DISCUSSION PAPER SERIES

IZA DP No. 7632

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

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September 2013

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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September 2013

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IZA Discussion Paper No. 7632
September 2013

ABSTRACT

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The paper looks at how the distribution of jobs by complexity and firms' willingness to hire low educated labor for jobs of different complexity contribute to unskilled employment in Norway, Italy and Hungary. In search of how unqualified workers can attend complex jobs, it compares their involvement in various forms of post-school skills formation. The countries are also compared by the weight of small firms, which are assumed to assist low skilled workers through interpersonal relationships. The data suggest that unskilled employment in Norway benefits from synergies between work in skill-intensive jobs, intense adult training, informal learning and involvement in civil activities. In Italy, workplaces requiring no literacy skills at all have the largest contribution but small businesses tend to employ low educated workers at a large scale even in highly complex jobs. In Hungary, insufficient skills (relative to Norway) and an undersized small-firm sector (relative to Italy) set limits to the inclusion of the low educated. An extreme degree of social isolation is likely to deteriorate their skills and jobs prospects further.

JEL Classification: J21, J24

Keywords: skills, skill requirements, unemployment, firm size

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1 Introduction

The gap between high and low educated people in terms of job prospects is nowhere as wide within the EU and the OECD as in the post-socialist countries of Central and Eastern Europe (CEE). The region's persistent failure to provide its unskilled population with work poses the risk of destructive social fragmentation, erosion of the legal and market institutions and slower growth through mechanisms discussed in Easterly, Ritzen & Woolcock (2006) and elsewhere. The present paper wants to contribute to a better understanding of this problem by comparing Hungary, as a representative of the CEE region, to Norway and Italy, two countries that integrate their low educated populace more or less successfully and do so in characteristically different ways.

Following a brief discussion of the literature and the data the paper looks at how two properties contribute to unskilled employment in the countries under examination: the distribution of jobs by their literacy requirements (complexity, for short), on the one hand, and firms' willingness to hire low educated workers for jobs of different complexity, on the other. The remainder of the paper focuses on the question of how so many low educated Norwegians and Italians are capable of doing skill intensive jobs. It first looks at low educated adults' engagement in skill enhancing activities. Second, it examines the importance of small businesses in each country under the assumption that the intense interpersonal relationships characteristic of these ventures can help to overcome the skill deficiencies of their low educated participants.

With only cross-section data at hand the paper cannot aim at exploring causal relationships. It rather wants to draw attention to some rarely considered aspects of the cross-country differentials using elementary tools (tables, charts and descriptive regressions) 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 skill surveys include information on the skill content of jobs, the population's measurable skills and people's engagement in informal learning and a series of civil activities, which can enhance their employability and/or provide them with alternative ways of social integration.

The data suggest that low-educated workers in Norway are often hired for complex jobs requiring a series of tasks, which presuppose proficiency in reading, writing and counting. Workers' ability to attend these jobs is enhanced by their high rates of participation in adult training, informal learning, social, political, cultural, sports and religious organizations, community groups and voluntary work. Norway seems to exploit the synergies between post-school skill formation, work in skill-intensive jobs and civil integration.

The Italian economy absorbs the country's large low-educated population at a rate that substantially exceeds the Hungarian level for men and roughly equal to it for women. The employment rate for both genders is significantly higher than anywhere in the CEEs, especially if we restrict the attention to the population attached to the labor market. Low-educated Italians have poor measurable skills, even when compared to their Hungarian counterparts, and their participation in skill-enhancing activities is nearly as infrequent as of the Hungarians. The explanation of high unskilled employment lies elsewhere. On the one hand, the Italian economy operates a large number of very simple jobs. On the other hand, Italy's sizeable small-firm sector has a high propensity to employ low-educated workers even in complex jobs. This, the paper speculates, is presumably explained by the ability of small, family-based businesses to minimize the need for formal written communication, to provide assistance and ensure control.

In Hungary, the low-educated cannot rely on the traditional small-firm sector, which has been eliminated under state socialism. The SME sector that came into being after 1990 is tiny and skill-intensive, following the North-Western rather than the Southern patterns of entrepreneurship. Second, unskilled Hungarians are practically absent in adult training and civil activities, which could develop their cognitive and non-cognitive skills. These attributes severely restrict the number of jobs available for them while their exclusion from work limits their links to the rest of the society and both non-employment and social isolation constrain them in skill formation.

Given the nature of the data the explanations and conclusions of the paper are tentative. They nevertheless can help in addressing a couple of unanswered questions. The paths of unskilled *employment* and *wages* in the CEEs are well documented but our knowledge of other components of the outcome is rather limited. We know little about what kinds of jobs are filled by the lucky few, who remained in employment. We need to know more about the job characteristics that promote or hinder employers in hiring low-educated applicants. We do not know if it is the composition of jobs by skill requirements or firms' willingness to rely on low educated labor (given skill requirements) that makes Hungary and other CEEs different? The skills survey data hopefully answer a part of these questions and help in setting the hypotheses for in-depth research right.

2 Unskilled employment in Central and Eastern Europe

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

Data from the EU LFS suggest that the East-West mean differential in the unskilled employment to population ratios is significantly larger than the within-region variance. For the data in Appendix Figure A1, panel A, for instance, the East-West gap is 24.5 percentage points while the within-group standard deviation is 8.9 for the CEEs and 9.5 for the non-CEEs.[1] A *country-level* univariate regression with a CEE dummy on the right hand explains 61 per cent of the variance in unskilled (ISCED 0-2) employment rates across the Eurostat countries.[2] A univariate logit estimated for the pooled European sample of low-educated *individuals* correctly classifies 72.7 per cent of the males, 54.4 per cent of the females and 59.4 per cent of all observations.[3] 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 CEEs 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.

[1] The six panels of Figure A1 show the absolute and relative levels of unskilled (ISCED 0-2) employment within the population attached to the labor market. i.e. excluding full-time students and persons older than 35 with no work experience. See Section 3 for a justification of the latter restriction.

[2] The data relate to both genders in 10 CEEs and 19 non-CEEs. The coefficient for the CEE dummy in the regression is -0.24 with a standard error of 0.035.

[3] The model has a dummy variable (employed=1) on the left hand. The marginal effects of living in a CEE country are -18, -5 and -12 percentage points for men, women and both genders, respectively.

The unequivocally poor performance of the post-socialist countries calls for explanations which derive the problem from their common legacies and contemporary histories rather than their highly diverse national labor market institutions. These common points have implications for the composition of jobs by skill content, firms' incentives to hire unskilled applicants, people's capacity to start small businesses and the scope for civil integration.

To start with, 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 FDI had detrimental effect on the share and within-firm relative wages of blue collars. Job destruction in old firms and job creation is new ones were strongly biased against low-educated workers. (See Earle & Telegdy 2012 and Commander & Köllő 2008 using matched employer-employee panels from Hungary and Romania.)

Competition in the product markets also undermined what Ellman (1979) characterized as the 'labor intensive variants of capital intensive technologies': the implementation of the productive capacity without such additional elements as the mechanized transport of materials, compartments and products; feeding systems; control appliance; air conditioning to protect product quality and automated packing. For the state `this dualism had the advantage of combining modern technology with some savings in scarce investment resources' (p.14) and for firms such quantity-oriented projects promised better position in the race for centrally allocated funds. As a consequence, firms had to employ an unusually high number of auxiliary laborers in order to keep the production process afloat. Even in the absence of trade shocks and technical progress these technologies had to disappear as they produced goods of inferior quality.

On top of the transition-specific effects, CEE economies were subject to the more general process of skill-biased technological change (SBTC) that shifted the relative demand curve for unskilled labor inwards. See an overview in Svejnar (1999). The recent increase of demand for low-educated workers, observed in several highly developed market economies and discussed in the *job polarization* literature by Autor, Levy & Murnane (2003), Acemoglu & Autor (2012) and elsewhere, has not reached the CEEs as yet, or, its impact has so far been offset by overwhelmingly negative effects in the tradable sector.[4] This is probably explained by low demand for personal services on the part of a weak and small middle class i.e. lack of an important driver of job polarization in the West (Manning 2004).

[4] In later stages of the transition demand shifts within the tradable sector were not unambiguously detrimental for unskilled labor. Woerz (2003) and Landesmann & Stehrer (2002) indicate shifts toward higher-tech and higher-skill sectors within the Visegrad-5 group and the latter paper also suggest that the more developed CEEs were increasing the unit value ratios of their products. In the same time, Dulleck *et al*. (2005) pointed to a move towards the low-quality product segment within low-tech industries. A paper by Egger & Stehrer (2003) on 14 manufacturing industries in the CzR, Hungary and Poland suggested that since 1993 intermediate goods trade with the EU has accounted for a considerable *reduction* of the skilled-to-unskilled wage bill ratio. Firm survey data analyzed in Commander & Köllő (2008) suggested that FDI and large increases in exports had significant positive impact on demand for workers with primary school background in Hungary and insignificantly positive in Romania. Assembly plants employing many low-educated workers were the fastest increasing segment of the economy after 1995 in Hungary, and it probably applied to several CEEs.

The *relative* demand for primary degree holders within blue collar jobs is further reduced by substitution with workers of uncertified vocational qualification.[5] Skill obsolescence forced many of these workers to take elementary and semi-skilled positions at a wage that only slightly exceeds the wage paid to primary degree holders. (For a summary see Kézdi, Köllő & Varga 2009). Minimum wage regulation and benefits generally set a floor to wages at the bottom of the job hierarchy but the transition process created further limits. Unskilled wages could not adjust immediately and fully in a period when the communist wage grid was abolished and the wage offers started to move toward marginal products. In settings like that the low-productivity groups tend to set too high reservation wages in a potentially lengthy initial period since their unemployment benefits are high relative to their *prospective* wages, irrespective of whether the benefits are flat-rate or set as a fraction of previous earnings. Low-productivity workers learn this indirectly, from having poor prospects of being re-hired, and they obviously do so with substantial delay. This sort of lag in the adjustment of wages was key component in Aghion and Blanchard's (1994) model of the transition and some its extensions, particularly Boeri (2007). It also plays central role in a similar model assuming heterogeneous labor and predicting high inequalities in job prospects during the transition (Balla et al. 2005). Since the employer decisions made during the transition materialized in specific technologies they also have long run implications for the demand for unskilled labor.

Part of the common heritage is the tiny size of the small firm sector relative to countries of similar development, where self-employment and micro firms are the major providers of jobs to the low educated. In terms of self-employment the gap is enormous, as shown in Maloney (2004) which compares the levels of self-employment in the Czech Republic, Hungary and Poland to those in countries having similarly productive wage labor sectors. His data depict the three CEEs as heavy outliers in the mid 1990s. The total gap is smaller because family-owned farms and shops in Romania, Poland and Hungary, for instance, are often operated as unincorporated companies. Therefore these countries have low self-employment rates but relatively high small-firm density. However, the fraction of unskilled workers employed in small establishments (including sole proprietorships) is still deep below the levels measured anywhere outside the club of the most developed western and northern countries. According to the IALS, 46 per cent of the low educated Poles worked in businesses employing less than 20 workers. In other CEEs these proportions were significantly lower: 17 per cent in the Czech Republic and 27 per cent in Hungary and Slovenia which compares to 62 per cent in Chile, 57 per cent in Italy and 50 per cent in Bermuda.[6]

Last but not least, the CEEs jointly lag behind Western and Northern Europe, less so 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, based on the Eurostat's Adult Education Survey, low educated adults' participation in formal and informal training amounts to 10 per cent in the CEEs on average compared to 42 per cent in the North, 23 per cent in the West but only 12 per cent in the South of Europe.[7] In Croatia, Hungary, Latvia, Lithuania and Poland the rates fall short of 10 per cent. In 8 out of the 9 CEEs the rates are lower than in Portugal, the laggard in the EU-15 excluding Greece and Italy, where participation is as infrequent as in the worst performing CEEs.

[5] In most CEEs these workers had three years of vocational training and 11 years in school altogether (12 in the Czech Republic in 1960-78 and after 1990). According to the IALS they account for 23-24 per cent of the labor force in Hungary, Poland and Slovenia and close to 30 per cent in the Czech Republic.
[6] The data for Bermuda come from the ALL. Calculations by the author using the IALS and ALL micro data.
[7] 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.

By looking at the above discussed dimensions of the unskilled labor market in a comparative perspective this paper exploits some yet unexplored issues covered in the international skill surveys. The existing studies mostly deal with the levels and distributions of literacy performance and their linkages with wages. Micklewright & Brown (2004) discuss methodological problems arising in the IALS and some school-based skill surveys. Micklewright & Schnepf (2004) study the consistency of the results of different skill surveys relating to English speaking countries versus the rest of the world. Devroye & Freeman (2000) and Blau & Kahn (2000) compare the skills and wage distributions of Americans compared to Europeans using a continuous wage variable (that is not available in the public files). Denny et al. (2004) and Carbonaro (2002) estimate augmented Mincer-type wage equations using the quintile position variable on the left hand and various literacy indicators on the right hand. McIntosh & Vignoles (2000) estimate both wage regressions and employment probits with literacy measures included on the right hand.[8] Since the micro-data of ALL became publicly available only at the end of 2012, academic research has not yet produced published or pre-published results, to the best of the author's knowledge. For the moment, only the summaries and a few descriptive country reports are available (OECD & Statistics Canada 2005, 2011).

The paper might also add to the literature by dealing with the jobs of people with *primary education background.* This is not exactly what the current literature on skills and skills requirements is generally looking at. Most papers studying the impact of SBTC, for instance, are concerned with the effects of computers and R&D: as much as 41 out of 78 empirical SBTC papers reviewed in Sanders and ter Weel (2000) look at the effect of computers and IT, and 23 addresses the impact of R&D. Most studies investigate the impact of technological change on high school versus college graduates and even those studying the production versus non-production division deal with relatively skilled labor. In their account of what is a production worker in US manufacturing Berman, Bound and Machin (1998) showed that in the mid-1990s 58 per cent of the production workers had high school attainment, 30 per cent had some college, and 8 per cent had college or university background. Less is known about how technological development and structural change affect those, who are genuinely unskilled i.e. lack any kind of educational or vocational qualification.

3 Data and measurement of the key variables

This paper basically relies on the rich background questionnaire of the ALL, which provides information on the respondents' social background, education, state of health, labor market status, job content and involvement in educational and social activities. The three countries were surveyed in 1998 in IALS, 2003 (Norway and Italy) and 2008 (Hungary) in ALL. I use both IALS and ALL for statistics on the size of the low-educated population and employment. A further systematic comparison of IALS and ALL is rendered impossible because of changes in the measurement of workplace literacy requirements and firm size as well as for lack of data on civil activities in IALS. Therefore I rely on the ALL data in the rest of the paper with only occasional reference to the IALS. The key variables used in the paper are the following:

Educational attainment is measured with years in school not counting repeated years. As shown in Table 1, Italy has a large unskilled population, amounting to more than 50 per cent in 1998 and about 6 percentage points lower in 2003. The unskilled share also fell by about 4 percentage points from 28 to 25 per cent in Hungary between 1998 and 2008. In these two countries the

[8] On the IALS see OECD & Statistics Canada (2000, 2001)

unskilled shares based on years in school versus ISCED are similar. This is not the case in Norway, which adopted the internationally accepted classification procedure for ISCED only in 2006.[9] Therefore I 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

	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 never worked.
a) Based on question *a1* in both surveys, except for Norway in the IALS (*a8no*).

The ALL data show that the population is nearly normally distributed by completed school years in Norway with a mode at 12 years. In Italy, three large groups stand out at 5, 8 and 13 years. In Hungary, the largest groups have 8, 11 (uncertified vocational) and 12 (secondary) years in school. The justification for setting the upper limit for low education at 10 years in school is given by the fact that the fraction of respondents classified as ISCED 0-2 steeply fall in both Italy and Hungary as we step from 10 to 11 years in school and so does the employment rate in Hungary (Appendix Figure A3). The data for Norway are missing as was mentioned. The high-educated had 13.5-13.8 years in school in the three countries on average while the low educated have longer records in Norway (8.8 years) than in Hungary (8.1 years) and Italy (7.2 years)[10].

Employment is measured with status at the time of the interview. The level of unskilled employment in absolute and relative terms is shown in Table 2. The proportion of workers employed (i) at the time of the interview and (ii) at least once in 12 months prior to the interview follows similar patterns across countries: Norway has a 30-35 percentage point's advantage over Hungary while Italy is halfway between the two countries. In terms of full time equivalent employment Italy gets closer to Norway and Hungary's disadvantage diminishes but remains substantial.

Since this paper is primarily concerned with the issue of social inclusion I put the dividing line between *no work* and *some work* i.e. do not distinguish between full-time and part-time employment. While it is true that part-time work generates lower income, it allows formal and informal on-the-job training and can deliver most of the non-wage benefits from work such as a structured everyday life, social contacts, appreciation, self-esteem and the feeling of usefulness[11]. From the two indicators measuring the *incidence* of work I choose the first one (employed at the time of the interview) in order to maintain comparability with LFS-based and other stock-type data.

[9] See EWCO (2009). As a result, the unskilled share jumped from 10 to 20 per cent.
[10] The differences in both educational categories remain significant after accounting for sampling error.
[11] See a seminal lecture by Marie Jahoda (1979) for a profound discussion of these benefits.

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

	IALS			ALL		
	Norway 1998	Italy 1998	Hungary 1998	Norway 2003	Italy 2003	Hungary 2008
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[d]	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[d]	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 never worked before. 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 d) The respondent is either employed or non-employed but had a paid job in the year preceding the interview.

One might argue that the labor market status of unskilled people should rather be measured with their *unemployment rate* since the non-participants withdraw from the market at will. The results would be similar: in the IALS the unskilled unemployment rates amounted to 5.2, 9.9 and 27.1 per cent in Norway, Italy and Hungary, respectively, while the corresponding figures in ALL were 5.9, 15.2 and 36 per cent, 1.3, 1.7 and 3.3 times higher than the skilled unemployment rates, respectively. However, from the point of view of social inclusion and skills formation the dividing line is clearly between work and no work rather than between labor force participation and inactivity.

Workplace literacy requirements. The ALL interview had 17 questions on the frequency of reading, writing and quantitative tasks at the workplace. I dichotomized these variables by setting their value to 0 for respondents answering that they "never or rarely" engage 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 small minority of the respondents. Attaching this minority to one or the other of the two large groups has no effect on the qualitative results.

Table 3 gives a list of the tasks in question, ordered by their effect on the share of high educated workers. This effect was estimated by regressing a high educated dummy on a set of controls in the pooled ALL sample, with the literacy tasks entered one by one.[12] A wage effect was estimated in a similar way. Finally, the last column of the table shows the outcome of a principal factor analysis of the 17 items. Skill 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 weak effect on the skill share and wages.

In order to keep the amount of statistics at a manageable level I use two indicators to characterize the complexity of a job: (i) the number of literacy tasks (Type1, Type 2 and overall) present at a job (ii) the weighted sum of tasks using the coefficients of the wage regression as weights. Appendix Figure A2 gives an overview of how the two measures of complexity relate to each other.

[12] Entering the 17 tasks together results in many insignificant coefficients because of collinearity and small size of the samples. The controls include tenure, firm size and dummies for part time jobs, occupations, agriculture and countries.

Table 3: Literacy-related tasks at 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 prepare 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, spreadsheet 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

b) OLS regression coefficients. Dependent variable: monthly gross earnings normalized for the country means. Explanatory variables: gender, experience, experience squared, years in school, occupation dummies, small firm, part time, rural. Estimation sample: pooled sample of employed workers

c) Assignment to two principal factors depending on factor loadings. Note that for "giving or following directions" the two factor loadings are very close to each other.

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

Occupations and sectors are coded using one digit ISIC and 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, I 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 with 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. The 'plausible values' for their test performance were estimated by Statistics Canada relying on item response theory. In calculating imputation error I follow the procedure proposed in Statistics Canada 2011b, p. 85.

Norwegians performed better at the tests than Hungarians and especially Italians. In the prose tests of the ALL, 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 slightly 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 variances calculated as suggested in Statistics Canada (2011b, 85-86) and explained in the text.
b) Coefficients of the low educated dummy in OLS regressions controlled for gender, age, age squared, rural residence and migrant status. The error variance was calculated as suggested in Statistics Canada (2011b, 88-90) and explained in the text.

Two notes concerning the use of test scores apply at this point. First, several facts make the observer suspicious about cross-country comparisons in terms of absolute test performance. It is hard to believe that Norwegian laborers employed in elementary occupations have higher cognitive skills (268 points in ALL) than do Italian professionals (266 points). It is also hard to accept as true that the absolute level of test performance improved so admirably, in each and every Hungarian birth cohort, as suggested by a comparison of the IALS and ALL data (Figure A4). 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 I stay away from a detailed cross-country comparison of test scores without calling into question that Norwegians perform better than Hungarians, who have a slight advantage (if at all) over Italians.

Second, I do not use the literacy test scores on the right-hand side of any model. The data provide information on current skills – ones that carry the effect of work experience – and the survey does not contain information that could be used to eliminate the resulting endogeneity bias. Variables, which might seem to be proper instruments at first sight such as parents' education, reading habits or the frequency of attending cultural events are likely to affect employment probabilities through channels other than their impact on literacy skills.[13]

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

Calculating standard errors. Statistics Canada (2011b) proposes the calculation of sampling variance for all statistics like means, shares and regression coefficients and the data file offers 30 replicate weights to make this correction possible. In multivariate models I follow the jacknife procedure suggested in the manual. I also evaluate sampling errors in simple tables when the group means fall close to each other. In several cases the cross-country and between-group differentials under examination are enormous compared to the sampling errors. The adjusted estimates (mean ± jacknife 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 we 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 I do not attach sampling variance to the observed means and cell proportions.

[13] This relates to wages, too. Workers employed in jobs with higher literacy requirements are paid higher wages, all else equal, while they are also likely to achieve higher levels of literacy over time. Therefore their current test scores and current wages are simultaneously affected by their literacy skills and reservation wages at the time they were selected for their jobs.

Treating missing values. I apply case to case deletion of missing observations i.e. do not restrict the analysis to respondents, for whom all variables appearing in the paper are non-missing. This would imply a major loss of observations.

Sample size. After excluding students and persons older than 64 we are left with 4493 observations in Norway, 5830 in Italy and 4875 in Hungary. For the low educated the figures are 981, 2927 and 914, respectively.

4 Who employs low educated workers?

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

4.1 Employment to population ratios

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/urban residence and immigrant status and the equations are estimated for both genders and men and women separately.

The estimations for women and both genders are repeated after excluding people older than 35, who reported that they never worked before. Slightly less than 5 per cent of the pooled sample belongs to this category, of which 89 per cent are female, 93 per cent do not look for jobs, 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 restrict the attention to the population attached to the labor market under 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 do not look for jobs now, are unlikely to enter the labor market later.

The estimates for Norway indicate an 11-12 percentage points disadvantage of the low educated (6-7 per cent for men and 17 per cent for women) in IALS and ALL that is robust to the inclusion/exclusion of the unattached population. In Hungary, the gender differentials are small, the estimates are practically equal for the total and restricted samples but the data indicate a major deterioration over time. The disadvantage of 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 in Italy over a five-year period, especially with women. This is probably explained by fast changes in the composition of the working age population i.e. the inflows of young women with college and university background and the outflows of ‘mammas’, who spent their entire post-school lifespan as ‘inactive’ (working hard at home, that is). The gender differentials are large even in the restricted sample: the skilled-unskilled gaps were 3 per cent for men but 21 percent for women in the IALS, which grew to 10 and 28 per cent by the time of the 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 smaller: a growth from 12 to 18 percentage points.

Table 5: Probability of employment - Average partial effect of low education 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)

Standard errors in parentheses. Controlled for age, age squared, rural residence, migrant status and gender in the first and last rows. Dependent variable: employed at the time of the interview. 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. xx

It is hard to decide how to deal with the prevalence of lifelong female inactivity in Italy and how to choose the population that is relevant for calculating an employment rate. The key question is whether we only observe a special, southern-type division of gender roles (and the resulting unequal sharing of employment opportunities) or the case is that massive female inactivity actually reduces the employment rate of the entire unskilled population. In the long run, reality is probably better described by the second option: more women in the labor force would predictably do more than just crowding out some men from their jobs. It would reduce the costs of job creation through several channels (lower recruitment costs, wage push, less skills-related and geographic mismatch) and stimulate employment growth. However, in this paper concerned with the status quo at a point in time, it seems justified to regard the level of unskilled employment as given and consider gender differentials a distributional issue. To the extent this reasoning is right, it is defensible to look at the employment probability of the entire low educated population after excluding those, who are not (have never been and predictably will never be) attached to the labor market. Therefore I regard the coefficients in the last row of Table 5 as the first best estimate for the employment gaps between high and low educated people. We find a relatively small difference between Norway and Italy and an enormous gap between any of these countries and Hungary.[14]

It is often argued that unskilled employment in Hungary and elsewhere in the CEEs is only seemingly low since unqualified people *work informally* on a massive scale and do so more frequently than their skilled counterparts. Hungary has a relatively large informal economy compared to Norway but not to Italy. Schneider's (2002) estimates, for instance, are 25, 19 and 27 per cent for the three countries, respectively, and other sources hint at similar relative rankings. Furthermore, the ILO-OECD employment figures, which fall very close to the self-reported ones, actually include a large part of the unregistered work. There was a 13 percentage

[14] It is worth noting that any comparison with Italy is subject to omitted variable bias because of its exceptionally large low educated population. It is likely that (i) the median unskilled person is located higher in the ability ranking in Italy than in Hungary and Norway and (ii) unobserved ability affects employability through channels other than its effect on schooling. If we were able to control for ability, the estimates for Italy would indicate a wider employment gap between low and high educated people.

point's gap between LFS-observed and registered (by the tax office) employment for low educated Hungarians in 2011, for instance. Other data and research results cited in Benedek, Elek & Köllő (2013) suggest that black work, unobserved in the LFS, may not be particularly frequent with the low educated: the reviewed studies suggest narrower-than-average gap between their declared consumption and income, lower life satisfaction holding declared household income constant and less frequent receipt of envelop wages i.e. an official minimum wage supplemented with informal side payments. Any explanation blaming the hidden economy for low (observed) unskilled employment in the CEEs ought to address and falsify an abundance of contradicting evidence.

At least a sizeable minority of the general public tends to regard Hungary's unskilled unemployment problem as a 'Roma problem'. This is unlikely in view of the fact that the trouble is present in all post-socialist countries including those with no or miniscule Roma population like Slovenia, Poland or the Baltic states. The scarcely available data from Hungary also call into question if the whole problem is driven by Roma unemployment. Kemény, Janky & Lengyel (2004) estimate that slightly more than 20 per cent of the low-educated male population aged 20-59 was regarded as Roma by their neighborhood in 2003, and their employment rate was around 23 per cent. Back-of-the-envelop calculations based on these and LFS data suggest that about 60 per cent of the non-Roma prime age males might have been employed in 2003. This is still way below the Norwegian and Italian levels in the same population and year: 85 and 80 per cent according to the ALL, respectively. Furthermore, it is likely that one could easily circumscribe sub-populations in Italy, perhaps less so in Norway, which has similar social attributes (living in social deprivation in urban ghettos and remote villages) and similar employment rates to those of the Hungarian Gypsies.[15]

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 $t \geq 0$ years ago 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.

Starting with the least surprising results, managerial and other skilled jobs employ significantly less 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 less low educated workers in all countries but this result is significant only in Italy and (weakly) in Norway.

[15] If either discrimination or the voluntary withdrawal of the Roma from work is part of the problem, the 60 per cent employment rate of the prime age non-Roma males should be regarded as upward-biased by positive discrimination and/or weaker competition for jobs compared to a country with no similar minority.

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 (less 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)	(1.11)
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 jacknife 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.

In both Norway and Italy the unskilled shares steeply rise 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 1/6 and 1/8 of the levels measured in the other two countries. This result together with some further data suggest that (i) the jobs attended by low educated Hungarians before the transition had a low probability of surviving until 2008 (ii) their jobs are short-lived today.[16]

Literacy tasks required in the job have strong negative effect on the unskilled share in Norway and Italy and weaker 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.

[16] 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 the highest level (19 per cent) in the youngest jobs with shorter than 2 years of tenure.

Small firms employ more unskilled workers in Italy (by 10 per cent) and less in Hungary (by 2 per cent) than 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 labor market. This might be called a *size effect,* which indicates how many j-type jobs are 'at the disposal' of the entire labor force. The product of the share effect and the size effect ($\varphi\Omega$) measures the contribution of j type jobs to the unskilled employment to population ratio in percentage points (e_L).

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

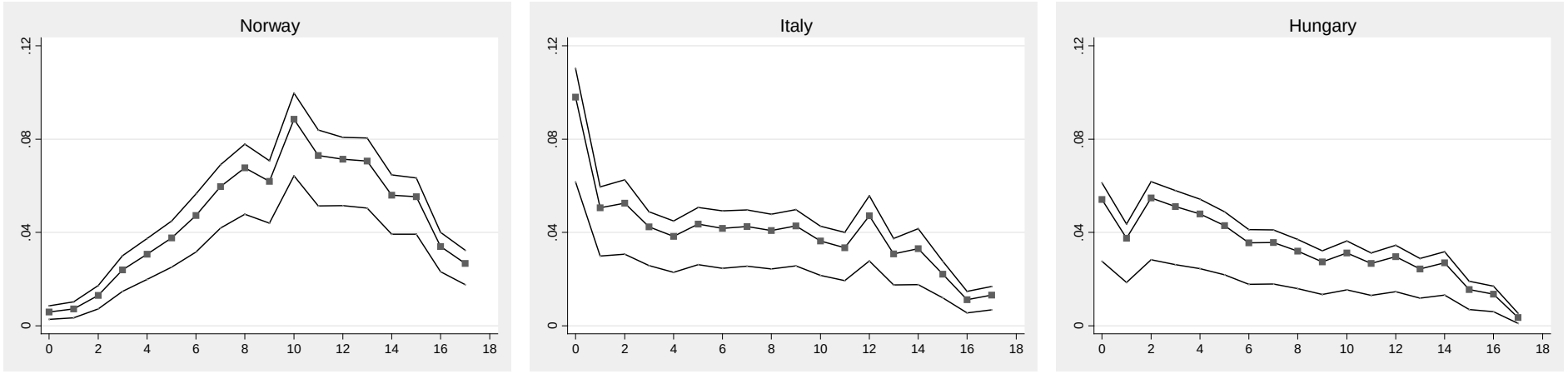
Starting with the upper row of Panel A, we see that in Norway the modal job involves 10 different literacy-related activities. By contrast, in both Italy and Hungary the largest group of jobs requires no literacy tasks (present in our list) at all. The Italian economy operates a particularly large number of very simple jobs. Otherwise the curves for these two countries fall close to each other but Italy's higher aggregate employment rate is reflected in a larger area below its curve.

The share effect shown in the second row of Panel A indicates that many low educated Norwegians attend complex jobs: their share in employment exceeds their population share in the domain of 0-8 literacy tasks unlike in Italy and Hungary, where low educated people are under-represented in jobs requiring more than 3 tasks. Compared to Hungarians, low educated Italians have a higher probability of being employed in all categories of jobs. The qualitative conclusions from Panel B are similar.

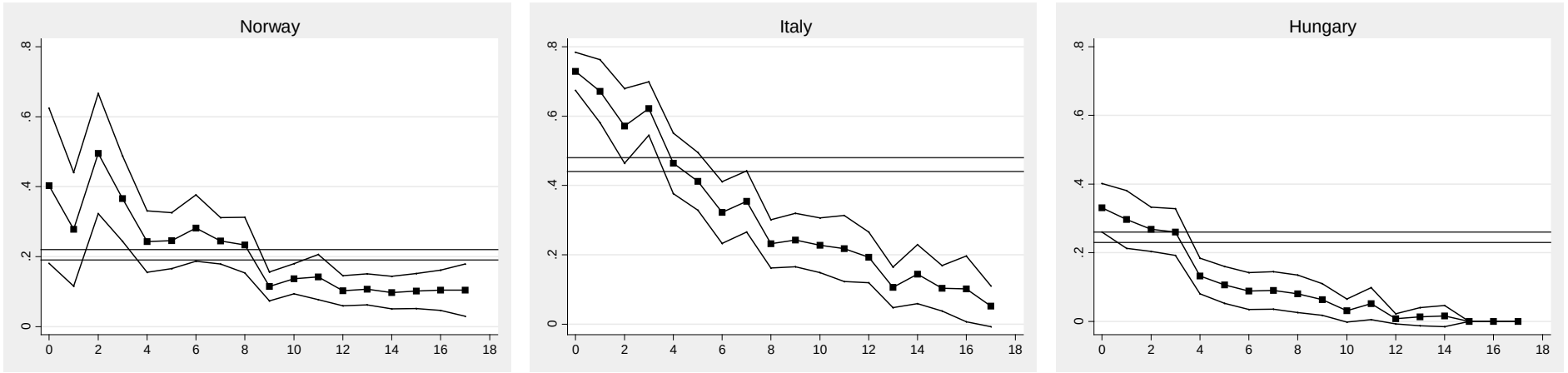
Finally, Panel C plots the contributions of job types to the unskilled employment ratio. In Norway, the bulk of unskilled employment comes from jobs requiring 6-11 different literacy tasks. In Italy, simple jobs demanding no literacy and numeracy at all play the most important role and the contributions monotonously decrease as we move toward complex workplaces. Hungary follows a similar pattern but the contributions are smaller at almost all levels of complexity.

Figure 1, Panel A: The distribution of jobs and the share of low educated workers by job complexity

The distribution of jobs by the number of literacy tasks



The share of low educated workers by the number of literacy tasks and their population share

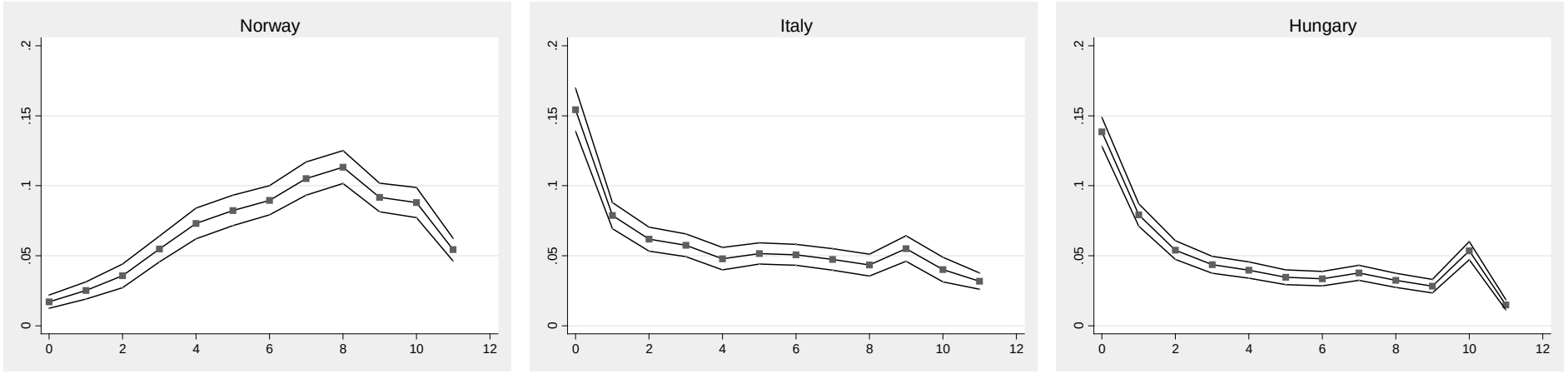


The number of literacy tasks

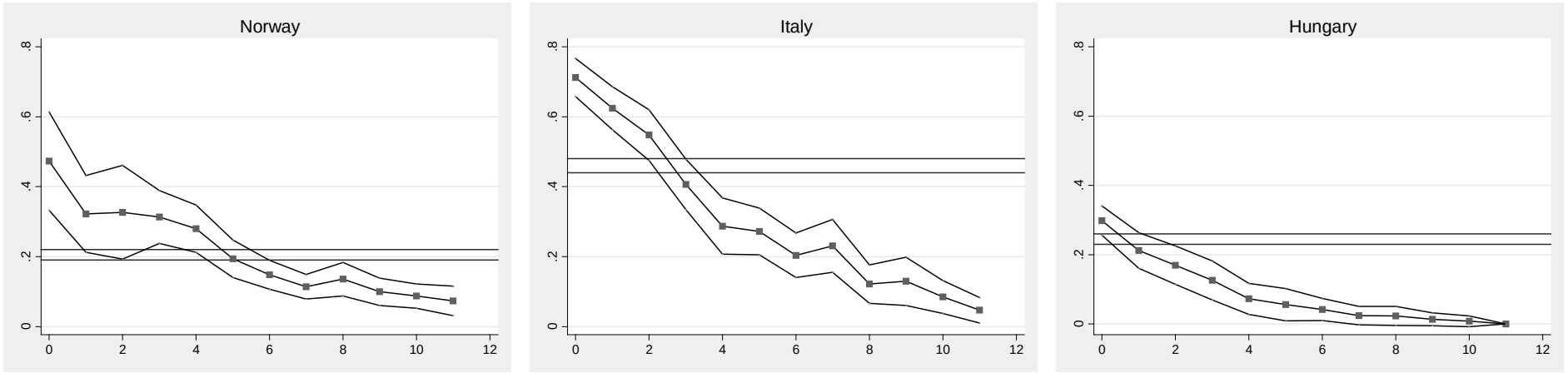
Note: 95 per cent confidence intervals indicated

Figure 1, Panel B: The distribution of jobs and the share of low educated workers by job complexity (Type 1 tasks)

The distribution of jobs by the number of Type 1 literacy tasks



The share of low educated workers by the number of Type 1 literacy tasks and their population share

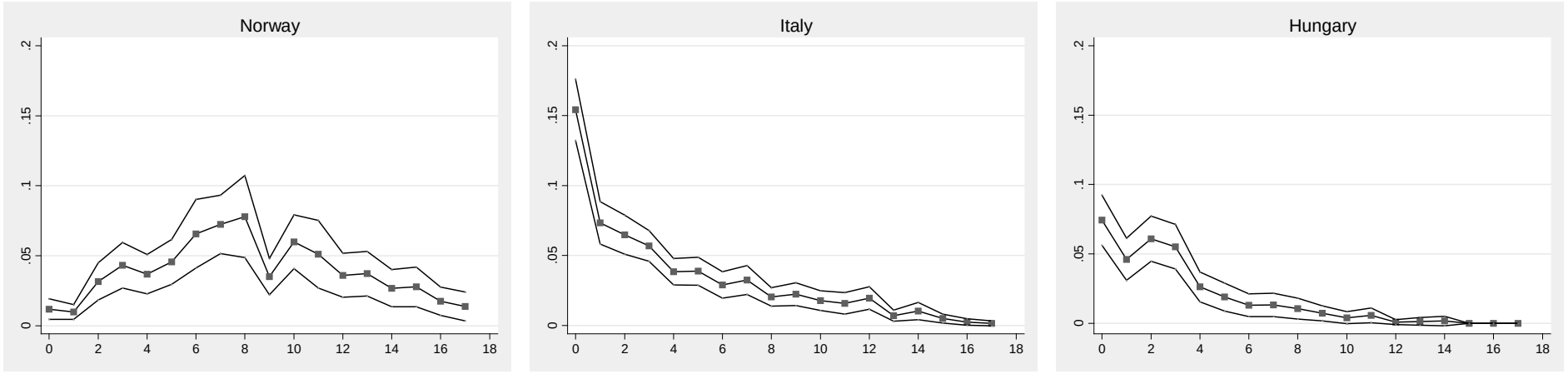


The number of Type 1 literacy tasks

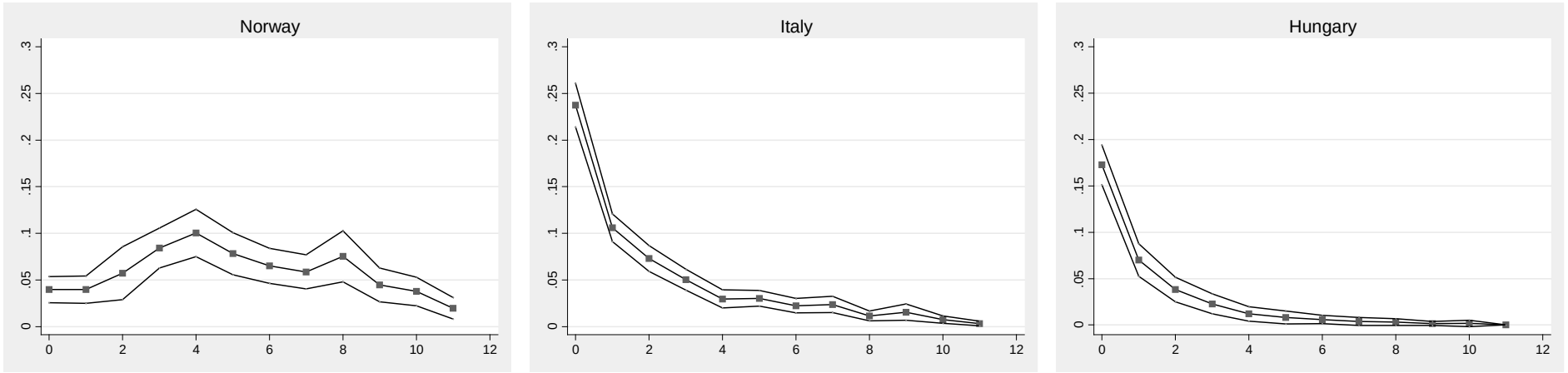
Note: 95 per cent confidence intervals indicated

Figure 1, Panel C: The total contribution of jobs of different complexity to the unskilled employment to population ratio

Job complexity measure: the number of literacy tasks (0-17)



Job complexity measure: the number of Type 1 literacy tasks (0-11)



The number if all/Type1 literacy tasks

Note: 95 per cent confidence intervals indicated

The patterns arising in Figure 3 remain valid if we distinguish the literacy tasks by their effects on wages and characterize each job with a weighted sum of the tasks present in the job, as was discussed in the comments to Table 3. Appendix Figure A5 depicts 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 either Italy or Norway and does not increase steeply as we move toward simple jobs.

4.4. Decomposition by firm size

The results of a similar decomposition by firm size are presented in Table 7. Small firm density is 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, roughly equal to large firms' contribution in Hungary and decisive in Italy.

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

	Norway	Italy	Hungary
Size effect			
Jobs in small firms/working age population	0.23	0.39	0.24
Share effect			
Unskilled share in small firms	0.16	0.43	0.11
Unskilled share in the population	0.20	0.46	0.25
Unskilled share in small firms/share in the population	0.77	0.94	0.66
Total contributions			
Unskilled employment to population ratio	0.69	0.49	0.34
Large firms' contribution	0.52	0.13	0.18
Small firms' contribution	0.17	0.36	0.16

5 How low educated Norwegians and Italians can attend skill-intensive jobs?

This section discusses three mechanisms potentially explaining how the gap between skill requirements and low education can be bridged. First I present data on adult training, informal learning and civil activities, which potentially develop the cognitive and non-cognitive skills of the adults with primary school background. Second, I present data on how cognitive skills (as measured by the literacy test scores) rise as we move toward more complex jobs under 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 skill deficiencies of those involved in the business.

5.1. Adult training, informal learning and civil integration

In the preceding sections we found that low educated Norwegians often make it to skill intensive jobs: the vast majority of them (80 per cent) are employed in workplaces, which require 4 or more literacy-related tasks and more than 50 per cent attend jobs involving 7 or more tasks. The respective figures are only 36 and 19 per cent in Italy and 22 and 9 per cent in Hungary. Educational attainment alone is unlikely to explain this sharp contrast: the median Norwegian low educated person had 9 years in school as opposed to 8 years completed by Italians and Hungarians. Furthermore, the Norwegian educational system does not perform brilliantly according to the PISA tests for 15 year old students – the age when our subjects complete their studies. In 2000-2006 Norway was ranked 13th, 19th and 24th in reading, maths and science while the respective rank numbers were 20, 22 and 25 for Italy and 22, 25 and 15 for Hungary out of

30 countries. In 2009 the ranks were 21, 24 and 12 (Norway), 29, 35 and 26 (Italy) and 35, 22 and 29 (Hungary), out of 74 countries. [17]

Norway's success could better be described as a kind of 'high equilibrium', in which adult training, informal learning activities and integration to the civil society generate skills and allow access to skill-intensive employment which, in turn, is itself a source of cognitive and non-cognitive competencies and a road to social inclusion. The question of causation remains unsolved: with cross-section data at hand we cannot aim at unraveling the 'chicken or the egg' problem - what the data can show is how dramatic the cross-country differences are in *all* dimensions of post-school skills formation.

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

Table 8: Potential sources of skills - Selected indicators (ALL)

	Levels[a]			Relative to the high educated		
	NO	IT	HU	NO	IT	HU
School-based education						
Completed schoolyears (mean)	8.8	7.2	8.1	0.64	0.52	0.59
Completed schoolyears (median)	9	8	8	0.60	0.62	0.67
Adult training						
Took training in last 12 months	33.4	5.7	5.7	0.58	0.22	0.29
Informal learning activities						
Visit trade fairs, professional conference	20.2	8.7	2.5	0.49	0.32	0.13
Attend lectures, seminars, workshops	28.1	3.7	4.6	0.44	0.15	0.19
Read 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
Use computer/internet not part of a course	43.2	8.6	3.4	0.54	0.21	0.14
Use video, television, tapes to learn	34.6	13.7	7.6	0.71	0.51	0.43
Learn by watching, getting help/advice	63.5	22.0	11.5	0.75	0.49	0.35
Learn by trying things out, practice	86.3	23.3	13.5	0.89	0.51	0.36
Learn 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[a]						
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 first and last two rows. b) At least occasionally c) Employment rate times the mean number of Type 1 (Type 2) job-related literacy tasks performed by those in employment

Second, uneducated Norwegians engage in *informal learning activities* at rates that exceed the Italian and Hungarian levels by factors between two and six. The ALL questionnaire has nine

[17] http://en.wikipedia.org/wiki/Programme_for_International_Student_Assessment

questions on such activities ranging from visiting fairs and workshops to learning by watching, copying, trial and error and practicing. While nearly all uneducated Norwegians (90 per cent) are involved in at least one of these activities, only 40 and 27 per cent of the Italians and Hungarians do so. The gap between low and high educated Norwegians is minimal in the field of learning by doing and following personal advice and significantly narrower than in the other two countries in learning by reading and attending events.

Third, a similar gap can be observed in reading books, using 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 (reading and owning books) or small (using computer). The cross-country differences in reading newspapers and magazines are less striking but even in this case the Italian and Hungarian levels lag behind by 20-30 percentage points.

Last but not least, there is substantial difference in the role of *work as a source of literacy*. I approximate the feedback from work to the skills of the average low educated person by creating and index, which takes into consideration the employment probability, on the one hand, and the complexity of jobs held, on the other. The product of the employment rate and the mean number of literacy related tasks to be performed at work (i.e. the share of the population exposed to literacy requirements at work times the degree of exposure) roughly captures the strength of the feedback in question. As 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 which require proficiency in reading and writing letters, notes, reports and other office-type documents.

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

	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 counseling	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*

Labor market success depends on both cognitive and non-cognitive skills like interpersonal and communication skills, dependability and docility as demonstrated in a series of studies ranging from an early work by Bowles & Gintis (1976) to a series of more recent papers (Heckman & Rubinstein 2001, Heckman, Sixtrud & Ursua 2006). While the ALL survey does not address non-cognitive skills directly it provides information on activities, which are known to develop some of them. Social encounters in which the low educated interact with high educated people; share common goals and work together to reach them are typical engines of development. The ALL

questionnaire has a dozen of questions on participation in such activities and civil organizations including 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 groups of worship, where Italy takes the lead, and charity, 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 and 50 per cent of the unskilled participate in at least one type of civil organizations and volunteer work while the respective rates are 22 and 19 per cent for Italy and 12 and 14 per cent for Hungary.

In relative terms, the picture is less unambiguous. The skilled-unskilled gap is markedly narrower in Norway than in the other two countries but 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 political organizations, unspecified groups and unspecified volunteer activities).

Table 10: The distribution of low-educated people by the number of activities listed in Table 9 (block on informal learning activites) and Table 8 (ALL)

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

Table 9 and the 'informal learning' block of Table 8 distinguish a total of 20 activities outside the school system and formal adult training that potentially contribute to cognitive and non-cognitive skills. As shown in Table 10, 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. As much as 41.1 per cent of the Norwegians are involved in 6 or more activities, which compares to 7.1 of the Italians and 2.0 per cent of the Hungarians.

5.2. Efficient selection and/or learning by doing?

More efficient screening and selection is a plausible explanation of how some low educated workers can attend complex jobs. As a direct test of this assumption one might look at the skills of newly hired and fired workers. Since this is not possible with the data at hand, I compare the measured skills of workers by the level of job complexity. This clearly is a second best solution because workers attending complex jobs might also have accumulated their literacy skills via on the job training. The data in Table 11 do not disentangle these two mechanisms – they only indicate the strength of the association between job complexity indices and test scores.

As shown in the table, the test scores of low educated workers rise as we move toward more complex jobs in all countries but the correlation is markedly stronger in Italy than Norway and Hungary. This finding is consistent with the expectation in that the scope for screening, selection and self-selection to demanding jobs is wider in a country with a large low educated population.

The findings, in principle, might also reflect that unskilled Italians learn more efficiently by performing complex tasks but it is hard to find arguments for such an assumption.[18]

Table 11: The test scores of low educated workers regressed on two measures of job complexity

Measures of complexity	Norway	Italy	Hungary
Number of literacy tasks	0.0459***	0.0707***	0.0414***
	(0.0720)	(0.0089)	(0.0184)
Number of literacy tasks adjusted for wage returns	0.0494***	0.0767***	0.0395**
	(0.0071)	(0.0096)	(0.0190)

OLS regression coefficients with jacknife standard errors in the parantheses. Dependent variable: mean of the 15 plausible values for the prose, document and quantitative tests relative to the country mean. Explanatory variables: proxies of job complexity as defined in the text commenting Table 1. The proxies are standardized to have zero mean and unit standard deviation in the pooled sample. The equations are controlled for gender, experience, tenure, rural residence and migrant status.

5.3. On 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 it's 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 shown in Table 12, the skill shares are similar in large and small firms in jobs requiring no literacy tasks at all but a wide gap opens as we move toward more complex jobs.

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 jacknife standard errors, per cent)

	Point estimates of the unskilled share		95% 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
10-17	11.9	18.9	8-16	14-24

A potential explanation for this observation might refer to the exceptional size (by European standards) of the low educated population, which opens the possibility of 'skimming the cream' of it. Unskilled Italians, who work in small firms or run their own small businesses may have low education but higher than average proficiency levels and/or higher participation rates in post-school skill enhancing activities.

The first of these two assumptions is tested by comparing the literacy performance of low educated Italians employed in small and large businesses. In doing so I follow the suggestions of Statistics Canada (2011b, 85-86): I first calculate the average of the five plausible values for small and large firm employees by field of testing (Θ_m, m=1,2,…5), get their means (Θ) and compute the imputation variance for each field of testing and firm size as:

[18] Note that the mean test scores are calculated from a set of predicted variables (plausible values). They appear on the left hand side of the equations, so the proper procedure would be estimating 15·3 equations by country and looking at the variance of the coefficients. Since the differences between Norway and Hungary are insignificant anyway and the coefficients for Italy are markedly higher, I do not account for imputation error in this case.

$$(2)\quad Var_{imp}(\Theta) = \left[1+\frac{1}{5}\right] \times \sum_{m=1}^{5} \frac{(\Theta_m - \Theta)^2}{4}$$

Overall error variance is 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 (2011b, 86):

$$(3)\quad Var(\Theta) = Var_{smpl}(\Theta_1) + Var_{imp}(\Theta)$$

As shown in Table 13, at the given sample size we find no evidence of 'creaming': the literacy score estimates can be considered statistically equal in view of the error variances. Likewise, all attempts to find differences across firm size in terms of participation at skill enhancing activities (listed in Tables 10 and 11) have failed.[19]

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

See equations 2 and 3 and the neighboring text for the calculation of mean test performance and error variance. The number of observations is 1356 (618 in large firms and 738 in small firms)

There are two plausibly looking explanations for small firms' tolerance of a gap between skills and skill requirements. The first might refer to a small firm's ability to overcome skill deficiencies through helpful interpersonal communication that is unavailable at 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 labor productivity and TFP (see Economist 2012 for the mainstream argument but also Dhawan 2001 and Diaz and Sanchez 2008 among others for contradicting empirical evidence). To the extent it is true, 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 have more to do with reality.

6 Conclusions for Hungary

Hungary, together with other post-socialist countries, spectacularly fails at integrating its low educated population and the findings on the two comparators do not predict easy escape from this position. On the one hand, low educated Hungarians lack the proper competencies for attending skill intensive jobs in large organizations, as their Norwegian counterparts do. On the other hand, they can not rely on a network of family-owned and family-managed small firms, a shelter for many unskilled Italians. The roads back to the state socialist patterns of integration are clearly closed.

The characteristics found important in this paper are undoubtedly region-specific. The traditional small firm sector was destroyed in all communist countries with the partial exception of private farming in Poland and Slovenia. The heritage of a low educated population trained for lifelong work in elementary jobs is also a common feature and so is the scarcity of governmental

[19] I do not present the negative findings on this issue.

and civil organizations that could promote post-school skill formation and build bridges to the rest of the society.

The dilemma of which 'archetype' of social inclusion is to be followed have been present in the political debates throughout the region, since the start of the transition. Twenty years later it seems that the efforts to rebuild a traditional economy have failed. Restitution, voucher privatization, compensation for confiscated property and massive support to the SMEs may have contributed to the formation of a more balanced economic structure but they did not recreate what the traditionalist schools and parties were dreaming of. In terms of skill requirements and organizational structure the CEEs are heading for Norway rather than Italy. A distant target that will not be achieved overnight.

Acknowledgements

This analysis is based on the Statistics Canada Adult Literacy and Life Skills Survey data base acquired in December 2012. All computations, use and interpretation of the data are entirely that of the author. 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 thanks Michael Landesmann and seminar participants in Budapest and Vienna for helpful comments.

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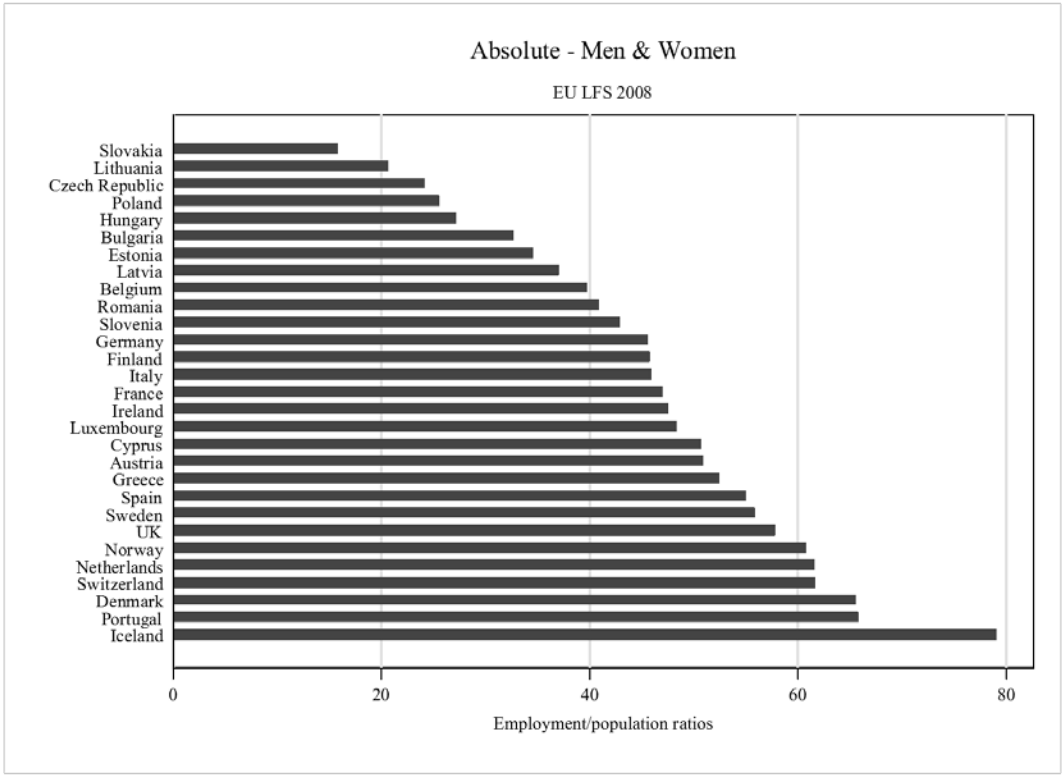
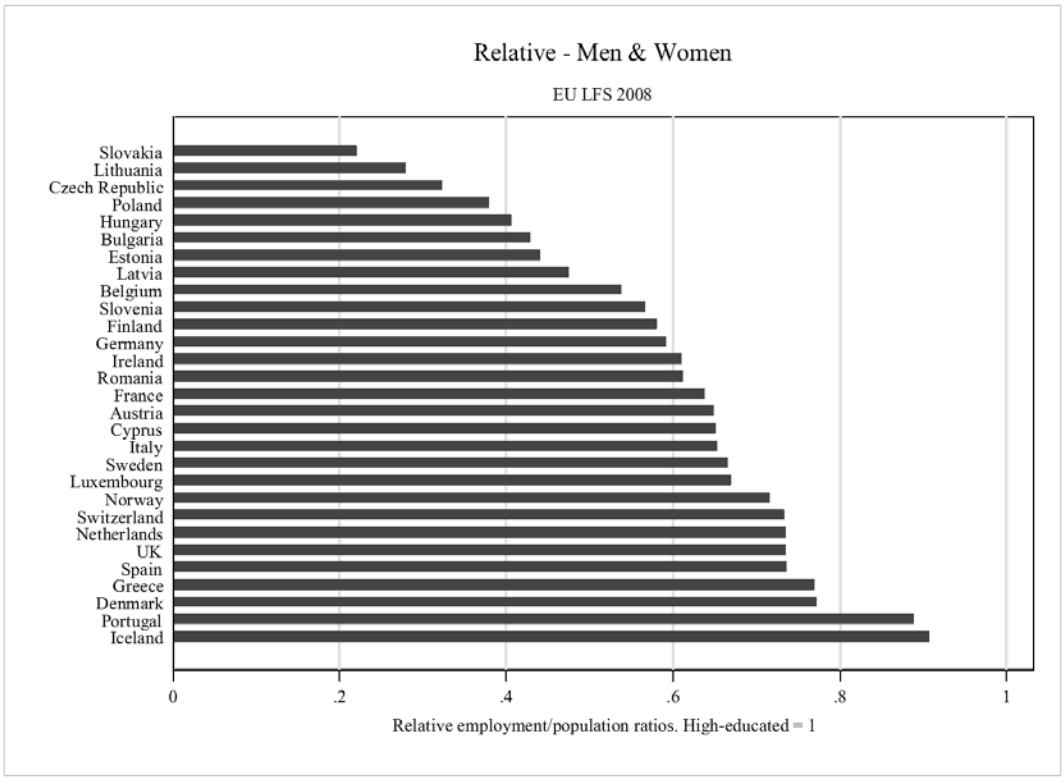
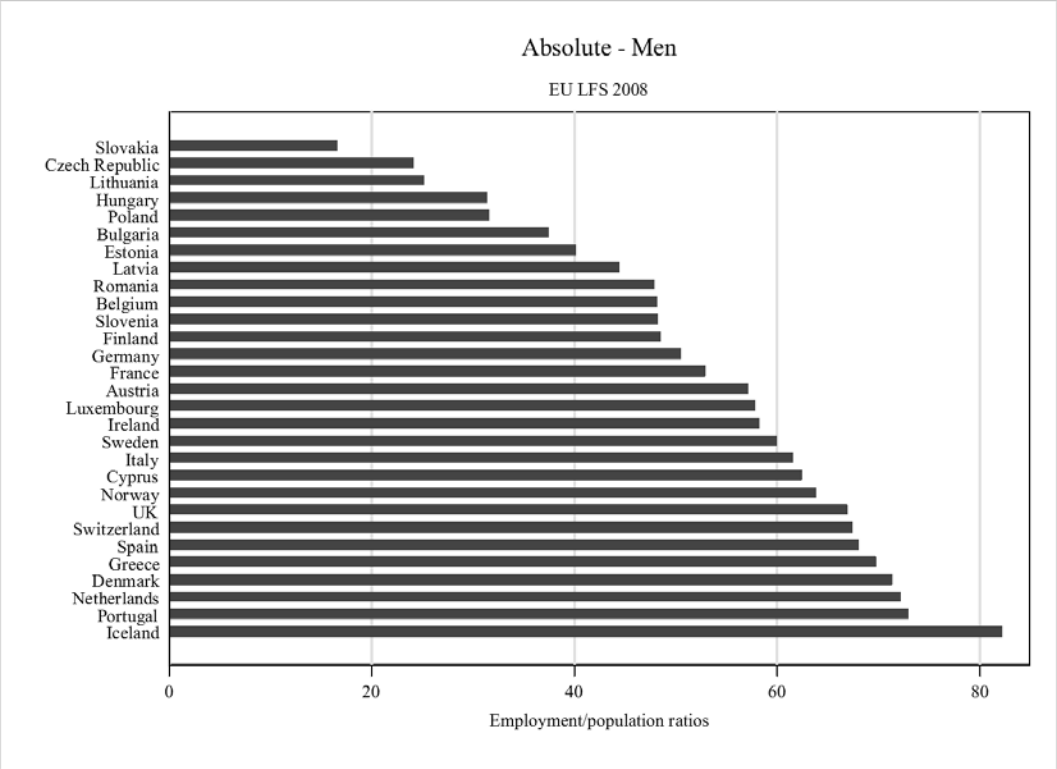
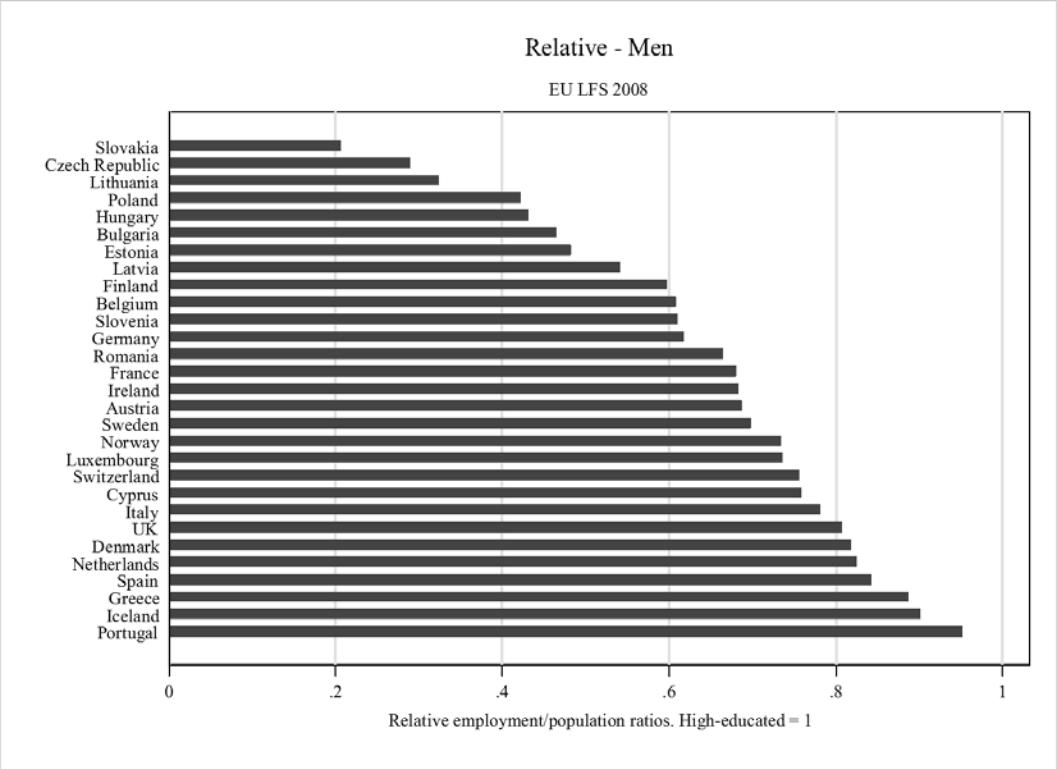
Figure A1: Absolute and relative employment rates of the low-educated (EU LFS)



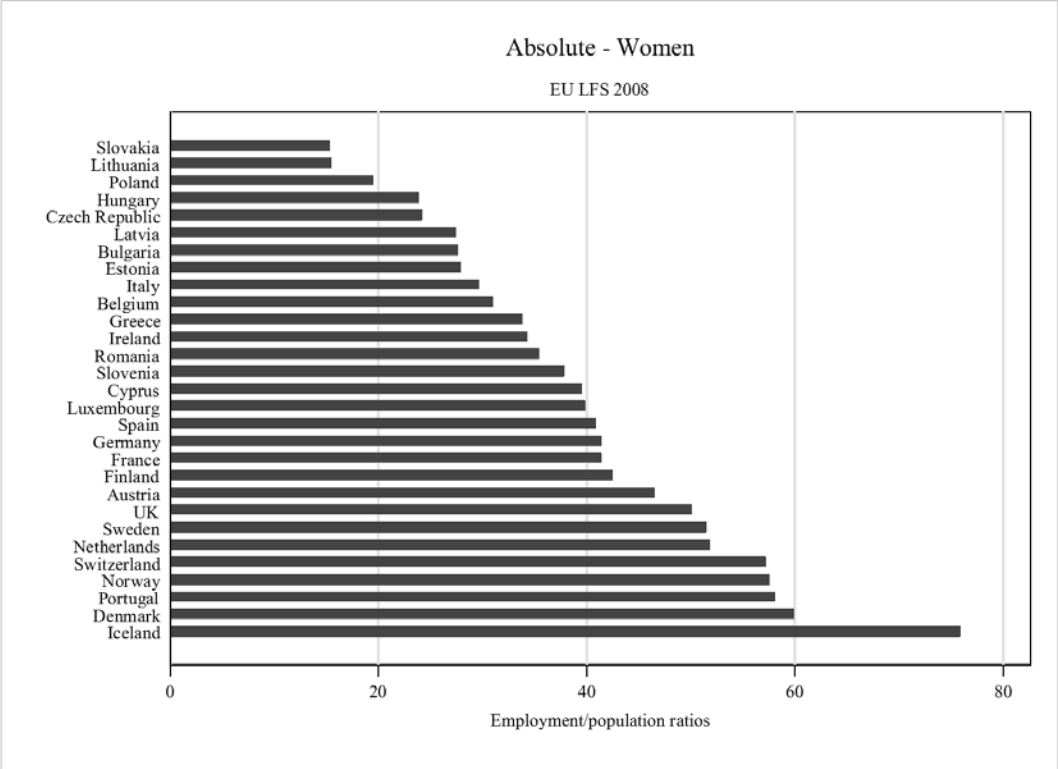


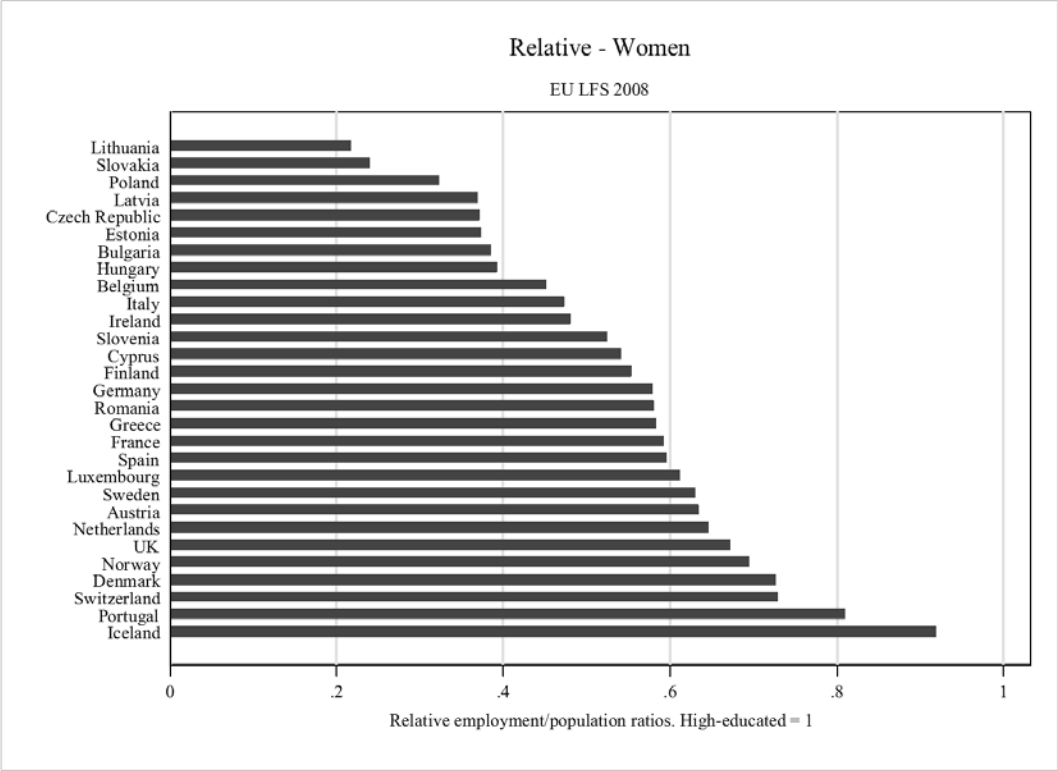
Note: the data relate to the population aged 15-64 excluding students and persons older than 35, who never worked. Unskilled stands for those classified as ISCED 0-2





Note: the data relate to the population aged 15-64 excluding students and persons older than 35, who never worked





Note: the data relate to the population aged 15-64 excluding students and persons older than 35, who never worked

Figure A2: Alternative measures of job complexity compared

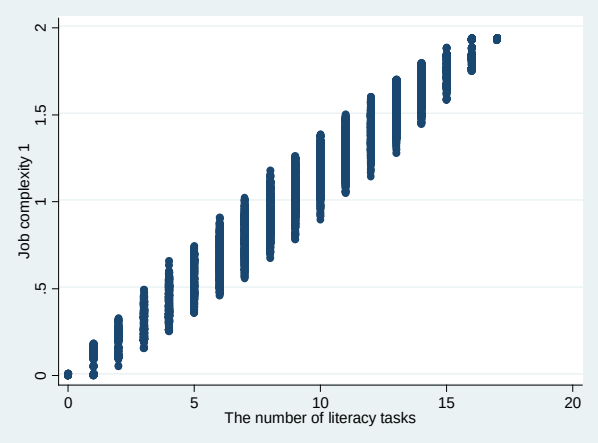
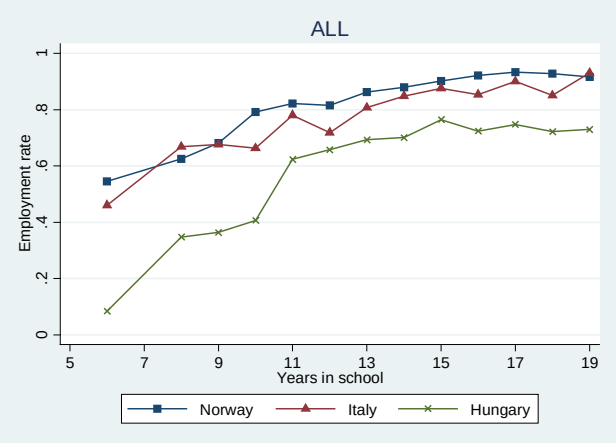


Figure A3: Employment rates by completed schoolyears



The figures relate to the population aged 16-64 excluding full-time students and persons older than 35 , who never worked before. Years in school: 6 stands for less than 8, 19 stands for 19 or more

Figure A4: Absolute test performance by year of birth in Hungary 1998, 2008 (Means of the first plausible value for prose)

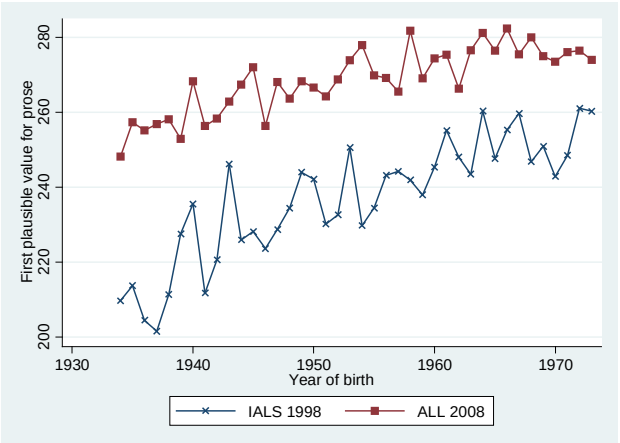
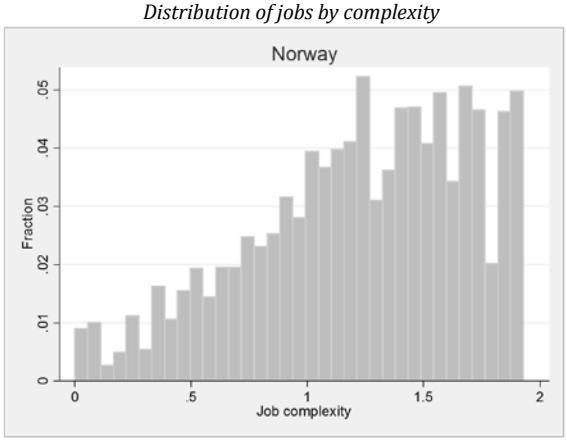


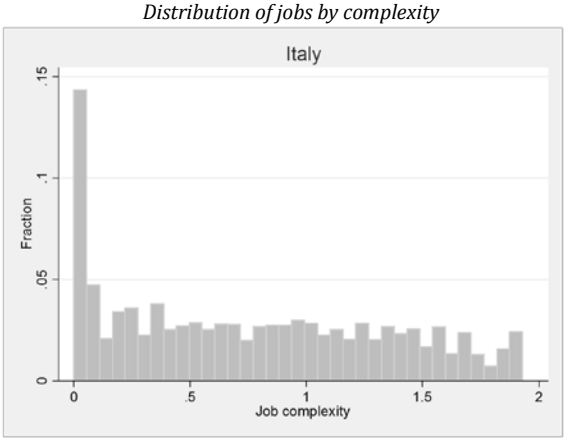
Figure A5: The distribution of jobs and locally weighted regression estimates of the unskilled share using an alternative measure of complexity

Complexity measure: sum of literacy tasks weighted with the wage regression coefficients in Table 3, column 2

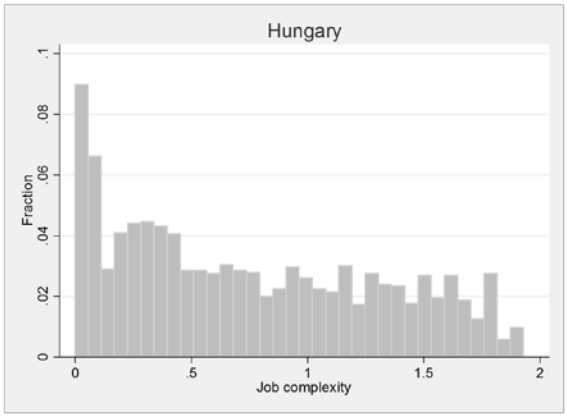
Distribution of jobs by complexity



Distribution of jobs by complexity



Distribution of jobs by complexity



Lowess regression estimates of the unskilled share