Online Appendix to "General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle"

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Table A1: Unobservable Selection and Coefficient Stability: Robustness Analysis based on Oster (2014)

	(1)	(2)	(3)	(4)
Age group	Young (ages 21-30)		Old (ages 56-65)	
	Vocational countries	Apprenticeship countries	Vocational countries	Apprenticeship countries
Baseline model				
General education type	-0.047	-0.067	0.061	0.198
	$(0.017)^{***}$	$(0.032)^{***}$	$(0.027)^{**}$	$(0.063)^{***}$
Observations	2,283	654	1,460	478
Countries	11	3	11	3
R^2	0.050	0.039	0.288	0.274
Extended model				
General education type	-0.055	-0.084	0.053	0.187
	$(0.017)^{***}$	$(0.032)^{***}$	$(0.027)^{**}$	$(0.063)^{***}$
Observations	2,283	654	1,460	478
Countries	11	3	11	3
R^2	0.058	0.048	0.295	0.290
δ to match $\beta_1=0$	Controls move coefficient further from null	Controls move coefficient further from null	2.915	2.549

Note: Linear probability models. Dependent variable: Individual is employed. Sample includes males with secondary or first stage of tertiary education aged 21 to 30 in columns (1)-(2) and males aged 56 to 65 in columns (3)-(4). Omitted education type is vocational. Baseline model includes controls for other education type, age, age squared, years of schooling, and country fixed effects. Extended model adds controls for literacy score and mother's education. Last row reports Oster (2014)'s coefficient of proportionality, δ, required to match a true effect of education type of zero. δ is calculated using the assumption that the unobservables explain as much of the variation in the outcome as the observables. For details see Oster (2014). Data source: International Adult Literacy Survey (IALS). Standard errors in parentheses. Significant at *** 1%, ** 5%, * 10%.

Table A2: Correlates of General Education Type

	(1)
Literacy score	0.049
	$(0.012)^{***}$
Literacy score * age/10	-0.003
	(0.004)
Mother has high-school education	0.040
	$(0.022)^{*}$
Mother has high-school education * age/10	0.003
	(0.009)
Age/10	-0.029
	$(0.016)^{*}$
$(Age/10)^2$	0.010
	$(0.003)^{***}$
Years of schooling	0.042
	$(0.002)^{***}$
Constant	-0.238
	$(0.029)^{***}$
Observations	9,818
Countries	11
Adjusted R^2	0.18
F(literacy score * age, mother education * age)	0.33
Prob > F	(0.719)

Note: Linear probability model. Dependent variable: 1 = education type of individual is general; 0 = vocational. Sample includes males aged 16 to 65 with secondary or first stage of tertiary education; individuals with "other" education type excluded. All specifications control for country fixed effects. Age variable subtracted by 16 throughout. Data source: International Adult Literacy Survey (IALS). Robust standard errors in parentheses. Significant at [***] 1%, [**] 5%, [*] 10%.

Table A3: The Effect of Education Type on Life-Cycle Employment: Vocational Education Countries

	(1) Belgium	(2) Czech Rep.	(3) Denmark	(4) Finland	(5) Germany	(6) Hungary	(7) Netherlands	(8) Norway	(9) Poland	(10) Slovenia	(11) Switzerland
General educ. type	0.039	0.143	-0.042	-0.151	-0.403	-0.027	-0.032	-0.022	0.380	-0.137	-0.333
	(0.104)	(0.131)	(0.062)	(0.064)**	(0.137)***	(0.068)	(0.115)	(0.098)	(0.331)	(0.050)***	(0.076)***
General educ. type * age/10	-0.019	-0.018	0.073	0.049	0.055	0.0004	-0.001	0.030	0.011	0.045	0.104
	(0.026)	(0.043)	(0.028)***	(0.025)**	(0.028)*	(0.025)	(0.023)	(0.026)	(0.041)	(0.020)**	(0.029)***
Observations	670	914	1,006	1,021	744	1,016	1,111	897	919	1,097	1,220

Note: Linear probability models. Dependent variable: Individual is employed. Sample includes males aged 16 to 65 with secondary or first stage of tertiary education. Each column is a separate regression with the same controls as in Column 5 of Table 2 (including country fixed effects). Age variable subtracted by 16 throughout. Data source: International Adult Literacy Survey (IALS). Robust standard errors in parentheses. Significant at *** 1%, ** 5%, * 10%.

Table A4: Nonlinear Specification of the Effect of Education Type on Life-Cycle Employment

	(1) Vocational countries	(2) Apprenticeship countries
General educ. type	-0.129	-0.308
	(0.029)***	(0.066)***
General educ. type * Cohort 26-35	0.061	0.215
	(0.030)**	(0.067)***
General educ. type * Cohort 36-45	0.112	0.225
	(0.030)***	(0.068)***
General educ. type * Cohort 46-55	0.084	0.217
	(0.033)**	(0.071)***
General educ. type * Cohort 56-65	0.112	0.307
	(0.038)***	(0.088)***
Observations	10,615	2,970

Note: Linear probability models. Dependent variable: Individual is employed. Sample includes males aged 16 to 65 with secondary or first stage of tertiary education. Each column is a separate regression controlling for dummy variables for "other education type", age cohorts, their interactions, and all other control variables in Column 5 of Table 2 (including country fixed effects). Data source: International Adult Literacy Survey (IALS). Robust standard errors in parentheses. Significant at *** 1%, ** 5%, * 10%.

Table A5: Education Type and Life-Cycle Employment: German Microcensus 2012

|	(1) All	(2) Only secondary education	(3) Only tertiary education
General education type	-0.215	-0.318	-0.094
	(0.008)***	(0.016)***	(0.010)***
General education type * age/10	0.070	0.092	0.035
	(0.003)***	(0.006)***	(0.003)***
Age/10	0.261	0.249	0.314
	(0.004)***	(0.005)***	(0.008)***
$(Age/10)^2$	-0.063	-0.062	-0.068
	(0.001)***	(0.001)***	(0.001)***
Tertiary education	0.081		
	(0.002)***		
Observations	167,937	112,056	55,881
Adjusted R^2	0.110	0.108	0.096

Note: Linear probability models. Dependent variable: Individual is employed. Sample includes males aged 16 to 65 with at least secondary education completed (and not currently in education). All models include a constant. Omitted education type is vocational. Age variable subtracted by 16 throughout. Data source: German Microcensus, 2012. Robust standard errors in parentheses. Significant at *** 1%, ** 5%, * 10%.

Table A6: Displacement Effects on Employment by Age and Occupational Status

|	(1)	(2)	(3)	(4)
Age group	35-39	40-44	45-49	50-55
PC * Blue * After	0.116	0.092	0.120	0.022
	(0.024)***	(0.023)***	(0.027)***	(0.028)
PC * After	-0.198	-0.167	-0.179	-0.154
	(0.017)***	(0.015)***	(0.020)***	(0.022)***
Blue * After	-0.004	-0.020	-0.073	-0.108
	(0.01)	(0.011)*	(0.012)***	(0.015)***
After	-0.089	-0.093	-0.121	-0.404
	(0.007)***	(0.006)***	(0.008)***	(0.011)***
Constant	0.982	0.984	0.987	0.990
	(0.004)***	(0.004)***	(0.005)***	(0.005)***
Worker fixed effects	Yes	Yes	Yes	Yes
Observations	325,356	393,243	336,129	365,769
Workers	5,708	6,899	5,897	6,417
R^2	0.452	0.442	0.412	0.442

Note: Weighted linear probability panel models. Dependent variable: Individual is employed. Samples include male private-sector workers in Austria employed between 1982 and 1988 at risk of a plant closure. Each actually displaced worker is matched to similar non-displaced workers based on an exact matching algorithm. Weights are one for each displaced worker and are one over the number of controls matched to each displaced worker for non-displaced workers. Employment is measured quarterly in the four years prior to potential displacement and up to ten years afterwards. *Blue* identifies blue collar workers, *After* identifies quarters after potential displacement, and *PC* identifies workers displaced due to a plant closure. The header indicates age at potential displacement. Data source: matched employer-employee data from the Austrian Social Security Database (ASSD). Clustered standard errors in parentheses. Significant at *** 1%, ** 5%, * 10%.

Figure A1: Density of Literacy Test Score of Males by Education Type
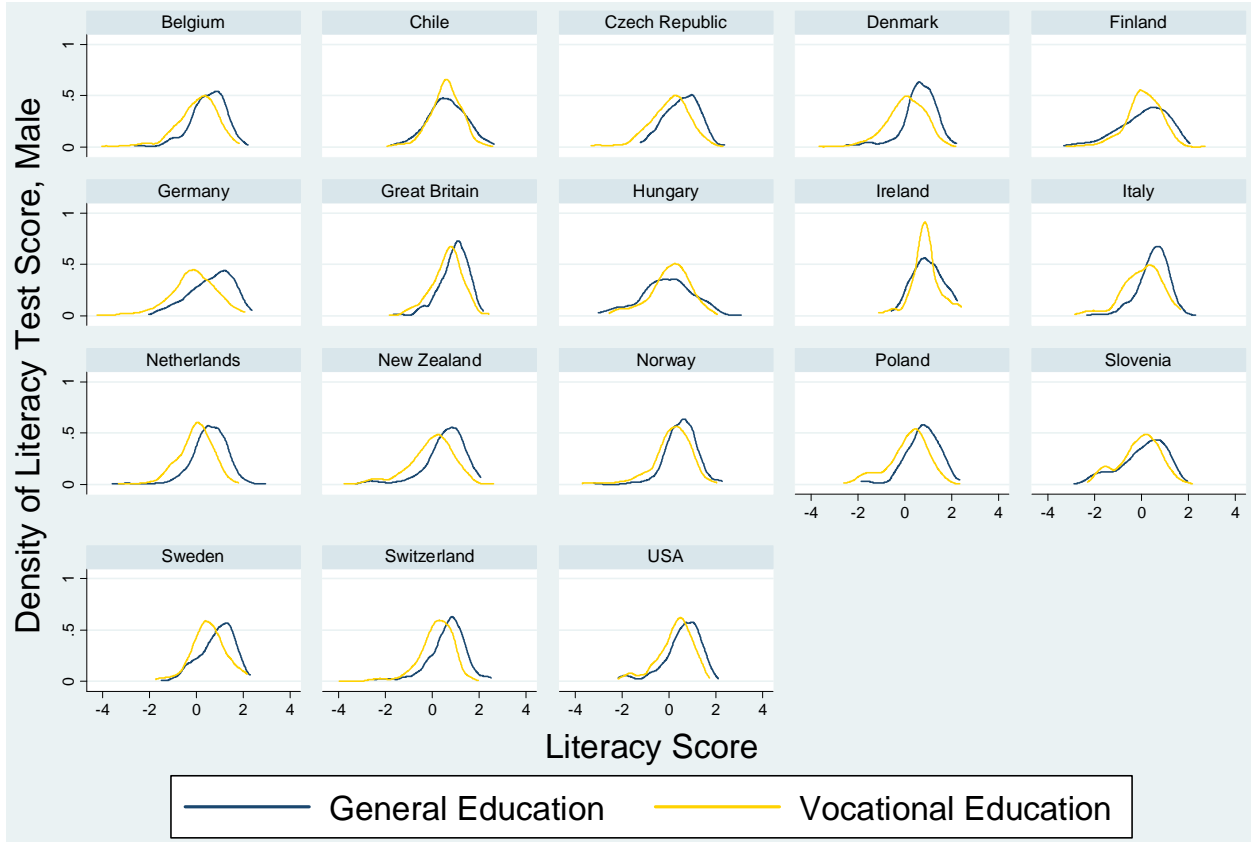
Note: See note to Table 1 for data source, sample, and definition of education types. Literacy score is the average of prose, document, and quantitative test scores and is normalized to have a mean of 0 and a standard deviation of 1 within each country. Data source: International Adult Literacy Survey (IALS).

Figure A2: Male Employment Rate by Age and Education Type
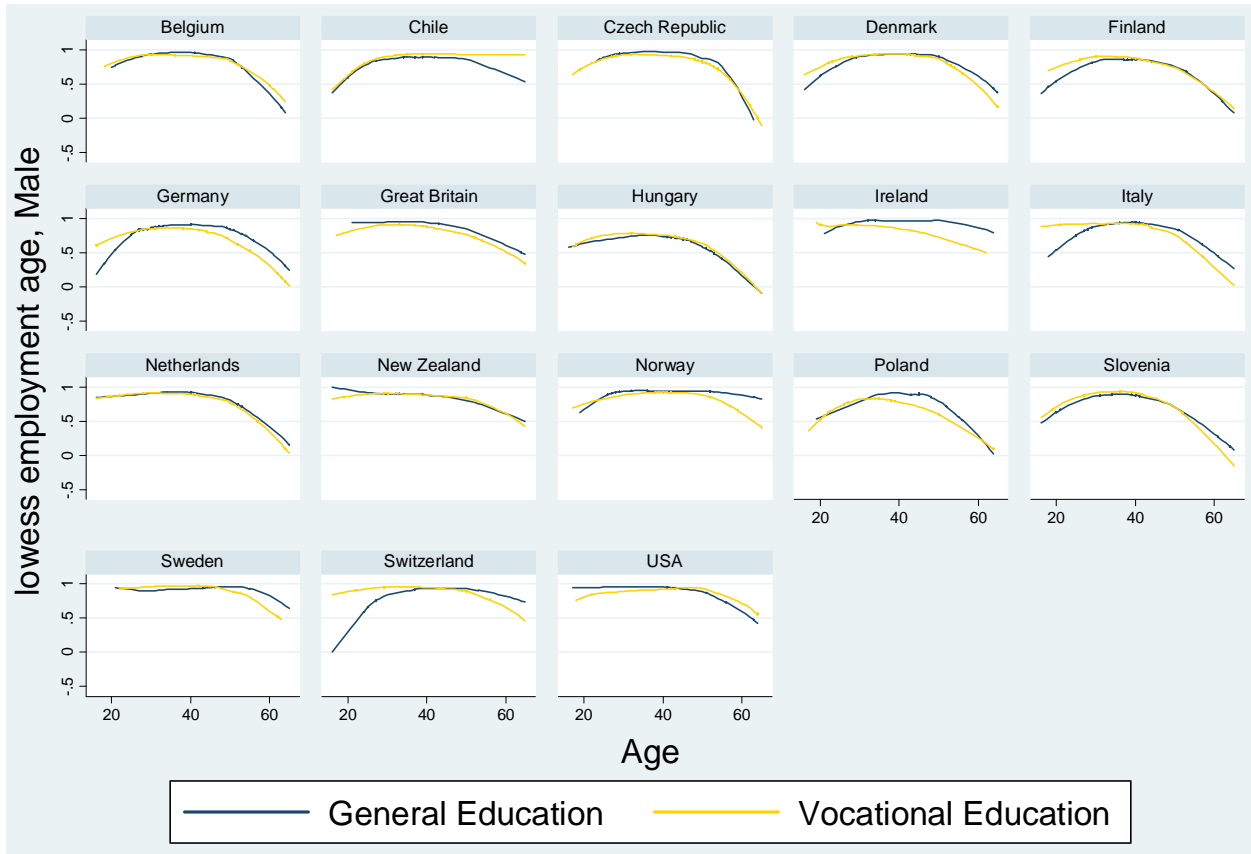
Note: Smoothed scatterplots using locally weighted regressions (Stata command "lowess", Cleveland (1979)). Sample includes all males who finished secondary education or the first stage of tertiary education and are not currently enrolled in school. See note to Table 1 for definition of education types. Individuals employed are those who are employed at the time of the survey; individuals not employed include retired, unemployed who are looking for work, homemakers, and others. Data source: International Adult Literacy Survey (IALS).