sociological science

Supplement to:

Forster, Andrea G., Thijs Bol, and Herman G. van de Werfhorst. 2016. "Vocational Education and Employment over the Life Cycle" Sociological Science 3: 473-494.

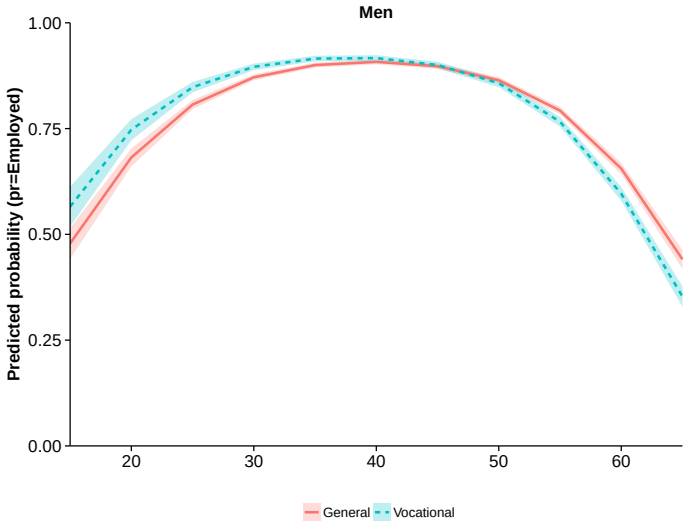
Appendix A

One could argue that we should also interact age squared with the characteristics of the educational system. Effectively, this then becomes a four-way interaction between age, age, VET, and one of the two variables that we use to measure vocational systems. Since this would produce tables that are very hard to interpret, we have decided to not show these in the main text. The analyses below, however, reproduce our main figures using this four-way interaction.

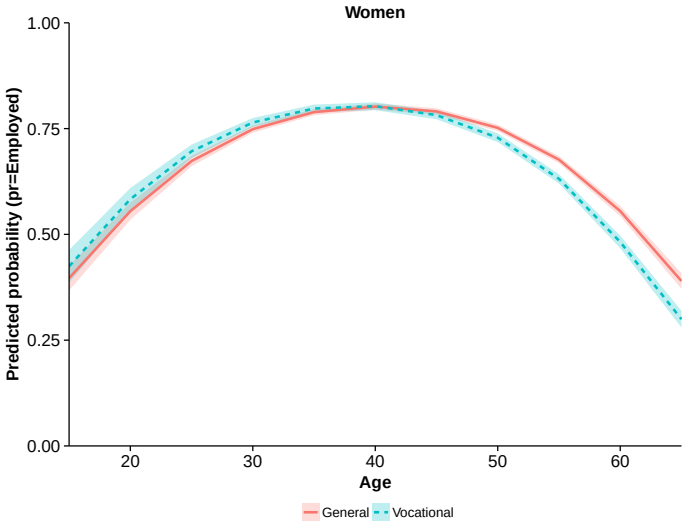
The main conclusion is that the overall findings are not that different. For the pooled regressions (Figure A1), we find a very similar pattern where there is an initial benefit of having a vocational degree which later turns into a penalty. The average marginal effect plots (Figure A2 and Figure A3) show a slightly different picture. For men the results are still very much the same: an initial benefit of having a vocational degree that is larger in more vocationally oriented educational systems, or systems with a larger dual system. For women, however, we see that the life-cycle decrease in more vocationally oriented systems tends to be stronger than in non-vocationally oriented systems, although the difference is not significant. At the same time, we do not find this when we look at the results for women with the dual system variable as the country level characteristic. All in all, these results support the main findings as presented in the article.

Figure A1: Predicted Probabilities of Employment by Type of Education (Vocational/General) with Additional Interaction between Age squared and VET (Pooled model)

(a) Men



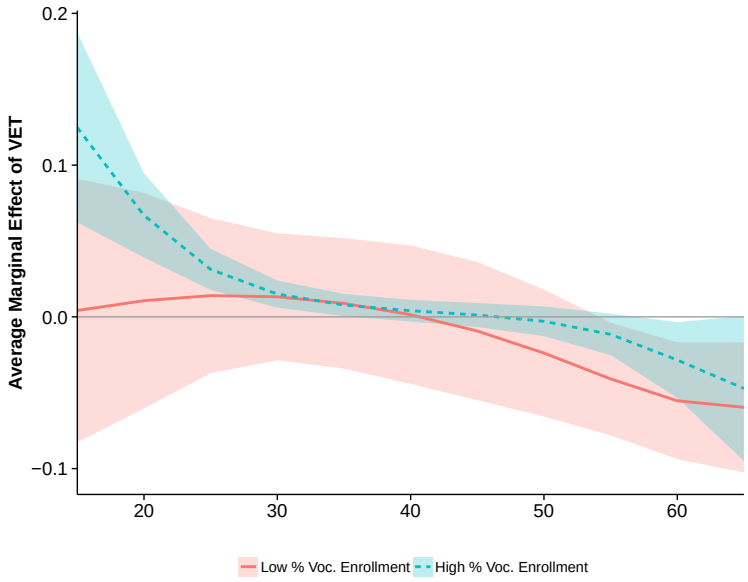
(b) Women



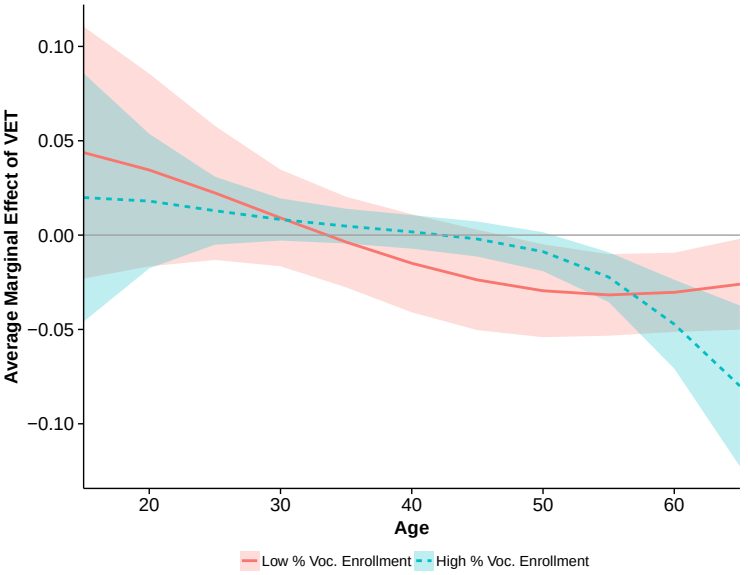
Note: The estimates of the predicted probabilities are based on a model similar to the one of Model 3 in Table 2 with the full set of predictors but now an additional interaction between age squared and VET is included. Age is used in its original form with years of age corresponding to values of the variable. Source: PIAAC 2012, release March 2015, own calculations.

Figure A2: Average Marginal Effects of VET on Employment for Countries with Low and High Vocational Enrollment (Including Interactions with Age Squared)

(a) Men



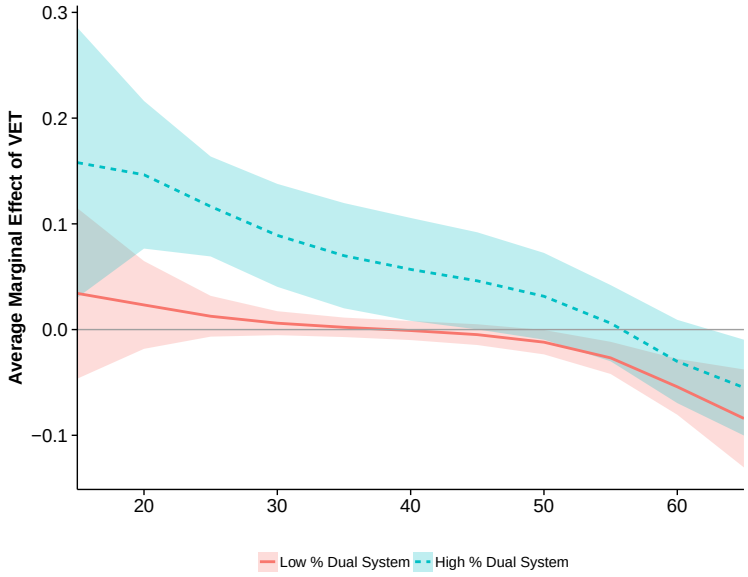
(b) Women



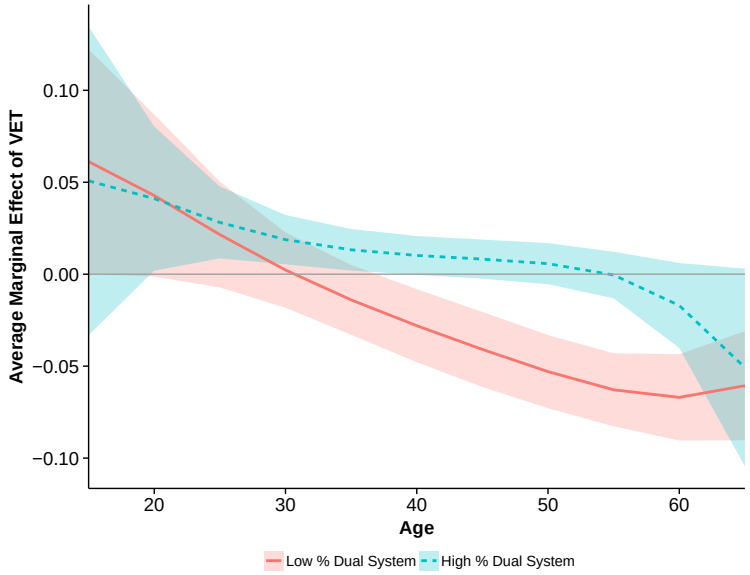
Note: These figures are based on a model with a full four-way interaction between age, age (i.e. age squared), VET and the Vocational Enrollment indicator. Age is used in its original form with years of age corresponding to values of the variable.
Source: PIAAC 2012, release March 2015, own calculations.

Figure A3: Average Marginal Effects of VET on Employment for Countries with Low and Dual System Enrollment (Including Interactions with Age Squared)

(a) Men



(b) Women



Note: These figures are based on a model with a full four-way interaction between age, age (i.e. age squared), VET and the dual system indicator. Age is used in its original form with years of age corresponding to values of the variable.
Source: PIAAC 2012, release March 2015, own calculations.

Appendix B

This appendix contains the regression tables for the separate country analyses for men (Table B1) and for women (Table B2). Furthermore, the predicted probabilities of being employed for women with vocational and general education in the single countries are shown in Figure B1.

Table B1: Country-by-Country Logistic Regressions with Employment as the Dependent Variable (Selected Coefficients for Men)

	Austria	Belgium	Canada	Czech Rep.	Denmark	Estonia	Finland	France	Germany	Ireland	Italy
Age (age 16 = value 0)	0.155†	0.398†	0.208†	0.208†	0.141†	0.063	0.247†	0.293†	0.134†	0.173†	0.228†
	(0.037)	(0.041)	(0.023)	(0.058)	(0.031)	(0.033)	(0.038)	(0.032)	(0.049)	(0.035)	(0.039)
Age squared (divided by 10)	−0.050†	−0.075†	−0.035†	−0.057†	−0.036†	−0.028†	−0.049†	−0.061†	−0.027†	−0.032†	−0.061†
	(0.004)	(0.005)	(0.003)	(0.007)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
VET	0.340	0.226	0.503	0.027	1.036†	−0.055	0.403	0.006	1.669†	−0.059	0.281
	(0.471)	(0.386)	(0.312)	(0.722)	(0.375)	(0.288)	(0.343)	(0.313)	(0.491)	(0.309)	(0.458)
VET × Age	−0.024*	−0.024*	−0.014	0.009	−0.032†	0.001	−0.014	−0.004	−0.045†	−0.004	−0.022
	(0.011)	(0.011)	(0.008)	(0.016)	(0.009)	(0.008)	(0.009)	(0.008)	(0.013)	(0.011)	(0.015)
Constant	−0.401	−3.133*	−2.909†	−2.275	−1.751*	−0.868	−4.265†	−2.935†	−2.876*	−2.466†	−0.605
	(1.110)	(1.303)	(0.632)	(1.453)	(0.816)	(0.861)	(1.109)	(0.886)	(1.334)	(0.809)	(0.965)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	2,043	1,886	9,009	2,046	2,927	2,616	2,026	2,301	1,987	2,044	1,846

	Japan	Rep. of Korea	Netherlands	Norway	Poland	Russia	Slovak Rep.	Spain	Sweden	UK	US
Age (age 16 = value 0)	0.312†	0.227†	0.229†	0.099†	0.131†	0.246†	0.256†	0.195†	0.214†	0.259†	0.082*
	(0.048)	(0.048)	(0.047)	(0.038)	(0.030)	(0.063)	(0.034)	(0.040)	(0.043)	(0.046)	(0.035)
Age squared (divided by 10)	−0.055†	−0.049†	−0.044†	−0.028†	−0.035†	−0.041†	−0.047†	−0.043†	−0.045†	−0.039†	−0.025†
	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.007)	(0.004)	(0.004)	(0.005)	(0.006)	(0.005)
VET	1.603*	0.606	1.082*	−0.006	0.695*	0.428	−0.222	0.081	0.424	0.200	1.091*
	(0.663)	(0.334)	(0.511)	(0.398)	(0.291)	(0.442)	(0.287)	(0.488)	(0.433)	(0.619)	(0.537)
VET × Age	−0.038*	−0.013	−0.009	0.003	−0.023†	−0.017	−0.001	−0.006	−0.010	−0.011	−0.040†
	(0.016)	(0.011)	(0.012)	(0.011)	(0.009)	(0.014)	(0.009)	(0.016)	(0.012)	(0.017)	(0.015)
Constant	−1.725	−0.801	−2.207	−0.799	−1.496	−3.139	−5.362†	−3.019†	−2.855†	−4.549†	−0.538
	(1.485)	(1.331)	(1.616)	(0.972)	(0.765)	(1.702)	(0.923)	(1.012)	(1.058)	(1.350)	(0.817)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	2,014	2,436	1,875	2,000	3,029	890	2,264	1,785	1,728	2,192	1,733

Note: Coefficients are logged odds. Standard errors in parentheses. Age squared is divided by 10 to improve the readability of coefficient and standard error. * $p < 0.05$, † $p < 0.01$
Source: PIAAC 2012, release March 2015, own calculations

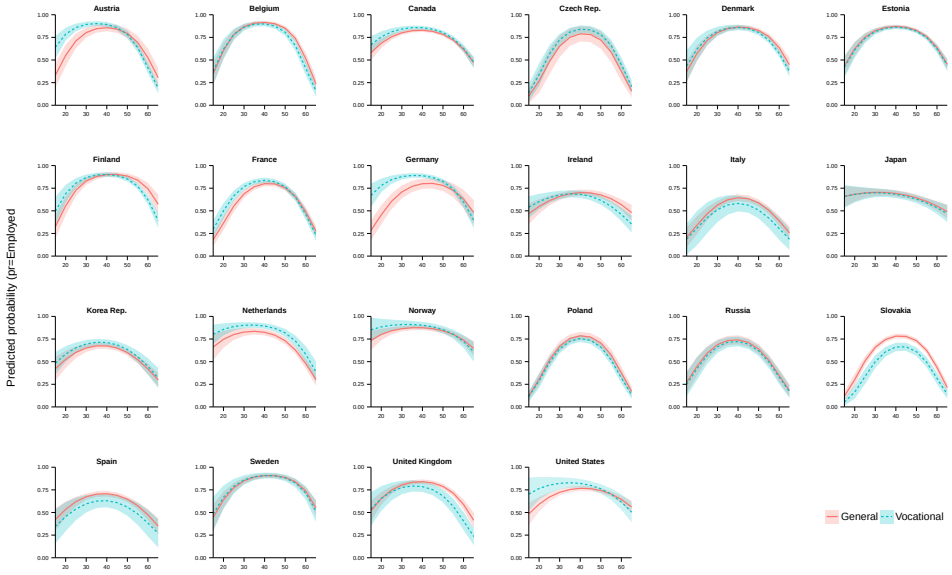
Table B2: Country-by-Country Logistic Regressions with Employment as the Dependent Variable (Selected Coefficients for Women)

	Austria	Belgium	Canada	Czech Rep.	Denmark	Estonia	Finland	France	Germany	Ireland	Italy
Age (age 16 = value 0)	0.201†	0.315†	0.174†	0.371†	0.212†	0.170†	0.258†	0.308†	0.209†	0.187†	0.137†
	(0.035)	(0.043)	(0.024)	(0.054)	(0.039)	(0.030)	(0.042)	(0.033)	(0.039)	(0.033)	(0.046)
Age squared (divided by 10)	−0.043†	−0.058†	−0.025†	−0.055†	−0.039†	−0.037†	−0.043†	−0.046†	−0.033†	−0.017†	−0.031†
	(0.004)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Type of Education (VET)	1.305†	0.126	0.435*	0.383	0.277	−0.072	0.778*	0.723†	1.766†	0.343	−0.132
	(0.362)	(0.342)	(0.222)	(0.488)	(0.345)	(0.248)	(0.340)	(0.266)	(0.364)	(0.256)	(0.521)
VET × Age	−0.040†	−0.014	−0.009	−0.001	−0.013	0.000	−0.032†	−0.019*	−0.043†	−0.018*	−0.006
	(0.009)	(0.010)	(0.006)	(0.011)	(0.009)	(0.007)	(0.010)	(0.008)	(0.010)	(0.009)	(0.017)
Constant	−2.490†	−3.859†	−4.073†	−6.058†	−4.198†	−2.430†	−5.028†	−5.563†	−4.383†	−4.679†	−2.412*
	(0.935)	(1.284)	(0.695)	(1.515)	(1.056)	(0.839)	(1.241)	(0.876)	(1.083)	(0.824)	(1.132)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	2,086	1,866	10,329	2,514	2,924	3,169	1,963	2,323	2,029	2,473	1,833

	Japan	Rep. of Korea	Netherlands	Norway	Poland	Russia	Slovak Rep.	Spain	Sweden	UK	US
Age (age 16 = value 0)	0.046	0.110†	0.166†	0.081*	0.282†	0.155†	0.354†	0.098†	0.296†	0.209†	0.060*
	(0.035)	(0.041)	(0.046)	(0.039)	(0.034)	(0.054)	(0.037)	(0.036)	(0.046)	(0.033)	(0.029)
Age squared (divided by 10)	−0.008*	−0.021†	−0.027†	−0.020†	−0.055†	−0.038†	−0.054†	−0.023†	−0.042†	−0.030†	−0.019†
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Type of Education (VET)	−0.002	0.246	0.816*	0.779	−0.076	−0.117	−0.916†	−0.343	0.185	0.075	0.936*
	(0.248)	(0.238)	(0.404)	(0.521)	(0.284)	(0.344)	(0.308)	(0.410)	(0.422)	(0.396)	(0.403)
VET × Age	−0.002	−0.003	−0.009	−0.020	−0.005	0.001	0.008	−0.001	−0.007	−0.019	−0.024*
	(0.008)	(0.009)	(0.011)	(0.014)	(0.008)	(0.011)	(0.009)	(0.015)	(0.012)	(0.012)	(0.012)
Constant	−0.265	−0.986	−3.348*	−2.105*	−4.314†	−2.636	−7.161†	−0.968	−6.174†	−4.162†	−0.847
	(0.991)	(1.064)	(1.416)	(0.991)	(0.921)	(1.548)	(0.958)	(0.826)	(1.249)	(0.909)	(0.729)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	2,281	2,689	1,930	1,781	2,819	1,817	2,475	1,867	1,617	3,141	2,029

Note: Coefficients are logged odds. Standard errors in parentheses. Age squared is divided by 10 to improve the readability of coefficient and standard error. * $p < 0.05$, † $p < 0.01$
Source: PIAAC 2012, release March 2015, own calculations

Figure B1: Predicted Probabilities of Employment per Country (Women)



Source: PIAAC 2012, release March 2015, own calculations.