Wealth inequality, intergenerational transfers and family background

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Supplementary Material – Online Appendix

Appendix A.

Table A1. OLS regression coefficients of log wealth on age and gender variables.

	France			*Spain*		
	Estimate	*S.E.*	*p*	*Estimate*	*S.E.*	*p*
α (Intercept)	11.454	0.041	<0.001	11.81	0.055	<0.001
β_1(Age difference)	0.021	0.007	0.003	0.018	0.009	0.042
β_1 (Age difference)^2	-0.001	0.000	0.028	-0.002	0.000	<0.001
β_1 (Age difference)^3	0.000	0.000	0.675	0.000	0.000	0.635
β_1 (Age difference)^4	0.000	0.000	0.986	0.000	0.000	0.74
δ (Female dummy)	-0.244	0.067	<0.001	-0.342	0.086	<0.001
γ_1 (Interaction female-age difference)	0.033	0.011	0.004	0.004	0.013	0.785
γ_2 (Interaction female-age difference)^2	-0.001	0.001	0.03	0.001	0.001	0.076
γ_3 (Interaction female-age difference)^3	0.000	0.000	0.006	0.000	0.000	0.371
γ_4 (Interaction female-age difference)^4	0.000	0.000	0.081	0.000	0.000	0.087
Observations		9235			5066	
R2		0.049			0.05	
R^2 adjusted		0.048			0.049	

	Britain			*US*		
	Estimate	*S.E.*	*p*	*Estimate*	*S.E.*	*p*
α (Intercept)	11.775	0.045	<0.001	11.537	0.079	<0.001
β_1(Age difference)	-0.002	0.007	0.821	-0.001	0.013	0.925
β_1 (Age difference)^2	-0.002	0.000	<0.001	0.000	0.001	0.869
β_1 (Age difference)^3	0.000	0.000	0.263	0.000	0.000	0.009
β_1 (Age difference)^4	0.000	0.000	0.102	0.000	0.000	0.015
δ (Female dummy)	-0.318	0.075	<0.001	-0.692	0.111	<0.001
γ_1 (Interaction female-age difference)	-0.002	0.012	0.878	0.042	0.019	0.026
γ_2 (Interaction female-age difference)^2	-0.001	0.001	0.235	0.001	0.001	0.553
γ_3 (Interaction female-age difference)^3	0.000	0.000	0.369	0.000	0.000	0.030
γ_4 (Interaction female-age difference)^4	0.000	0.000	0.199	0.000	0.000	0.024
Observations		10218			4486	
R2		0.045			0.064	
R^2 adjusted		0.044			0.062	

Notes: Coefficients of the regression used to adjust wealth by age and gender prior to our main analysis:

$\ln(W_i) = \alpha + \delta F_i + \sum_{n=1}^{4} \beta_n (A_i - 65)^n + \sum_{n=1}^{4} \gamma_n F_i (A_i - 65)^n + \varepsilon_i$

We finally retain the adjusted value as by: $\ln(W_i^{adj}) = \ln(W_i) - \hat{\delta} F_i - \sum_{n=1}^{4} \hat{\beta}_n (A_i - 65)^n - \sum_{n=1}^{4} \hat{\gamma}_n F_i (A_i - 65)^n$

Details and comments on the coefficients in Section 3. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).

Table A2. Inequality of distributions and contributions of inheritances and family background to total wealth inequality (%) for the 50-80 years old sample.

A)

			France	Spain	Great Britain	United States
Original Adjusted Wealth Distribution	T	Estimate	0.989	0.753	0.949	1.857
		Standard Error	(0.028)	(0.046)	(0.021)	(0.048)
		C.I. (Low - High)	(0.928 - 1.050)	(0.655 - 0.852)	(0.904 – 0.995)	(1.754 - 1.959)
Inheritance Smoothed	T_I^S	Estimate	0.564	0.450	0.606	1.115
		Standard Error	(0.021)	(0.038)	(0.026)	(0.049)
		C.I. (Low - High)	(0.520 - 0.608)	(0.369 - 0.532)	(0.549 - 0.662)	(1.009 - 1.221)
Family Background Smoothed	T_F^S	Estimate	0.799	0.588	0.784	1.369
		Standard Error	(0.029)	(0.045)	(0.028)	(0.055)
		C.I. (Low - High)	(0.736 - 0.862)	(0.491 - 0.684)	(0.723 - 0.844)	(1.251 - 1.487)
Inheritance and Family Background Smoothed	T_{I+F}^S	Estimate	0.520	0.377	0.552	0.873
		Standard Error	(0.021)	(0.034)	(0.024)	(0.049)
		C.I. (Low - High)	(0.475 - 0.566)	(0.304- 0.451)	(0.501 - 0.603)	(0.767 – 0.978)

Notes: Inequality (measured by the MLD Index) of the original adjusted wealth distribution (row 1) and of the different smoothed counterfactual distributions in which differences in wealth associated with inheritances (row 2), family background (row 3) or both (row 4) have been removed. See Section 2 for details on the smoothing procedure. All measures weighted using population weights. Standard errors and confidence intervals calculated using bootstrap and multiple imputation (MI Boot method as proposed in Schomaker and Heumann, 2018). Sample used is aged between 50 and 80, excluding non-positive wealth observations and adjusting by age, gender and household size. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).

B)

			France	Spain	Great Britain	United States
Gross Inheritance Contribution	Sh_I^G	Estimate	43.0%	40.2%	36.2%	39.9%
		Standard Error	(1.6%)	(3.3%)	(2.1%)	(2.5%)
		C.I. (Low - High)	(39.5% - 46.4%)	(33.2% - 47.3%)	(31.7% - 40.8%)	(34.5% - 45.4%)
Gross Family Background Contribution	Sh_F^G	Estimate	19.2%	22.0%	17.4%	26.3%
		Standard Error	(1.9%)	(3.1%)	(2.4%)	(2.2%)
		C.I. (Low - High)	(15.0% - 23.4%)	(15.3% - 28.7%)	(12.3% - 22.6%)	(21.6% - 30.9%)
Combined Inheritance and Family Background Contribution	Sh_{I+F}^C	Estimate	47.4%	49.9%	41.8%	53.0%
		Standard Error	(1.7%)	(3.1%)	(2.0%)	(2.5%)
		C.I. (Low - High)	(43.6% - 51.1%)	(43.2% - 56.6%)	(37.6% - 46.1%)	(47.6% - 58.4%)
Interacted Contribution	$Sh_{I+F}^{INT.} = Sh_I^G + Sh_F^G - Sh_{I+F}^C$	Estimate	14.8%	12.3%	11.8%	13.2%
		Standard Error	(1.6%)	(4.7%)	(2.2%)	(2.5%)
		C.I. (Low - High)	(11.3% - 18.2%)	(2.2% - 22.4%)	(7.0% - 16.6%)	(7.7% - 18.7%)
Marginal Inheritance Contribution	$Sh_I^M = Sh_{I+F}^C - Sh_F^G$	Estimate	28.2%	27.9%	24.4%	26.7%
		Standard Error	(1.9%)	(3.7%)	(2.8%)	(2.9%)
		C.I. (Low - High)	(24.2% - 32.2%)	(20.0%- 35.9%)	(18.4% - 30.4%)	(20.5% - 33.0%)
Marginal Family Background Contribution	$Sh_F^M = Sh_{I+F}^C - Sh_I^G$	Estimate	4.4%	9.7%	5.6%	13.1%
		Standard Error	(0.9%)	(3.8%)	(0.9%)	(2.2%)
		C.I. (Low - High)	(2.6% - 6.6%)	(1.6% -17.8%)	(3.6% - 7.7.%)	(8.4% - 17.7%)
Shapley Inheritance Contribution	$Sh_I^{SHAPLEY}$	Estimate	35.6%	34.1%	30.3%	33.3%
		Standard Error	(1.5%)	(2.6%)	(2.2%)	(2.4%)
		C.I. (Low - High)	(32.2% -38.9%)	(28.5% - 39.6%)	(25.6% - 35.1%)	(28.1% - 38.5%)
Shapley Family Background Contribution	$Sh_F^{SHAPLEY}$	Estimate	11.8%	15.9%	11.5%	19.7%
		Standard Error	(1.3%)	(2.5%)	(1.4%)	(1.7%)
		C.I. (Low - High)	(9.1% - 14.6%)	(10.4% - 21.3%)	(8.4% - 14.6%)	(15.9% - 23.4%)

Notes: Gross contribution of each characteristic to wealth inequality (rows 1-2) and of both characteristics combined (row 3) based on comparing the original adjusted wealth inequality and the inequality of the counterfactual wealth distributions. Interacted contribution to wealth inequality of both characteristics (row 4) and marginal contribution of each of them (rows 5 and 6) based on our methodology (see Section 2). Rows 6 and 7 show the contribution of each characteristic using the Shapley value decomposition. All measures weighted using population weights. Standard errors and confidence intervals calculated using bootstrap and multiple imputation (MI Boot method as proposed in by Schomaker and Heumann, 2018), Sample used is aged between 50 and 80, excluding non-positive wealth and adjusting by age, gender and household size. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).

Table A3. Inequality of distributions and contributions of inheritances and family background to total wealth inequality (%). Samples exclude observations in the first decile of the wealth distribution for France, Spain and Great Britain to be comparable with the sample for the U.S. when non-positive wealth observations are excluded.

A)

			France	**Spain**	**Great Britain**	**United States**
Original Adjusted Wealth Distribution	T	Estimate	0.816	0.534	0.957	1.841
		Standard Error	0.033	0.029	0.020	(0.045)
		C.I. (Low - High)	(0.745 – 0.888)	(0.471 – 0.597)	(0.976 – 0.999)	(1.745 - 1.937)
Inheritance Smoothed	T_I^S	Estimate	0.559	0.387	0.685	1.158
		Standard Error	0.033	0.027	0.026	(0.058)
		C.I. (Low - High)	(0.488 - 0.630)	(0.330 - 0.444)	(0.630 - 0.740)	(1.033 - 1.284)
Family Background Smoothed	T_F^S	Estimate	0.726	0.445	0.842	1.433
		Standard Error	0.035	0.031	0.019	(0.048)
		C.I. (Low - High)	(0.649 - 0.802)	(0.379 - 0.512)	(0.800 - 0.884)	(1.329 - 1.537)
Inheritance and Family Background Smoothed	T_{I+F}^S	Estimate	0.521	0.337	0.634	0.943
		Standard Error	0.028	0.023	0.022	(0.043)
		C.I. (Low - High)	(0.460 - 0.582)	(0.287- 0.387	(0.587 - 0.681)	(0.850 - 1.036)

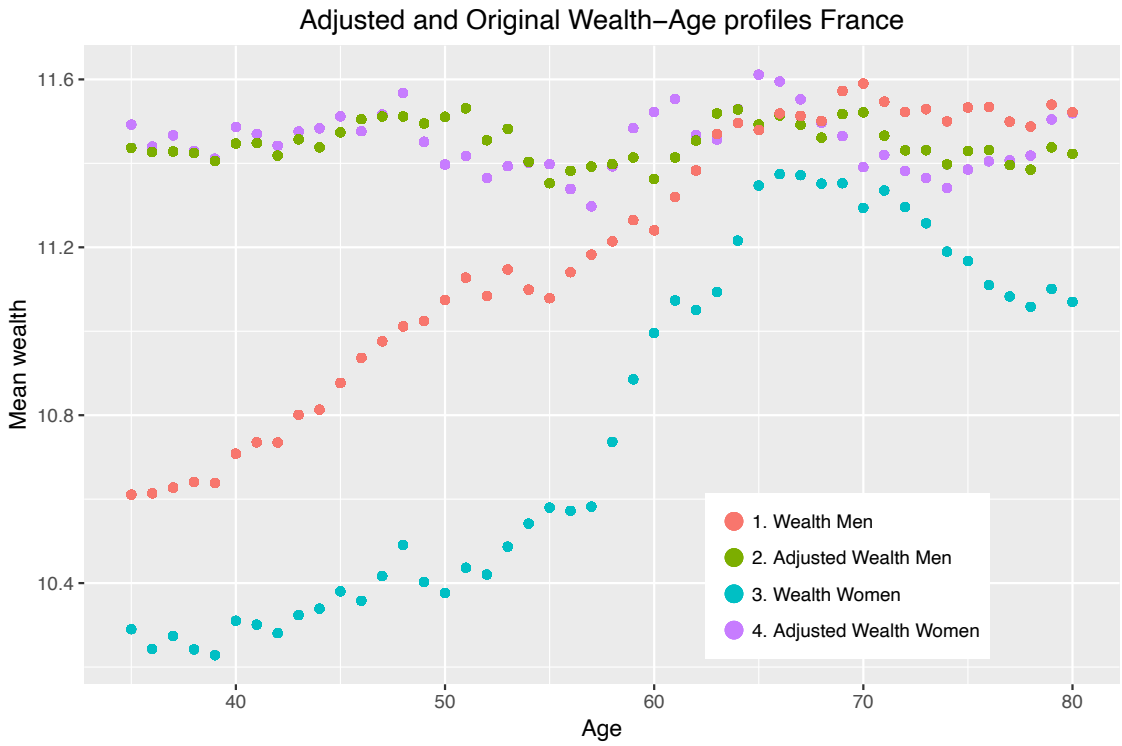
Notes: Inequality (measured by the MLD Index) of the original adjusted wealth distribution (row 1) and of the different smoothed counterfactual distributions in which differences in wealth associated with inheritances (row 2), family background (row 3) or both (row 4) have been removed. See Section 2 for details on the smoothing procedure All measures weighted using population weights. Standard errors and confidence intervals calculated using bootstrap and multiple imputation (MI Boot method as proposed in by Schomaker and Heumann, 2018) Sample used is aged between 35 and 80, excluding non-positive wealth observations in the U.S. and the lowest 10% of the wealth distribution observations in the other three countries, adjusting by age, gender and household size. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).

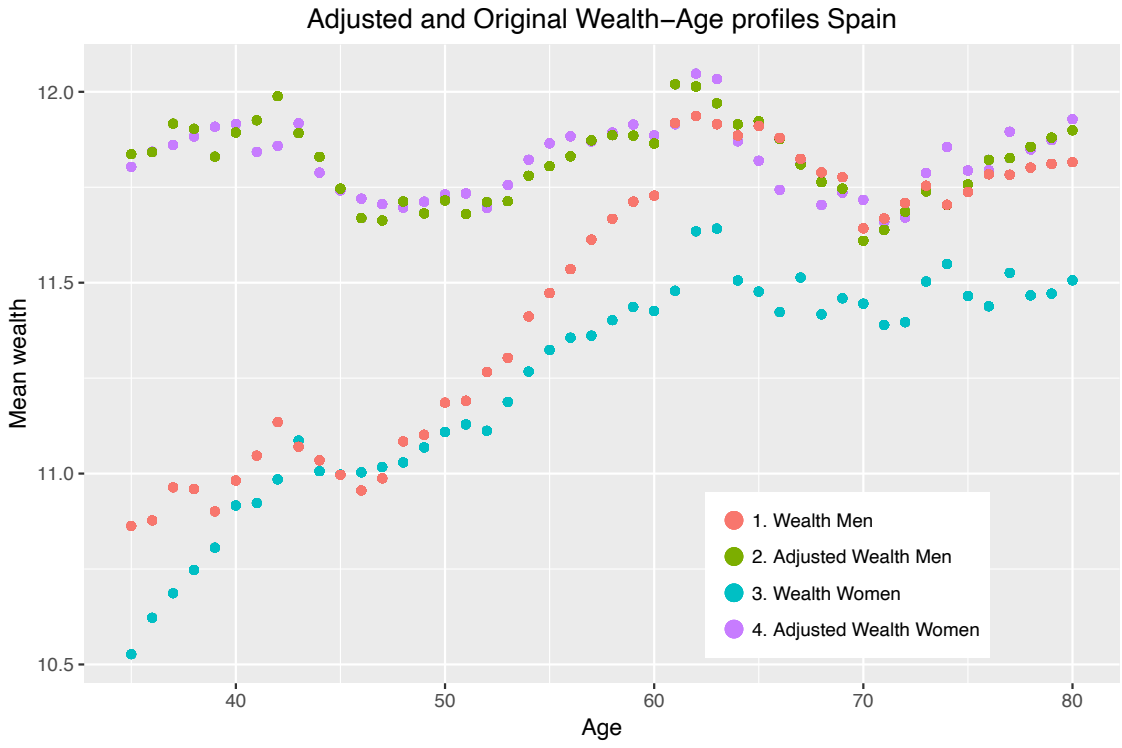
B)

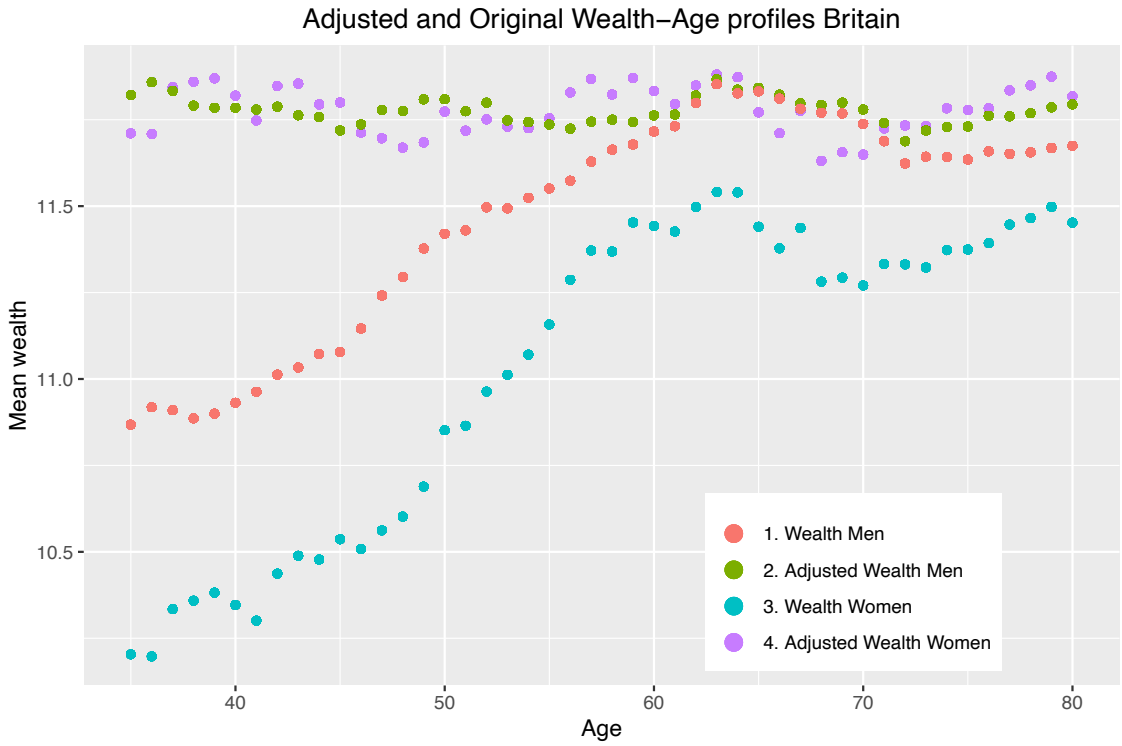
			France	Spain	Great Britain	United States
Gross Inheritance Contribution	Sh_I^G	Estimate	31.5%	27.6%	28.4%	37.1%
		Standard Error	(1.7%)	(2.6%)	(2.1%)	(2.9%)
		C.I. (Low - High)	(27.8% - 35.3%)	(22.0% - 33.0%)	(23.9% - 33.0%)	(30.9% - 43.3%)
Gross Family Background Contribution	Sh_F^G	Estimate	11.1%	16.6%	12.0%	22.2%
		Standard Error	(1.2%	(2.1%)	(1.3%)	(1.8%)
		C.I. (Low - High)	(8.6% - 13.6%)	(12.2% - 21.1%)	(9.1% - 14.8%)	(18.3% - 26.0%)
Combined Inheritance and Family Background Contribution	Sh_{I+F}^C	Estimate	36.2%	36.8%	33.8%	48.8%
		Standard Error	(1.4%	(2.7%)	(1.8%)	(2.1%)
		C.I. (Low - High)	(33.2% - 39.1%)	(30.9% - 42.7%)	(29.9% - 37.6%)	(44.1% - 53.4%)
Interacted Contribution	$Sh_{I+F}^{INT} = Sh_I^G + Sh_F^G - Sh_{I+F}^C$	Estimate	6.5%	7.4%	6.7%	10.5%
		Standard Error	(1.6%)	(2.8%)	(1.4%)	(2.8%)
		C.I. (Low - High)	(3.1% - 9.8%)	(1.3% - 13.5%)	(3.7% - 9.6%)	(4.5% - 16.5%)
Marginal Inheritance Contribution	$Sh_I^M = Sh_{I+F}^C - Sh_F^G$	Estimate	25.1%	20.2%	21.8%	26.6%
		Standard Error	(0.9%)	(3.0%)	(1.9%)	(2.1%)
		C.I. (Low - High)	(23.3% - 27.1%)	(13.7%- 26.6%)	(17.7% - 25.9%)	(22.1% - 31.1%)
Marginal Family Background Contribution	$Sh_F^M = Sh_{I+F}^C - Sh_I^G$	Estimate	4.6%	9.3%	5.3%	11.7%
		Standard Error	(1.1%)	(2.6%)	(1.0%)	(2.5%)
		C.I. (Low - High)	(2.3% - 6.9%)	(3.7% -14.8%)	(3.2% - 7.4%)	(6.2% - 7.1%)
Shapley Inheritance Contribution	$Sh_I^{SHAPLEY}$	Estimate	28.3%	23.9%	25.1%	31.8%
		Standard Error	(1.2%)	(2.4%)	(1.9%)	(2.1%)
		C.I. (Low - High)	(25.8% -30.8%)	(18.7% - 29.1%)	(21.0% - 29.2%)	(27.3% - 36.4%)
Shapley Family Background Contribution	$Sh_F^{SHAPLEY}$	Estimate	7.9%	13.0%	8.6%	16.9%
		Standard Error	(0.8%	(1.9%	(0.9%	(1.7%)
		C.I. (Low - High)	(6.2% - 9.6%)	(9.0% - 16.9%)	(6.6% - 10.7%)	(13.3% - 20.6%)

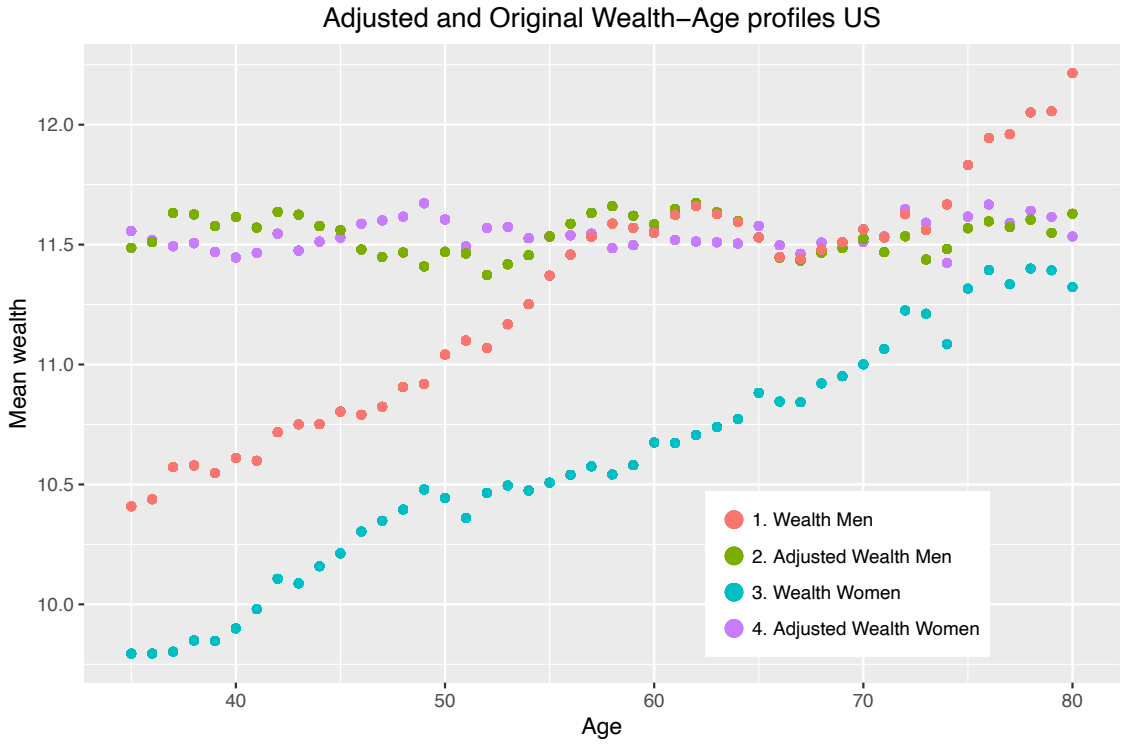
Notes: Gross contribution of each characteristic to wealth inequality (rows 1-2) and of both characteristics combined (row 3) based on comparing the original adjusted wealth inequality and the inequality of the counterfactual wealth distributions. Interacted contribution to wealth inequality of both characteristics (row 4) and marginal contribution of each of them (rows 5 and 6) based on our methodology (see Section 2). Rows 6 and 7 show the contribution of each characteristic using the Shapley value decomposition. All measures weighted using population weights. Standard errors and confidence intervals calculated using bootstrap and multiple imputation (MI Boot method as proposed in by Schomaker and Heumann, 2018), Sample used is aged between 35 and 80, excluding non-positive wealth observations in the U.S. and the lowest 10% of the wealth distribution observations in the other three countries, adjusting by age, gender and household size. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).

Figure A1. Age wealth profile by gender of the household head.
(Rolling mean over 9 years centred intervals)









Notes: Original and age-gender adjusted wealth distributions, by gender, in each of the countries analysed. Values represent the moving rolling average across 9 years of age. Details of the adjustment in Section 3. Source: Authors' calculations from HFCS (France and Spain), WAS (Britain) and SCF (United States).