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## Complexity in Employment Life Courses in Europe in the Twentieth Century—Large Cross-National Differences but Little Change across Birth Cohorts

Social Forces

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Complexity in Employment Life Courses in Europe in the 20th Century – Large Cross-National Differences but Little Change across Birth Cohorts

Online Supplement

## **I. Gender Specific Conditional Cross-Classified Regressions**

Conditional cross-classified multilevel models analogous to Table 4 are displayed in Table A1 for men and A2 for women. The empirical Bayes estimates of the country and cohort random intercepts are displayed in Figures A1 and A2 for men and A3 and A4 for women. Generally, the results of the gender specific models are substantively similar to the results reported in the manuscript. For both genders first employment in the public sector is associated with less complex employment trajectories, higher education and higher WRRs are associated with more complex employment trajectories. EPL is only significantly associated with lower employment trajectory complexity for men. This indicates that parental leave policies and childcare arrangements may be more important for women's employment complexity (see also page 25, paragraph 4 in the Results section). Especially the universal availability of childcare may augment EPL in facilitating stable employment life courses for women.

*Table A1: Conditional Cross-Classified Random Effects Regression on Individual Employment Trajectory Complexity – Male Sample*

	(1)	(2)	(3)	(4)
<i>Fixed Effects</i>	Individual	EPL	WRR	EPL & WRR
Number of Children (Centered)	0.026 (0.066)	0.033 (0.066)	0.028 (0.066)	0.031 (0.066)
Sector 1 <sup>st</sup> Employment (Ref.: Private)	-2.393 <sup>***</sup> (0.333)	-2.404 <sup>***</sup> (0.333)	-2.379 <sup>***</sup> (0.333)	-2.391 <sup>***</sup> (0.333)
Family Status (Ref.: Never Married)	-0.051 (0.361)	-0.051 (0.361)	-0.041 (0.361)	-0.052 (0.361)
Education (Ref.: Post-Secondary)				
None	-3.012 <sup>***</sup> (0.551)	-3.009 <sup>***</sup> (0.552)	-3.004 <sup>***</sup> (0.551)	-3.028 <sup>***</sup> (0.552)
Pre-Primary	-2.890 <sup>***</sup> (0.287)	-2.897 <sup>***</sup> (0.288)	-2.875 <sup>***</sup> (0.287)	-2.903 <sup>***</sup> (0.288)
Primary	-2.179 <sup>***</sup> (0.292)	-2.186 <sup>***</sup> (0.292)	-2.179 <sup>***</sup> (0.292)	-2.187 <sup>***</sup> (0.292)
Secondary	-1.144 <sup>***</sup> (0.239)	-1.150 <sup>***</sup> (0.239)	-1.136 <sup>***</sup> (0.239)	-1.141 <sup>***</sup> (0.239)
EPL (centered)		-0.937 <sup>**</sup> (0.343)		-0.768 <sup>*</sup> (0.319)
WRR (centered)			0.060 <sup>*</sup> (0.023)	0.062 <sup>*</sup> (0.025)
Constant	17.949 <sup>***</sup> (0.978)	17.889 <sup>***</sup> (0.961)	18.027 <sup>***</sup> (0.931)	17.988 <sup>***</sup> (0.911)
<i>Random Effects</i>				
Var(Country) – $\psi_j$	10.316 <sup>***</sup> (4.088)	8.947 <sup>***</sup> (3.587)	9.256 <sup>***</sup> (3.682)	8.325 <sup>***</sup> (3.339)
Var(Cohort) – $\psi_k$	0.380 <sup>***</sup> (0.242)	1.197 <sup>***</sup> (0.817)	0.211 <sup>***</sup> (0.157)	0.568 <sup>***</sup> (0.496)
Var(Individual) – $\sigma$	68.551 <sup>***</sup> (0.957)	68.465 <sup>***</sup> (0.956)	68.562 <sup>***</sup> (0.957)	68.495 <sup>***</sup> (0.957)
$R^2$ (%)				
Total	6.64	7.39	8.07	8.83
Log. R. Likelihood	10,315	10,315	10,315	10,315
N – Individuals	-36,474	-36,472	-36,474	-36,472

Note: Significance Levels: \* $p < 0.05$  \*\* $p < 0.01$  \*\*\* $p < 0.001$ ; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; All analyses estimated with 14 countries and 13 birth cohorts; Data not weighted

Figure A1: Mean Employment Complexity by Country Calculated from Null Model (Men)

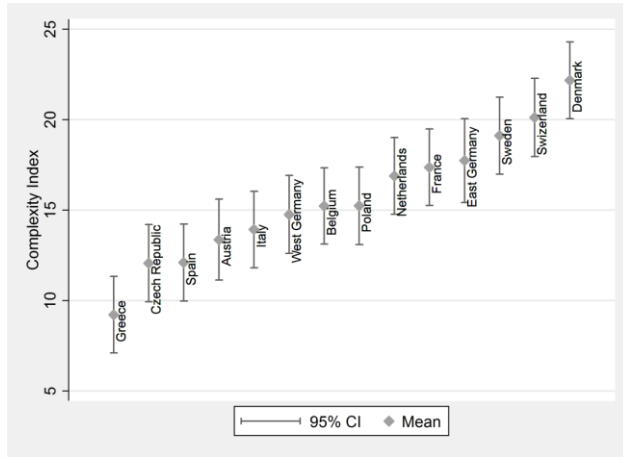


Figure A2: Mean Employment Complexity by Cohort Calculated from Null Model (Men)

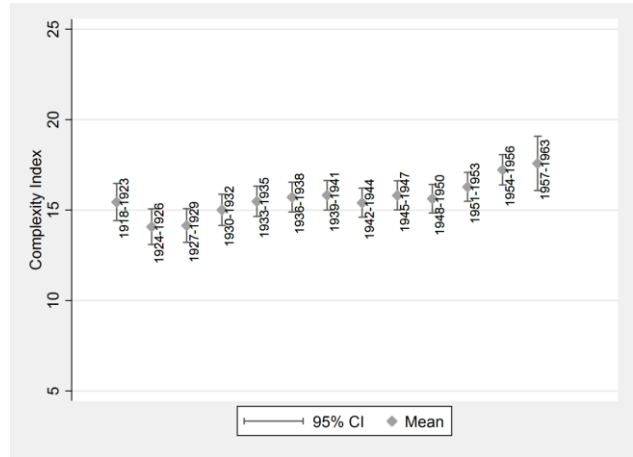


Table A2: Conditional Cross-Classified Random Effects Regression on Individual Employment Trajectory Complexity – Female Sample

	(1)	(2)	(3)	(4)
<i>Fixed Effects</i>	Individual	EPL	WRR	EPL & WRR
Number of Children (Centered)	-0.091 (0.065)	-0.088 (0.065)	-0.090 (0.065)	-0.088 (0.065)
Sector 1 <sup>st</sup> Employment (Ref.: Private)	-3.050 <sup>***</sup> (0.323)	-3.047 <sup>***</sup> (0.323)	-3.040 <sup>***</sup> (0.323)	-3.038 <sup>***</sup> (0.323)
Family Status (Ref.: Never Married)	0.796 <sup>*</sup> (0.349)	0.785 <sup>*</sup> (0.349)	0.823 <sup>*</sup> (0.349)	0.814 <sup>*</sup> (0.349)
Education (Ref.: Post-Secondary)				
None	-2.040 <sup>***</sup> (0.539)	-2.051 <sup>***</sup> (0.540)	-2.056 <sup>***</sup> (0.539)	-2.055 <sup>***</sup> (0.540)
Pre-Primary	-1.780 <sup>***</sup> (0.301)	-1.777 <sup>***</sup> (0.302)	-1.755 <sup>***</sup> (0.302)	-1.748 <sup>***</sup> (0.303)
Primary	-1.056 <sup>***</sup> (0.294)	-1.056 <sup>***</sup> (0.294)	-1.039 <sup>***</sup> (0.294)	-1.038 <sup>***</sup> (0.294)
Secondary	0.056 (0.252)	0.050 (0.252)	0.100 (0.253)	0.095 (0.253)
EPL (centered)		-0.399 (0.331)		-0.272 (0.316)
WRR (centered)			0.065 <sup>**</sup> (0.022)	0.061 <sup>**</sup> (0.023)
Constant	16.483 <sup>***</sup> (1.019)	16.451 <sup>***</sup> (1.010)	16.557 <sup>***</sup> (0.947)	16.527 <sup>***</sup> (0.944)
<i>Random Effects</i>				
Var(Country) – $\psi_j$	10.621 <sup>***</sup> (4.210)	9.852 <sup>***</sup> (3.985)	9.150 <sup>***</sup> (3.647)	8.773 <sup>***</sup> (3.568)
Var(Cohort) – $\psi_k$	1.101 <sup>***</sup> (0.507)	1.575 <sup>***</sup> (0.864)	0.610 <sup>***</sup> (0.346)	0.888 <sup>**</sup> (0.650)
Var(Individual) – $\sigma$	68.070 <sup>***</sup> (0.931)	68.052 <sup>***</sup> (0.931)	68.087 <sup>***</sup> (0.931)	68.070 <sup>***</sup> (0.932)
$R^2$ (%)				
Total	8.40	8.76	10.64	10.77
Log. R. Likelihood	10,739	10,739	10,739	10,739
N – Individuals	-37,940	-37,939	-37,939	-37,939

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; All analyses estimated with 14 countries and 13 birth cohorts; Data not weighted

Figure A3: Mean Employment Complexity by Country Calculated from Null Model (Women)

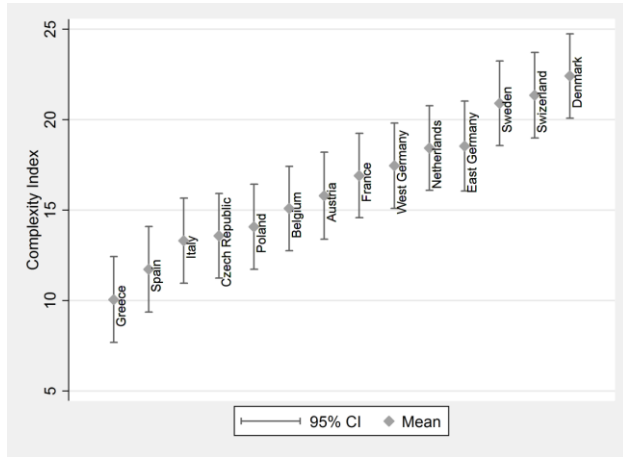
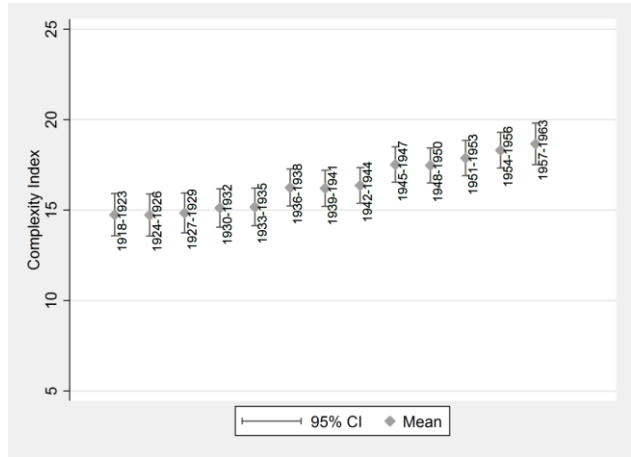


Figure A4: Mean Employment Complexity by Cohort Calculated from Null Model (Women)



## II Interacted Cross-Classified Regressions

Unconditional and conditional cross-classified multilevel models including an interacted random effect are displayed in Tables A3 and A4, respectively. The country specific deviations from the overall cohort trend are displayed in Figure A5. Significant interacted random effects indicate that complexity differences across birth cohorts are country specific. While the interacted random effect is significant, none of the estimated deviations are significant at conventional levels. The results of a conditional interacted cross-classified model do not differ substantially from the conditional additive model and we therefore retain the conditional additive model in the main manuscript (see also pages 18-19 in the Data and Methods section).

*Table A3: Unconditional Cross-Classified Random Effects Regression on Individual Employment Trajectory Complexity*

	Total	Men	Women
<i>Fixed Effects</i>			
Constant	16.090 <sup>***</sup> (1.033)	15.662 <sup>***</sup> (0.995)	16.400 <sup>***</sup> (1.081)
<i>Random Effects</i>			
Var(Country) – $\psi_j$	12.930 <sup>***</sup> (5.103)	12.421 <sup>***</sup> (4.924)	13.847 <sup>***</sup> (5.486)
Var(Cohort) – $\psi_k$	1.777 <sup>***</sup> (0.775)	1.143 <sup>***</sup> (0.626)	2.172 <sup>***</sup> (0.954)
Var(Interaction) – $\psi_{jk}$	0.326 <sup>***</sup> (0.123)	0.307 <sup>*</sup> (0.194)	0.374 <sup>***</sup> (0.185)
Var(Individual) – $\sigma$	71.389 <sup>***</sup> (0.699)	71.047 <sup>***</sup> (0.998)	70.674 <sup>***</sup> (0.972)
<i>Intraclass Correlations</i>			
$\rho_{Country}$	14.96	14.62	15.90
$\rho_{Cohort}$	2.05	1.34	2.49
Log. R. Likelihood	-74895	-36688	-38174
N – Individuals	21054	10315	10739

Note: Significance Levels: \*\*\* $p < 0.001$ ; Unstandardized regression coefficients displayed; Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; All analyses estimated with 14 countries and 13 birth cohorts; Data not weighted



Figure A5: Country Specific Deviations from the General Birth Cohort Trend

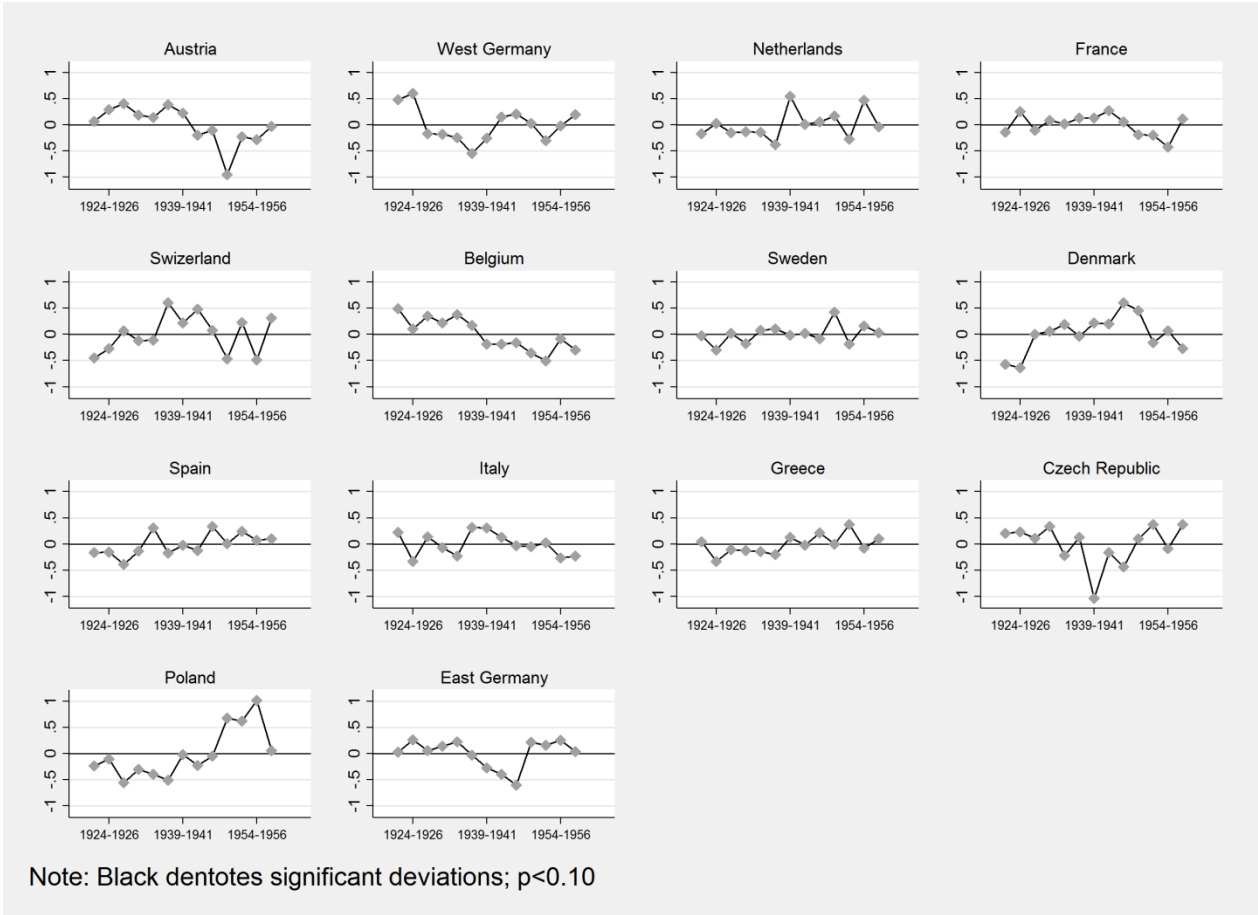


Table A4: Interacted Conditional Cross-Classified Random Effects Regression on Individual Employment Trajectory Complexity – Full Sample

	(1)	(2)	(3)	(4)
<i>Fixed Effects</i>	Individual	EPL	WRR	EPL & WRR
Gender (Ref.: Female)	0.586*** (0.127)	0.584*** (0.127)	0.595*** (0.127)	0.590*** (0.127)
Number of Children (Centered)	-0.028 (0.046)	-0.023 (0.046)	-0.027 (0.046)	-0.023 (0.046)
Sector 1 <sup>st</sup> Employment (Ref.: Private)	-2.778*** (0.232)	-2.780*** (0.232)	-2.769*** (0.232)	-2.773*** (0.232)
Family Status (Ref.: Never Married)	0.455 (0.251)	0.443 (0.251)	0.464 (0.251)	0.453 (0.251)
Education (Ref.: Post-Secondary)				
None	-2.610*** (0.386)	-2.622*** (0.386)	-2.628*** (0.386)	-2.625*** (0.386)
Pre-Primary	-2.361*** (0.208)	-2.367*** (0.208)	-2.355*** (0.208)	-2.355*** (0.208)
Primary	-1.606*** (0.206)	-1.612*** (0.206)	-1.603*** (0.206)	-1.606*** (0.206)
Secondary	-0.549** (0.173)	-0.557** (0.173)	-0.531** (0.173)	-0.540** (0.173)
EPL (centered)		-0.917*** (0.270)		-0.847** (0.269)
WRR (centered)			0.063*** (0.019)	0.050* (0.019)
Constant	16.888*** (0.930)	16.819*** (0.914)	16.974*** (0.865)	16.889*** (0.859)
<i>Random Effects</i>				
Var(Country) – $\psi_j$	9.980*** (3.941)	8.535*** (3.394)	8.731*** (3.460)	7.735*** (3.085)
Var(Cohort) – $\psi_k$	0.695*** (0.327)	1.656*** (0.814)	0.336*** (0.211)	1.117*** (0.639)
Var(Interaction) – $\psi_{jk}$	0.151* (0.095)	0.076 (0.084)	0.191** (0.102)	0.110 (0.090)
Var(Individual) – $\sigma$	68.601*** (0.672)	68.604*** (0.672)	68.584*** (0.672)	68.584*** (0.672)
$R^2$ (%)				
Total	8.09	8.73	9.92	10.27
Log. R. Likelihood	21,054	21,054	21,054	21,054
N – Individuals	-74,456	-74,453	-74,455	-74,453

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed above; All analyses estimated with 14 countries and 13 birth cohorts; Data not weighted

### **III Cross-Classified Regressions on Alternative Employment Mobility Measures**

We test three types of alternative specifications of our outcome variable on complexity in employment trajectories: i) different complexity indices and count variables of the number of transitions and employment states in the sequences, ii) extending the employment trajectories until age 50 for a smaller range of birth cohorts, and iii) weighting the complexity index by the proportion of involuntary moves.

#### ***i) Elzinga's Complexity, Number of Transitions, Number of Distinct States, Number of Employment States, Number of Full-time Employment States***

The results of conditional cross-classified models using Elzinga's (2010) complexity measure, the number of transitions within sequences, the number of distinct sequence states, the number of employment states and the number of full-time employment states within sequences are displayed in Tables A5-A9, respectively. Overall we find a very high correspondence of findings using different complexity measures (as presented in paper based on Gabadinho and colleagues (2010) and Elzinga (2010)), as well as count variables of the number of transitions and number of distinct states in the employment sequences as mentioned in the manuscript (see page 17 in the Data and Methods section). Results are qualitatively the same. Findings deviate more, if we simply count the number of employment states or number of full time employment states compared to the other alternative measures. EPL is insignificant in models using the number of employment states and number of full-time employment states and WRR is insignificant in the model using the number of full-time employment states. The directions of the effects however remain the same. These deviations are plausible because these two indicators are substantively very different outcomes that do not distinguish between moves between jobs and in and out of employment. Theoretically, these findings show that EPL and WRR are indeed consequential for holistic employment trajectories that include job mobility and moves into and out of employment, but this is not visible for simplistic count variables as the number of employment of full-time employment states. Methodologically, there is little variance in the number of employment states and full-time states (see page 22 in the Results section and Figure 4), mostly ranging between 1 and 2. Given little variability and non-normal distributions other modeling strategies, such as poisson regression on count data, would likely produce more informative estimates for these indicators.

Table A5: Cross-Classified Random Effects Regression on Elzinga's Complexity – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		0.190*** (0.037)	0.189*** (0.037)	0.193*** (0.037)	0.190*** (0.037)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-0.703*** (0.067)	-0.702*** (0.067)	-0.701*** (0.067)	-0.701*** (0.067)
Education (Ref.: Post-Secondary)					
None		-0.888*** (0.112)	-0.893*** (0.112)	-0.891*** (0.111)	-0.893*** (0.112)
Pre-Primary		-0.829*** (0.060)	-0.830*** (0.060)	-0.828*** (0.060)	-0.827*** (0.060)
Primary		-0.787*** (0.060)	-0.789*** (0.060)	-0.786*** (0.060)	-0.787*** (0.060)
Secondary		-0.503*** (0.050)	-0.506*** (0.050)	-0.498*** (0.050)	-0.501*** (0.050)
EPL (centered)			-0.273*** (0.073)		-0.257*** (0.071)
WRR (centered)				0.014** (0.005)	0.011* (0.005)
Constant	5.786*** (0.279)	6.145*** (0.253)	6.125*** (0.248)	6.163*** (0.238)	6.140*** (0.236)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	0.740*** (0.292)	0.634*** (0.252)	0.657*** (0.260)	0.583*** (0.232)	0.740*** (0.292)
Var(Cohort) – $\psi_k$	0.037*** (0.018)	0.106*** (0.054)	0.018*** (0.012)	0.074*** (0.043)	0.037*** (0.018)
Var(Individual) – $\sigma$	5.771*** (0.056)	5.766*** (0.056)	5.772*** (0.056)	5.767*** (0.056)	5.771*** (0.056)
<i>Total R<sup>2</sup> (%)</i>					
( $\rho_{Country} / \rho_{Cohort}$ )	(13.67/1.53)	7.63	8.22	9.05	9.39
Log. R. Likelihood	-48,813	-48,404	-48,401	-48,406	-48,403

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment, number of children and family status also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted

Table A6: Cross-Classified Random Effects Regression on Number of Transitions – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		0.124*** (0.028)	0.124*** (0.028)	0.126*** (0.028)	0.125*** (0.028)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-0.604*** (0.051)	-0.604*** (0.051)	-0.604*** (0.051)	-0.602*** (0.051)
Education (Ref.: Post-Secondary)					
None		-0.421*** (0.084)	-0.425*** (0.084)	-0.423*** (0.084)	-0.426*** (0.084)
Pre-Primary		-0.334*** (0.045)	-0.336*** (0.045)	-0.332*** (0.045)	-0.332*** (0.045)
Primary		-0.144** (0.045)	-0.145** (0.045)	-0.142** (0.045)	-0.143** (0.045)
Secondary		0.017 (0.038)	0.015 (0.038)	0.023 (0.038)	0.020 (0.038)
EPL (centered)			-0.179** (0.056)		-0.166** (0.055)
WRR (centered)				0.015*** (0.004)	0.013*** (0.004)
Constant	2.978*** (0.221)	3.077*** (0.205)	3.063*** (0.202)	3.095*** (0.189)	3.081*** (0.187)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	0.589 (0.232)	0.479*** (0.189)	0.414*** (0.164)	0.415*** (0.164)	0.369*** (0.146)
Var(Cohort) – $\psi_k$	0.085*** (0.037)	0.041*** (0.018)	0.084*** (0.040)	0.021*** (0.011)	0.054*** (0.029)
Var(Individual) – $\sigma$	3.403*** (0.033)	3.285*** (0.032)	3.283*** (0.032)	3.285*** (0.032)	3.283*** (0.032)
<i>Total R<sup>2</sup> (%)</i>					
( $\rho_{Country} / \rho_{Cohort}$ )	(14.45/2.09)	6.69	7.26	8.75	9.13
Log. R. Likelihood	-42,827	-42,484	-42,482	-42,483	-42,482

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted

Table A7: Cross-Classified Random Effects Regression on Number of Distinct States – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		0.038 (0.026)	0.038 (0.026)	0.040 (0.026)	0.039 (0.026)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-0.566 <sup>***</sup> (0.048)	-0.566 <sup>***</sup> (0.048)	-0.564 <sup>***</sup> (0.048)	-0.564 <sup>***</sup> (0.048)
Education (Ref.: Post-Secondary)					
None		-0.407 <sup>***</sup> (0.080)	-0.411 <sup>***</sup> (0.080)	-0.410 <sup>***</sup> (0.080)	-0.411 <sup>***</sup> (0.080)
Pre-Primary		-0.334 <sup>***</sup> (0.043)	-0.335 <sup>***</sup> (0.043)	-0.332 <sup>***</sup> (0.043)	-0.332 <sup>***</sup> (0.043)
Primary		-0.140 <sup>***</sup> (0.042)	-0.141 <sup>***</sup> (0.042)	-0.139 <sup>**</sup> (0.042)	-0.140 <sup>**</sup> (0.042)
Secondary		0.030 (0.036)	0.028 (0.036)	0.035 (0.036)	0.033 (0.036)
EPL (centered)			-0.155 <sup>**</sup> (0.053)		-0.141 <sup>**</sup> (0.051)
WRR (centered)				0.013 <sup>***</sup> (0.004)	0.012 <sup>**</sup> (0.004)
Constant	3.888 <sup>***</sup> (0.210)	4.010 <sup>***</sup> (0.196)	3.999 <sup>***</sup> (0.192)	4.028 <sup>***</sup> (0.182)	4.014 <sup>***</sup> (0.179)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	0.544 <sup>***</sup> (0.214)	0.445 <sup>***</sup> (0.175)	0.388 <sup>***</sup> (0.154)	0.388 <sup>***</sup> (0.153)	0.347 <sup>***</sup> (0.138)
Var(Cohort) – $\psi_k$	0.066 <sup>***</sup> (0.028)	0.030 <sup>***</sup> (0.014)	0.063 <sup>***</sup> (0.031)	0.015 <sup>***</sup> (0.009)	0.039 <sup>***</sup> (0.022)
Var(Individual) – $\sigma$	3.039 <sup>***</sup> (0.030)	2.936 <sup>***</sup> (0.029)	2.934 <sup>***</sup> (0.029)	2.936 <sup>***</sup> (0.029)	2.934 <sup>***</sup> (0.029)
<i>Total R<sup>2</sup> (%)</i> <i>(<math>\rho_{Country} / \rho_{Cohort}</math>)</i>	(14.90/1.80)	6.50	7.21	8.48	8.98
Log. R. Likelihood	-41,634	-41,299	-41,298	-41,299	-41,299

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted

Table A8: Cross-Classified Random Effects Regression on Number of Distinct Employment States – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		-0.322*** (0.024)	-0.322*** (0.024)	-0.320*** (0.024)	-0.320*** (0.024)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-0.563*** (0.044)	-0.563*** (0.044)	-0.561*** (0.044)	-0.561*** (0.044)
Education (Ref.: Post-Secondary)					
None		0.030 (0.074)	0.028 (0.074)	0.028 (0.074)	0.027 (0.074)
Pre-Primary		0.128** (0.040)	0.127** (0.040)	0.130** (0.040)	0.130** (0.040)
Primary		0.041 (0.039)	0.041 (0.039)	0.042 (0.039)	0.042 (0.039)
Secondary		0.052 (0.033)	0.051 (0.033)	0.056 (0.033)	0.055 (0.033)
EPL (centered)			-0.087 (0.049)		-0.075 (0.048)
WRR (centered)				0.013*** (0.003)	0.012*** (0.003)
Constant	2.638*** (0.187)	2.773*** (0.196)	2.766*** (0.194)	2.790*** (0.179)	2.783*** (0.178)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	0.448*** (0.177)	0.445*** (0.175)	0.414*** (0.164)	0.376*** (0.149)	0.355*** (0.141)
Var(Cohort) – $\psi_k$	0.035*** (0.016)	0.041*** (0.018)	0.061*** (0.030)	0.023*** (0.012)	0.037*** (0.021)
Var(Individual) – $\sigma$	2.592*** (0.025)	2.508*** (0.024)	2.508*** (0.024)	2.508*** (0.024)	2.507*** (0.024)
<i>Total R<sup>2</sup> (%)</i> <i>(<math>\rho_{Country} / \rho_{Cohort}</math>)</i>	(14.57/1.15)	2.63	3.04	5.49	5.72
Log. R. Likelihood	-39,958	-39,649	-39,650	-39,648	-39,649

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted

Table A9: Cross-Classified Random Effects Regression on Number of Distinct Full-time Employment States – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		-0.615*** (0.023)	-0.615*** (0.023)	-0.614*** (0.023)	-0.614*** (0.023)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-0.566*** (0.048)	-0.566*** (0.048)	-0.564*** (0.048)	-0.564*** (0.048)
Education (Ref.: Post-Secondary)					
None		-0.025 (0.071)	-0.026 (0.071)	-0.027 (0.071)	-0.027 (0.071)
Pre-Primary		0.091* (0.038)	0.091* (0.038)	0.091* (0.038)	0.092* (0.038)
Primary		0.027 (0.038)	0.027 (0.038)	0.027 (0.038)	0.027 (0.038)
Secondary		0.054 (0.032)	0.053 (0.032)	0.056 (0.032)	0.055 (0.032)
EPL (centered)			-0.075 (0.045)		-0.062 (0.044)
WRR (centered)				0.006* (0.003)	0.005 (0.003)
Constant	2.420*** (0.151)	2.861*** (0.166)	2.854*** (0.164)	2.871*** (0.157)	2.863*** (0.157)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	0.304*** (0.120)	0.322*** (0.127)	0.301*** (0.120)	0.290*** (0.116)	0.278*** (0.112)
Var(Cohort) – $\psi_k$	0.011*** (0.006)	0.015*** (0.007)	0.027*** (0.015)	0.009*** (0.006)	0.018** (0.013)
Var(Individual) – $\sigma$	2.469*** (0.024)	2.314*** (0.023)	2.313*** (0.023)	2.314*** (0.023)	2.314*** (0.023)
<i>Total R<sup>2</sup> (%)</i>					
( $\rho_{Country} / \rho_{Cohort}$ )	(10.92/0.40)	4.77	5.17	6.12	6.26
Log. R. Likelihood	-39,438	-38,793	-38,795	-38,796	-38,798

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted



*ii) Complexity Index of Sequences from Age 15-50 of Cohorts born 1924-1956*

The results of cross-classified models on complexity of longer sequences from ages 15 to 50 for individuals born between 1924 and 1956 are displayed in Table A10. Results are substantially comparable. The effect of EPL on longer employment trajectories is much stronger compared to the results presented in the manuscript. This indicates that EPL stabilizes employment trajectories particularly after age 45. The effect of WRRs are insignificant in the results displayed below, however the effect size and direction are substantially similar to those reported in the manuscript. WRRs rise considerably in the last three birth cohorts, reaching the highest observed values. The omission of extreme values will always affect results. Furthermore, the effects of WRRs for men remains significant at the 10% level also for the longer employment trajectories until age 50.

Table A10: Cross-Classified Random Effects Regression on Long Employment Trajectory Complexity – Full Sample

<i>Fixed Effects</i>		(1) Individual	(2) EPL	(3) WRR	(4) EPL & WRR
Gender (Ref.: Female)		0.650*** (0.126)	0.652*** (0.126)	0.652*** (0.126)	0.654*** (0.126)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-2.476*** (0.231)	-2.476*** (0.230)	-2.473*** (0.231)	-2.474*** (0.230)
Education (Ref.: Post-Secondary)					
None		-2.225*** (0.384)	-2.264*** (0.384)	-2.227*** (0.384)	-2.263*** (0.384)
Pre-Primary		-2.276*** (0.206)	-2.293*** (0.206)	-2.272*** (0.206)	-2.288*** (0.206)
Primary		-1.669*** (0.204)	-1.678*** (0.204)	-1.666*** (0.204)	-1.675*** (0.204)
Secondary		-0.588*** (0.172)	-0.603*** (0.172)	-0.579*** (0.172)	-0.596*** (0.172)
EPL (centered)			-1.416*** (0.278)		-1.411*** (0.278)
WRR (centered)				0.025 (0.020)	0.020 (0.020)
Constant	15.248*** (1.021)	16.299*** (0.935)	16.143*** (0.929)	16.338*** (0.906)	16.174*** (0.907)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	12.633*** (4.975)	10.024*** (3.952)	8.161*** (3.230)	9.421*** (3.749)	7.809*** (3.113)
Var(Cohort) – $\psi_k$	1.487*** (0.688)	0.688*** (0.331)	2.030*** (0.997)	0.567*** (0.295)	1.848*** (0.934)
Var(Individual) – $\sigma$	67.102*** (0.673)	64.397*** (0.646)	64.305*** (0.645)	64.404*** (0.646)	64.310*** (0.645)
<i>Total R<sup>2</sup> (%)</i>					
( $\rho_{Country} / \rho_{Cohort}$ )	(15.55/1.83)	7.52	8.27	8.40	8.93
Log. R. Likelihood	-70,236	-69,822	-69,812	-69,825	-69,814

Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 19,926 Individuals; Data not weighted

### *iii) Cross-Classified Regressions incorporating Involuntary Mobility*

The results of a cross-classified multilevel regression on employment complexity weighted by the proportion of involuntary employment mobility are displayed in Table A11. Respondents were asked to give the reason they left their employment relationships: resignation, layoff, mutual agreement, plant closure, temporary job completion, retirement or another reason. We calculated the proportion of involuntary job moves as the number of transitions due to layoff, plant closure or the completion of a temporary job divided by the total number of job transitions between the ages 15 and 45. The weighted complexity index is calculated as individual's sequence complexity multiplied with their proportion of involuntary job moves. As a result, employment trajectory complexity will be higher for individuals that experience involuntary moves more often than voluntary moves. The results using the complexity index weighted by the proportion of involuntary employment transitions are substantively the same as the results presented in the manuscript. Interestingly, the EPL effects on the employment complexity index weighted by the number of involuntary job moves are stronger than for the unweighted complexity index. Substantively, this indicates that EPL is especially effective at reducing involuntary job transitions (see also pages 25-26 in the Results section).

*Table A11: Cross-Classified Random Effects Regression on Employment Trajectory Complexity Index Weighted by Proportion of Involuntary Employment Transitions – Full Sample*

		(1)	(2)	(3)	(4)
<i>Fixed Effects</i>		Individual	EPL	WRR	EPL & WRR
Gender (Ref.: Female)		0.454** (0.160)	0.454** (0.160)	0.462** (0.160)	0.461** (0.160)
Sector 1 <sup>st</sup> Employment (Ref.: Private)		-3.300*** (0.294)	-3.300*** (0.294)	-3.292*** (0.294)	-3.293*** (0.294)
Education (Ref.: Post-Secondary)					
None		-2.500*** (0.488)	-2.542*** (0.488)	-2.503*** (0.487)	-2.541*** (0.488)
Pre-Primary		-2.318*** (0.263)	-2.337*** (0.263)	-2.303*** (0.263)	-2.320*** (0.263)
Primary		-1.669*** (0.260)	-1.680*** (0.260)	-1.662*** (0.260)	-1.672*** (0.260)
Secondary		-0.366 (0.219)	-0.380 (0.219)	-0.344 (0.219)	-0.358 (0.219)
EPL (centered)			-1.151*** (0.330)		-1.133*** (0.327)
WRR (centered)				0.057* (0.023)	0.054* (0.023)
Constant	17.787*** (1.227)	19.192*** (1.133)	19.112*** (1.138)	19.260*** (1.049)	19.179*** (1.060)
<i>Random Effects</i>					
Var(Country) – $\psi_j$	16.077*** (6.336)	12.836*** (5.067)	10.755*** (4.278)	10.986*** (4.379)	9.307*** (3.731)
Var(Cohort) – $\psi_k$	4.543*** (1.920)	2.743*** (1.189)	4.826*** (2.162)	2.068*** (0.951)	3.918*** (1.830)
Var(Individual) – $\sigma$	113.373*** (1.106)	110.057*** (1.074)	109.985*** (1.073)	110.060*** (1.074)	109.985*** (1.073)
<i>Total R<sup>2</sup> (%)</i>					
( $\rho_{Country} / \rho_{Cohort}$ )	(11.99/3.39)	6.23	6.28	8.11	8.04
Log. R. Likelihood	-79734	-79414	-79409	-79414	-79409

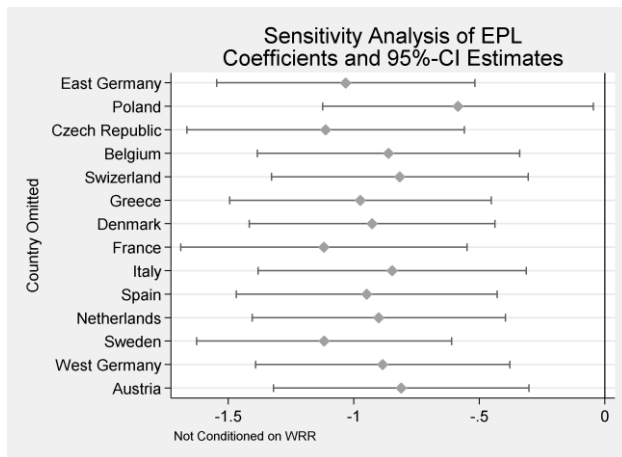
Note: Significance Levels: \*p<0.05\*\*p<0.01\*\*\*p<0.001; Unstandardized regression coefficients displayed Standard errors in parentheses; Significance of random effect parameters determined by likelihood-ratio tests; Industrial branch of first employment also controlled; R-Squared values represent the percentage reduction of the random effects estimates against the unconditional estimates displayed in Table 3; Analyses estimated with 14 countries, 13 birth cohorts and 21,054 Individuals; Data not weighted

## IV EPL and WRR Effect Sensitivity

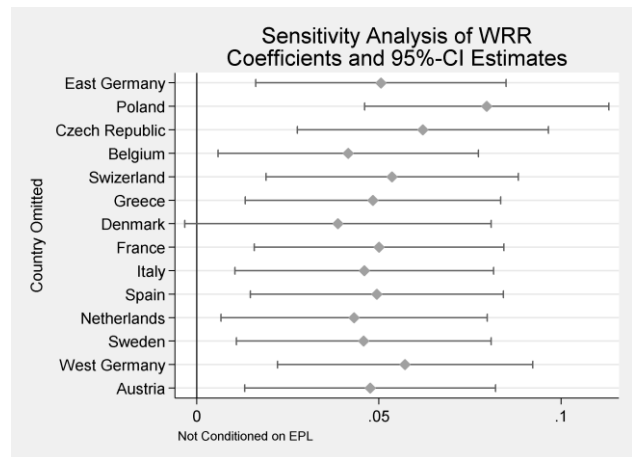
### *i) Sensitivity to Country Omissions*

The sensitivity of the EPL and WRR effects to the omission of single countries is displayed in Figures A6 and A7, respectively. Overall, the estimated EPL and WRR effects are extremely robust to the omission of single countries. All but one of the estimates remain significant at the 5% level and there are no significant differences among the EPL and WRR estimates with the omission of countries as well as between those and the EPL and WRR coefficients reported in the manuscript. Alone the omission of Denmark causes the WRR effect to become insignificant at the 5% level; it remains significant at the 10% level. The omission of cases at the extremes of a distribution will have the greatest impact – in this case it is the high level of WRRs in Denmark that influence the WRR estimates. In sum, these sensitivity analyses indicate that our results are not driven by any single country.

*Figure A6: Estimated EPL Effect on Sequence Complexity with Country Omissions*



*Figure A7: Estimated WRR Effect on Sequence Complexity with Country Omissions*

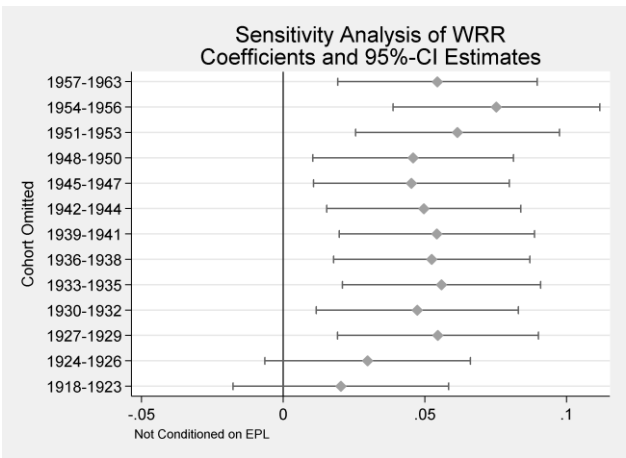
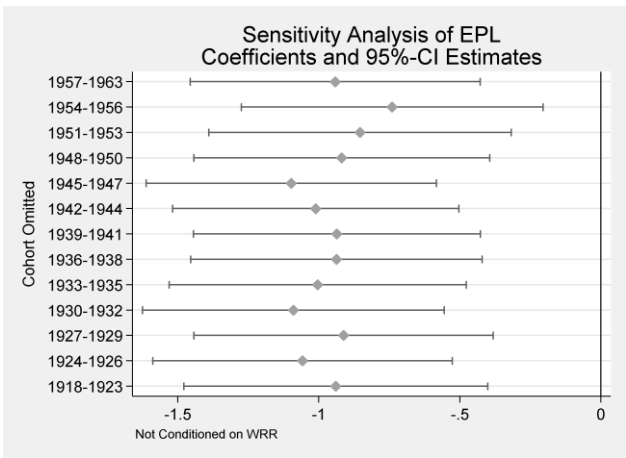


*ii) Sensitivity to Birth Cohort Omissions*

The sensitivity of the EPL and WRR effects to the omission of single birth cohorts is displayed in Figures A8 and A9, respectively. Overall, the estimated EPL and WRR effects are extremely robust to the omission of single birth cohorts. With the exception of two estimates, all EPL and WRR effects remain significant at the 5% level and there are no significant differences among the EPL and WRR estimates with the omission of cohorts as well as between those and the EPL and WRR coefficients reported in the manuscript. The estimated WRR effect without the 1924-1926 birth cohort is borderline significant at the 10% level. We state in the Methods section of the manuscript (see page 19, paragraph 1) that our results are “slightly sensitive” to the omission of the 1918-1923 birth cohort. As can be seen below, the WRR effect without the oldest birth cohort is not significant at conventional levels for the total sample. As noted above, also here the omission of cases at the extremes of a distribution – in this case very low WRRs for the 1918-1923 cohort – has the strongest impact on the results. However, both the WRR effects with the omission of the 1918-1923 and 1924-1926 birth cohorts are significant at the 5% level for men only. This indicates that while women displayed moderate complexity throughout the birth cohorts of the 1920s and 1930s due to exiting the labor market following family formation, the 1918-1923 and 1924-1926 male birth cohorts experienced high stability within the labor market associated with low WRRs. Thus, especially the omission of early male cohorts reduces the covariance between employment complexity and WRRs, generating marginally smaller effect sizes. In sum, the sensitivity analyses indicate that our results are largely not driven by a single birth cohort.

*Figure A8: Estimated EPL Effect on Sequence Complexity with Cohort Omissions*

*Figure A9: Estimated WRR Effect on Sequence Complexity with Cohort Omissions*

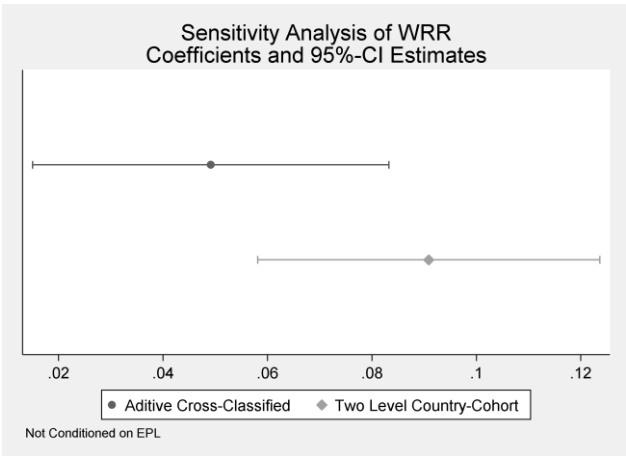
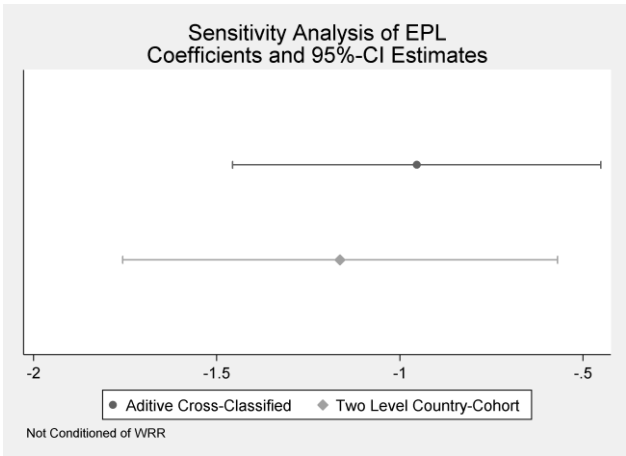


**iii) Random Effect Specification**

The estimated EPL and WRR effects from an additive cross-classified model (reported in the manuscript) and a country-cohort two level model with 182 country-cohort groups are displayed in Figures 10 and 11, respectively. This comparison examines, whether the EPL and WRR effects on sequence complexity are sensitive to the small number of higher level units in the cross-classified models. There are no significant differences between the EPL and WRR estimates from a random effects specification with 182 higher level units and the cross-classified model. As expected, our results tend to be a slightly more conservative estimate of the effects of EPL and WRRs on employment complexity (see pages 28-29 in the Discussion; see also Bryan and Jenkins (2015)).

*Figure A10: Estimated EPL Effect on Sequence Complexity by Random Effect Specification*

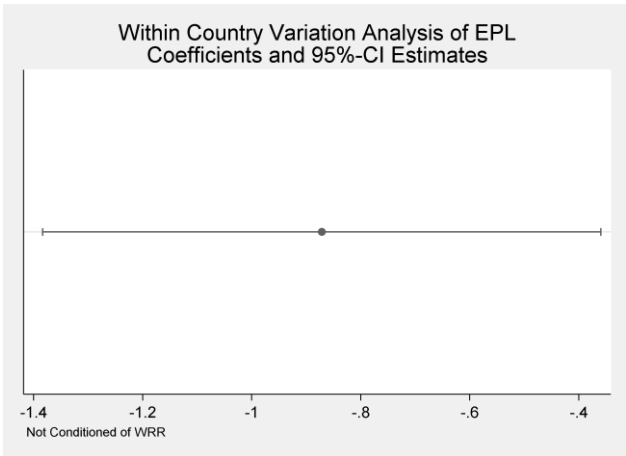
*Figure A11: Estimated WRR Effect on Sequence Complexity by Random Effect Specification*



***iv) EPL and WRR Effect Estimation using Within-Country Variation Conditioned on Between-Country Variation***

In Figures A12 and A13 we display the within-country effect of EPL and WRR on sequence complexity. This can be understood as a “fixed-effects” estimate with the context of multilevel models as described by Rabe-Hesketh and Skrondal (2012). We calculate the country specific EPL and WRR means and the cohort specific EPL and WRR deviations from their respective country means. Both the country specific means and the cohort specific deviations are used as covariates in the cross-classified models. The EPL and WRR estimates from the country means can be interpreted as a “between-country” effect, comparable to a population model estimate (results available from authors). The EPL and WRR estimates using the cohort deviations can be interpreted as a “within-country” effects, comparable to a fixed-effects regression estimate. The effects below indicate the association between a change in EPL or WRR within a country and sequence complexity. The effect sizes and directions are similar to the estimates reported in the manuscript and increase our confidence in the robustness of our results.

*Figure A12: EPL Estimate using Deviations from the Country Mean*



*Figure A13: WRR Estimate using Deviations from the Country Mean*

