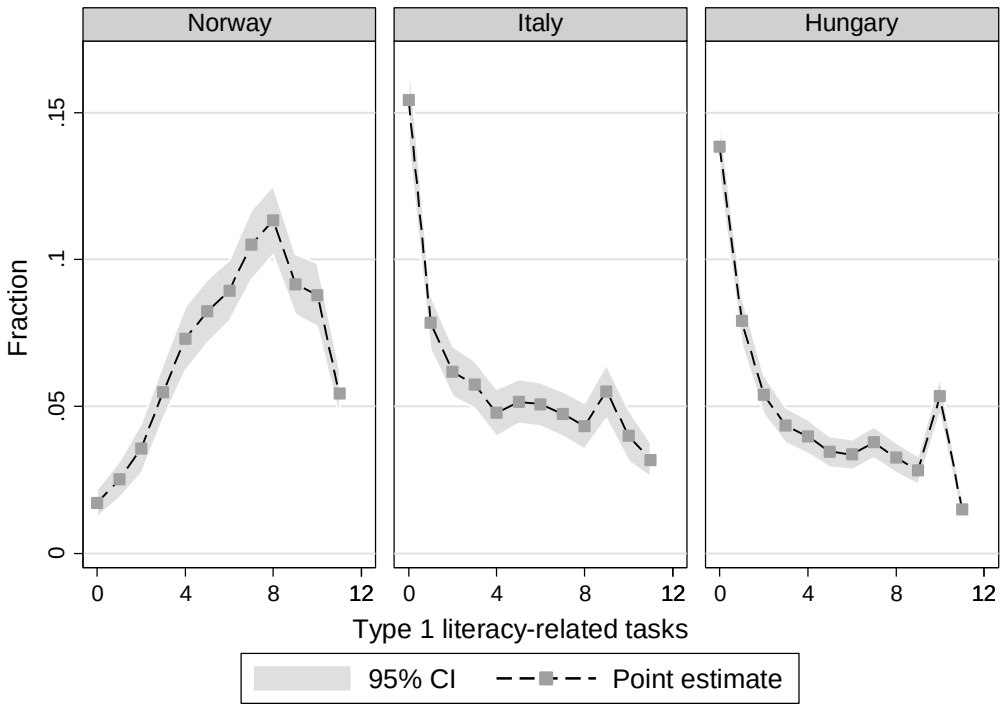
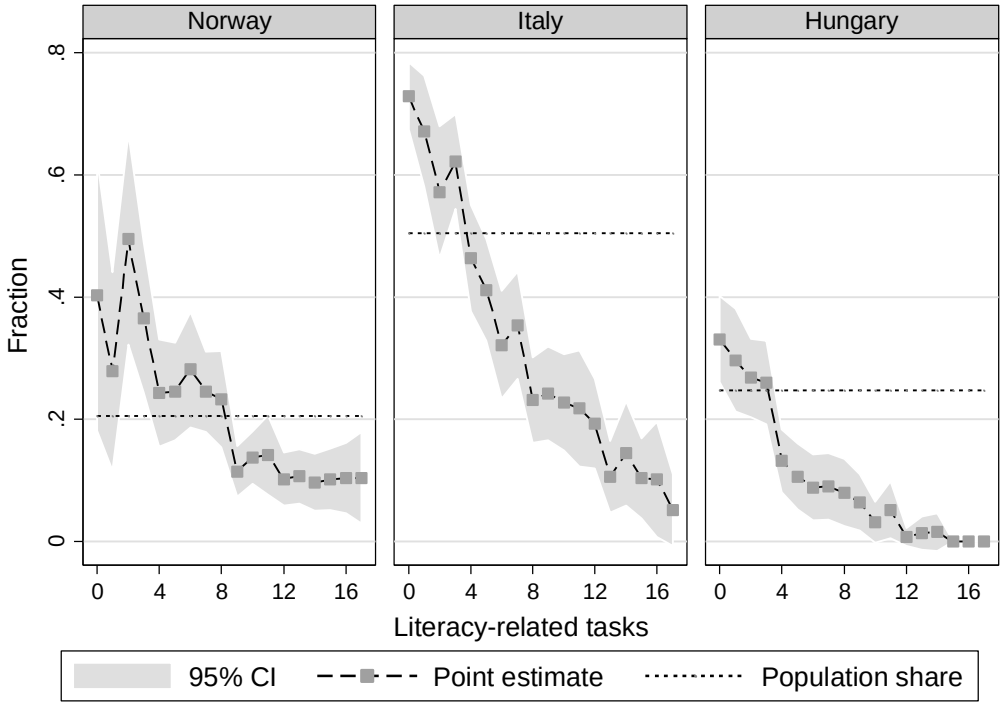


Figure 2: The share of low-educated workers by job complexity

2(a) Shares by all literacy-related tasks



2(b) Shares by Type 1 literacy-related tasks

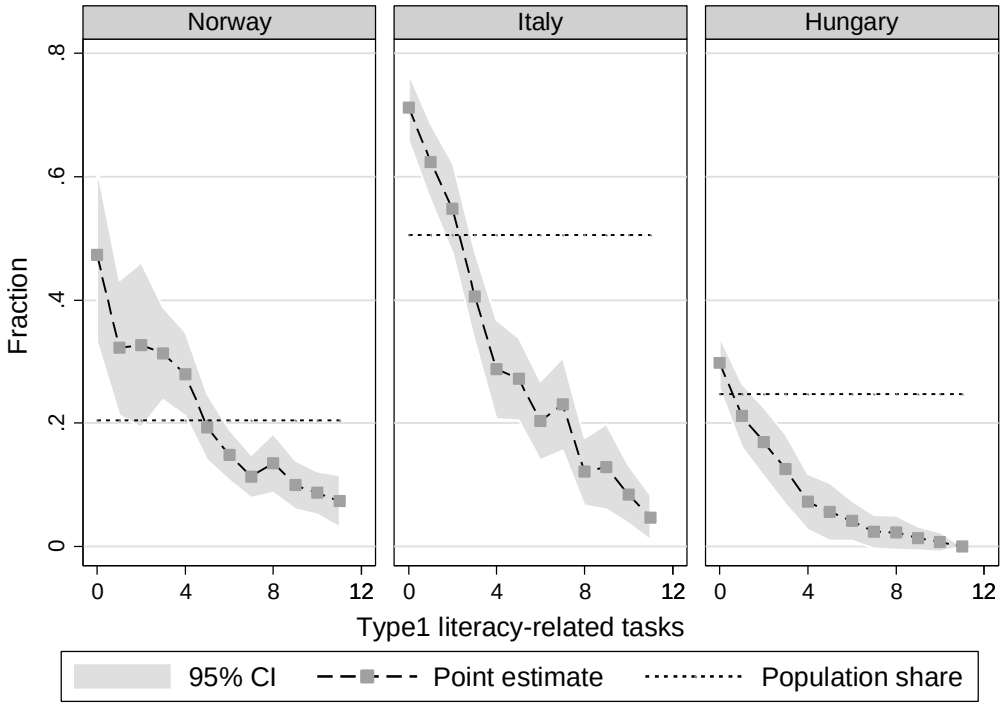
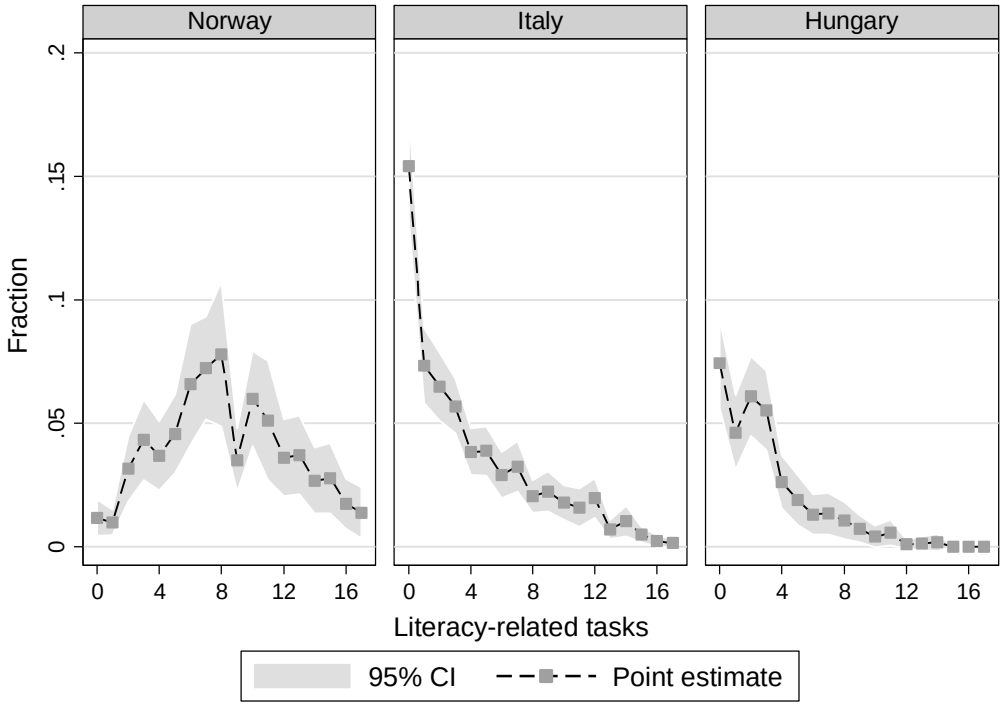
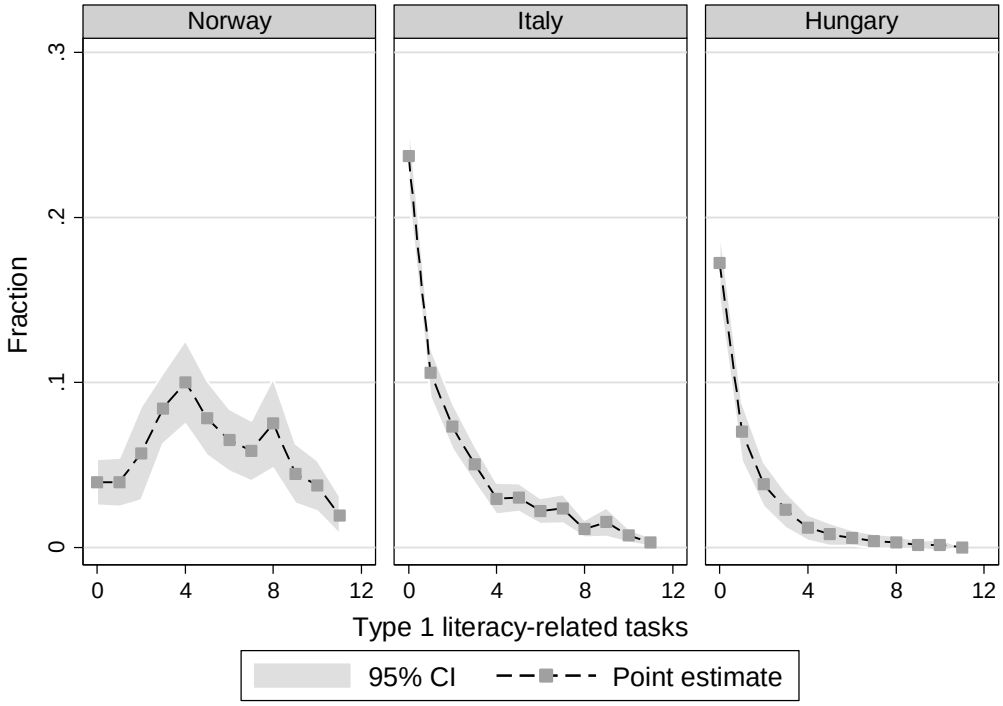


Figure 3: The contributions of jobs of varying complexity to the unskilled employment-to-population ratios

3(a) Complexity measured with all literacy-related tasks



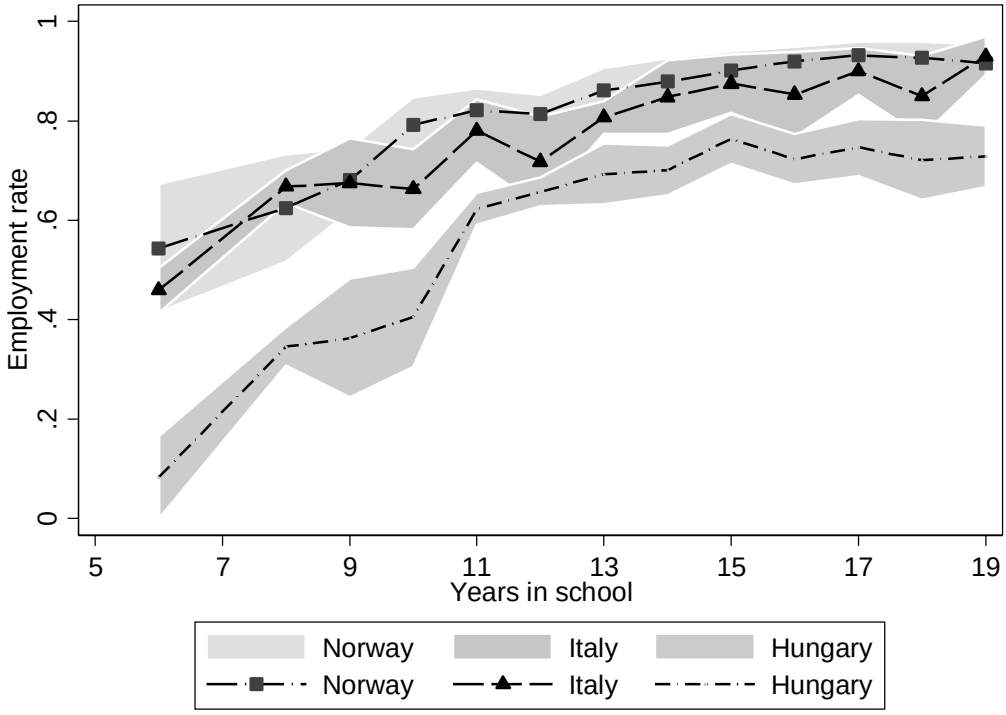
3(b) Complexity measured with Type 1 literacy-related tasks



Appendix

Figure A1: Employment ratios by completed school years (ALL)

Point estimates and 95 per cent confidence intervals based on jackknife standard errors



The figures relate to the population aged 16–64, excluding full-time students and persons older than 35 who have never worked. Years in school: 6 stands for less than 7 and 19 stands for more than 18.