Motivation
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Joint Distribution
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Wealth-Income Ratios
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Mobility
ooooooooooo

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Wealth and Income Over the Life-Cycle
Evidence from Swiss Tax Data

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February 24-25, 2023

Inequality in Income and Wealth and The Role Of Age

2 stylized facts

1. The marginal distributions of income are strongly correlated, especially at the tails.

2. Income and wealth exhibit pronounced life-cycle patterns, with wealth increasing monotonically as people age.

▶ What are the implications of age for the joint distribution?

▶ What can we say about income and wealth mobility over the life-cycle for different cohorts?
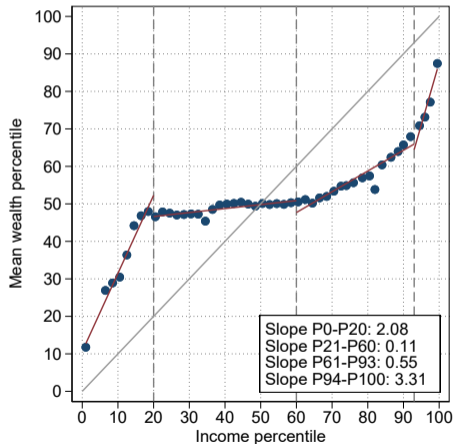
Literature

▶ **Wealth Inequality**: Kopczuk and Saez (2004), Saez and Zucman (2016), Föllmi and Martínez (2017), Piketty et al. (2019)

▶ **Joint Distribution**: Jäntti et al. (2015), Jäntti et al. (2008), Sierminska et al. (2007), Gallusser and Krapf (2022), Martínez (2022)

▶ **Wealth-Income Ratios**: Piketty and Zucman (2014), Piketty (2014), Kumar (2019), Baselgia and Martínez (2023)

▶ **Wealth Mobility**: Jianakoplos and Menchik (1997), Hochguertel and Ohlsson (2012), Benhabib et al. (2019), Moser (2019)

Income and Wealth Tax Data from Canton of Bern

▶ 13% of the total population of taxpayers

▶ Panel over the period 2002 – 2018

▶ Joint taxation of married couples

▶ Unit of analysis: the individual
   → **Wealth** of married individuals need to be split equally between spouses
   → **Incomes** of married individuals can be treated in two ways:
      ▶ split equally
      ▶ use individual incomes
        (except for a few sources, where incomes have to be split)

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Joint Distribution of Income and Wealth

Mean Wealth Rank by Income Rank (2018)

Slope P0-P20: 2.08
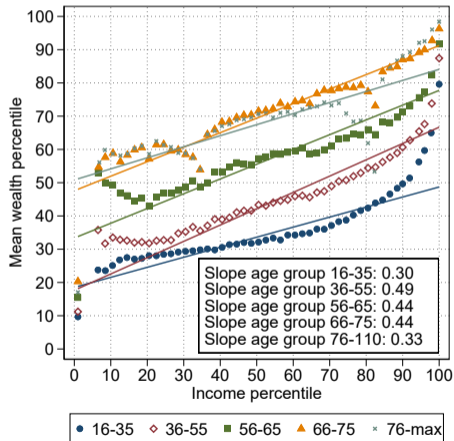Slope P21-P60: 0.11
Slope P61-P93: 0.55
Slope P94-P100: 3.31

"Step-function"

► Highly correlated at the tails

► Weak correlation in the middle of the income distribution

Over time,

► corr. ↓ at the bottom

► corr. ↑ for the upper middle class

► top earners moved up wealth distribution (higher avg. wealth percentile)

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Mean Wealth Rank by Income Rank Across Age Groups (2018)

Slope age group 16-35: 0.30
Slope age group 36-55: 0.49
Slope age group 56-65: 0.44
Slope age group 66-75: 0.44
Slope age group 76-110: 0.33

• 16-35   ◇ 36-55   ■ 56-65   ▲ 66-75   × 76-max

"Step-function" mask
heterogeneity across age groups

► For a given income percentile, older
  cohorts are higher up the wealth
  distribution

► Exception 1: young top-earners (age
  16-35) have high wealth

► Exception 2: those with very (!) low
  income have very low wealth

► Policy implication:
  Retirees tend to be wealthy, even
  those with low incomes

Wealth-Income Ratios

# Wealth-Income Ratios Rising Along the Income Distribution (Median)
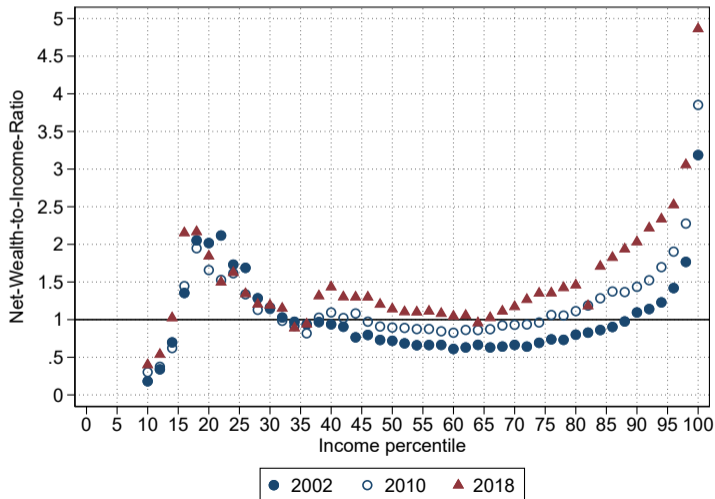
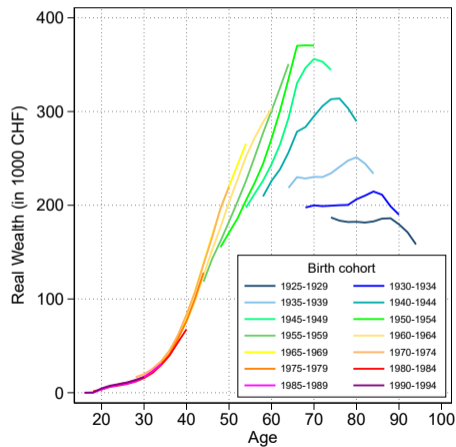# Wealth-Income Ratios by Cohort (Median, 2002-2018)

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Wealth-Income Ratios
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Income and Wealth Mobility over the Life Cycle

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Conclusion
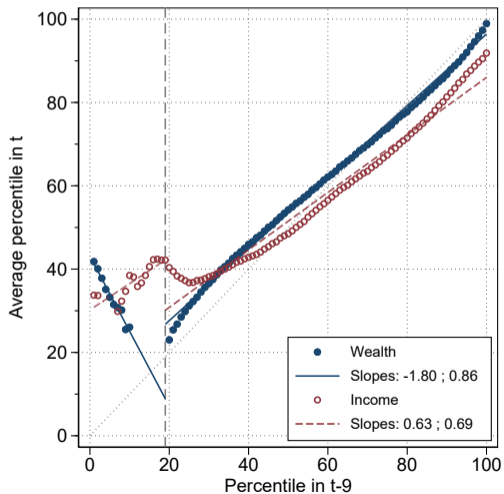○○
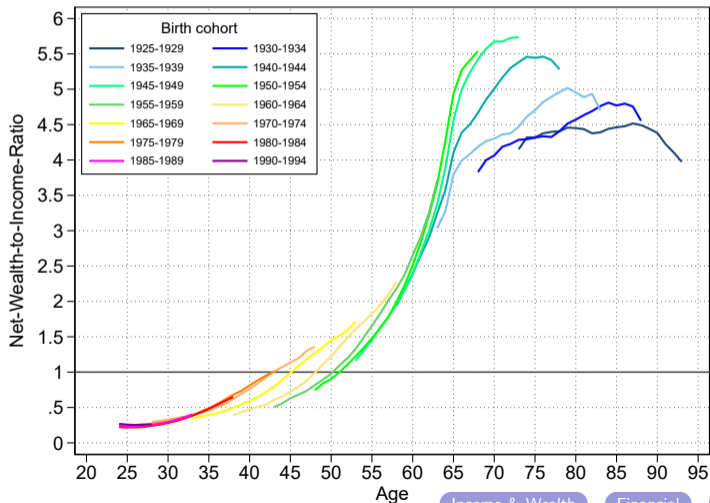
Real Income and Wealth Over The Life-Cycle (Median, 2002-2018)

Income
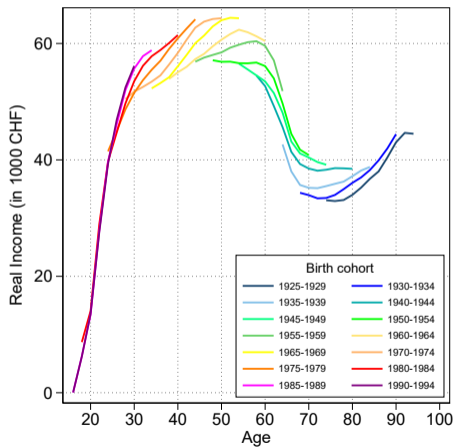
Wealth

Average Wealth and Income Rank Mobility (2002-2018)

Income Percentile Rank Mobility Estimates (BE, 2003-2012)

$$P(Income)_{i,t} = \alpha + \beta \cdot P(Income)_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) total	(2) female	(3) male	(4) married	(5) single
P_{t-9}^{Y}	0.729	0.638	0.757	0.754	0.676
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	14.714	16.923	15.216	12.089	19.311
	(0.05)	(0.07)	(0.09)	(0.07)	(0.09)
R^2	0.464	0.340	0.501	0.548	0.329
Obs.	4215677	2068948	2146729	2403134	1812542
Ind.	677,765	343,417	334,361	407,393	349,595
HH.	562,508	375,177	380,812	284,083	340,870

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).
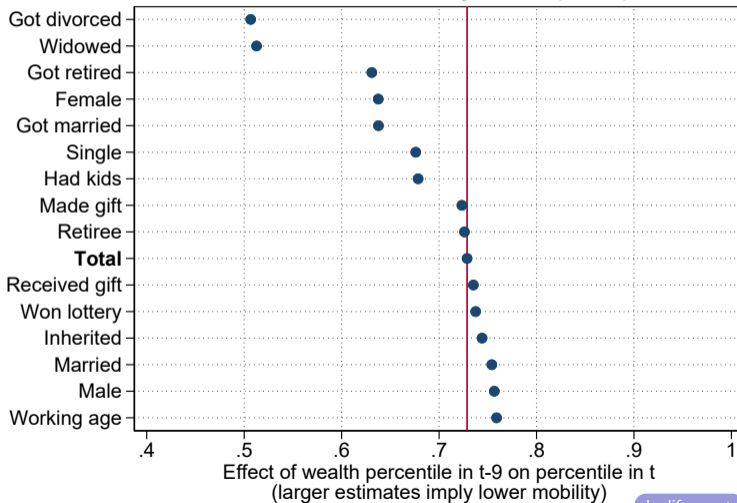
Wealth Percentile Rank Mobility Estimates (BE, 2003-2012)

$$P(Wealth)_{i,t} = \alpha + \beta \cdot P(Wealth)_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) total	(2) female	(3) male	(4) married	(5) single
P^W_{t-9}	0.874	0.878	0.869	0.863	0.877
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	9.437	8.777	10.223	11.091	7.974
	(0.07)	(0.08)	(0.08)	(0.10)	(0.08)
R^2	0.591	0.596	0.587	0.588	0.544
Obs.	4130774	2203836	1926938	2441713	1689060
Ind.	682,416	359,693	322,733	407,483	343,226
HH.	550,688	394,397	365,771	265,546	338,411

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).
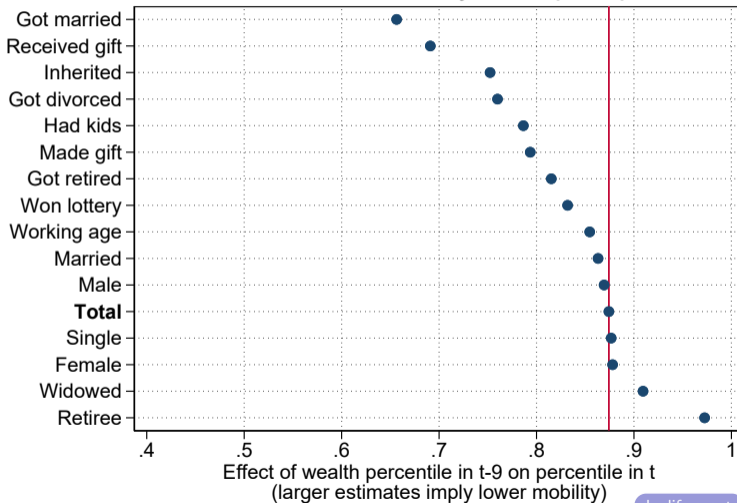
Income Rank Mobility - Sample Splits

Effect of wealth percentile in t-9 on percentile in t
(larger estimates imply lower mobility)

by life-event   by wealth shock

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Wealth Rank Mobility - Sample Splits

Effect of wealth percentile in t-9 on percentile in t
(larger estimates imply lower mobility)

by life-event   by wealth shock

Income Mobility Largest Among Younger Cohorts

$$P(\text{Income})_{i,t} = \alpha + \beta_0 \cdot P(\text{Income})_{i,t-9} + \beta_{1,c} \cdot (P(\text{Income})_{i,t-9} \times \text{Cohort } c) + \gamma_{age} + \varepsilon_{i,t}$$
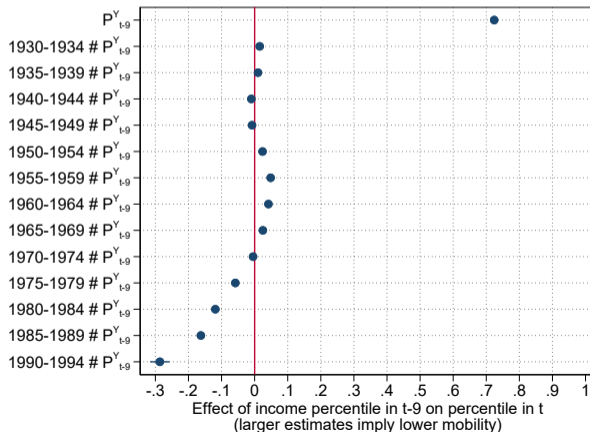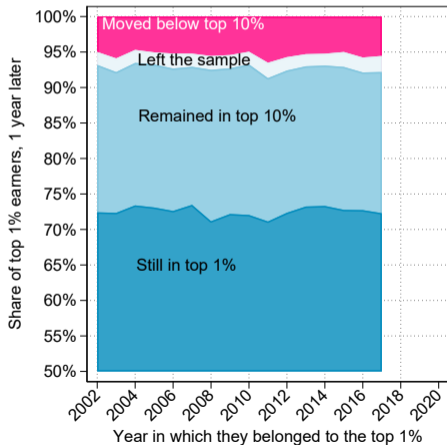
Wealth Persistence High Across All Cohorts

$$P(\text{Wealth})_{i,t} = \alpha + \beta_0 \cdot P(\text{Wealth})_{i,t-9} + \beta_{1,c} \cdot (P(\text{Wealth})_{i,t-9} \times \text{Cohort } c) + \gamma_{age} + \varepsilon_{i,t}$$

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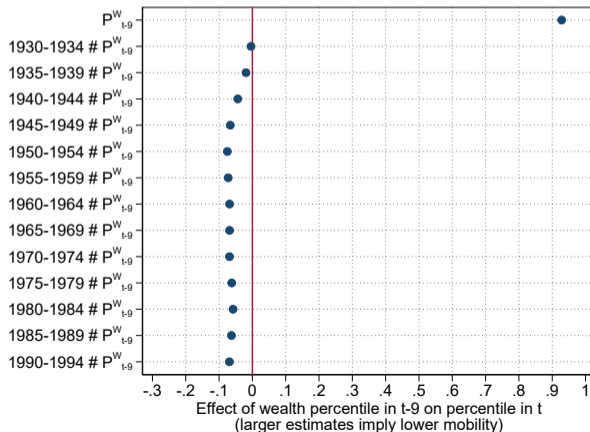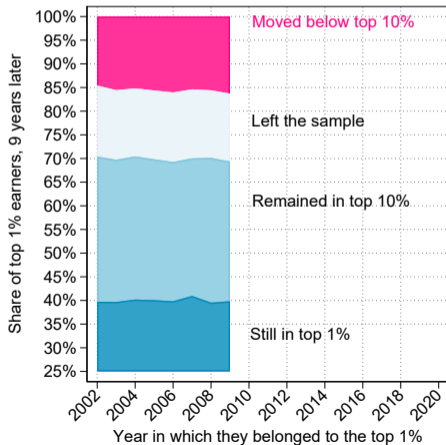
Conclusion
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Wealth Ranks Tend To Be More Persistent Than Income Ranks
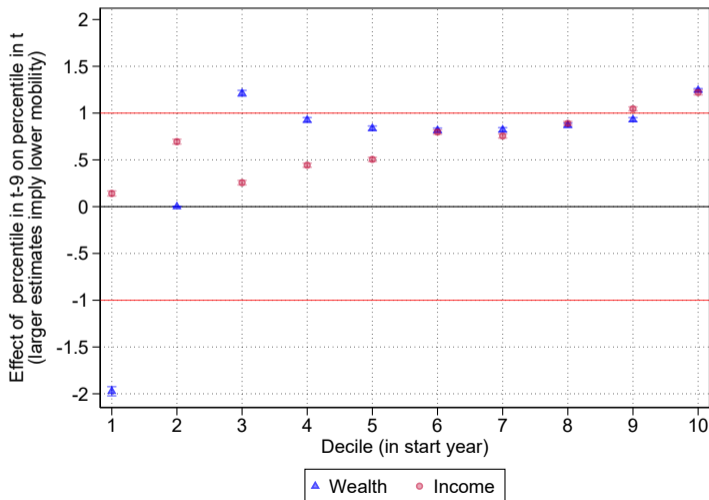
The Top 1%: Persistence After 1 Year

Income

Wealth
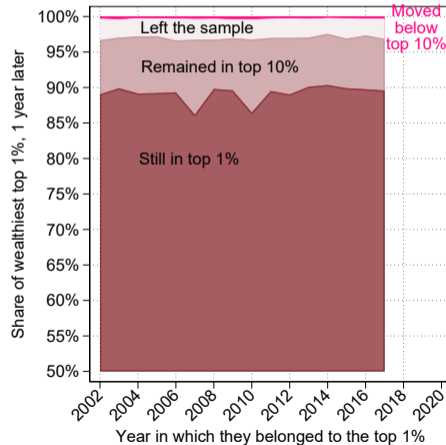
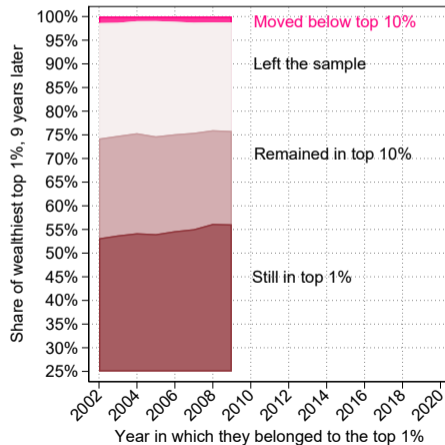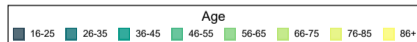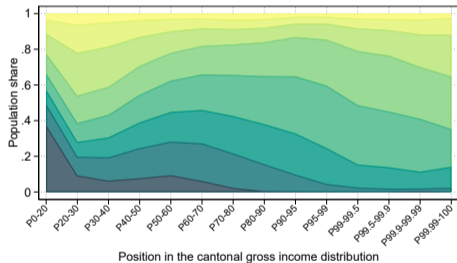# The Top 1%: Persistence After 9 Years

Conclusion

▶ Strong association between income and wealth, especially at the tails

▶ Non-linearity in joint distribution driven by demographic composition and age-wealth nexus:
 → older people are wealthier throughout the income distribution!

▶ Climbing wealth distribution harder than income distribution

▶ Intra-generational wealth mobility (s)low

▶ Wealth accumulation beyond retirement age

▶ Retirees hardly dis-save, but rather die rich

▶ Clear differences between cohorts:
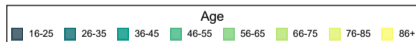 ▶ Younger cohorts wealthier and have higher incomes

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Thank You!

Age Composition Along the Income and Wealth Distributions

Income (2018)
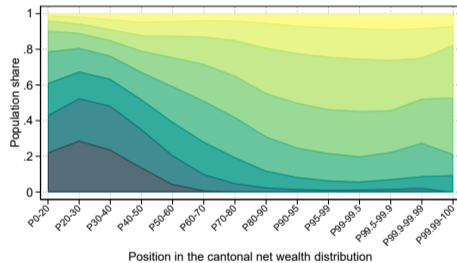
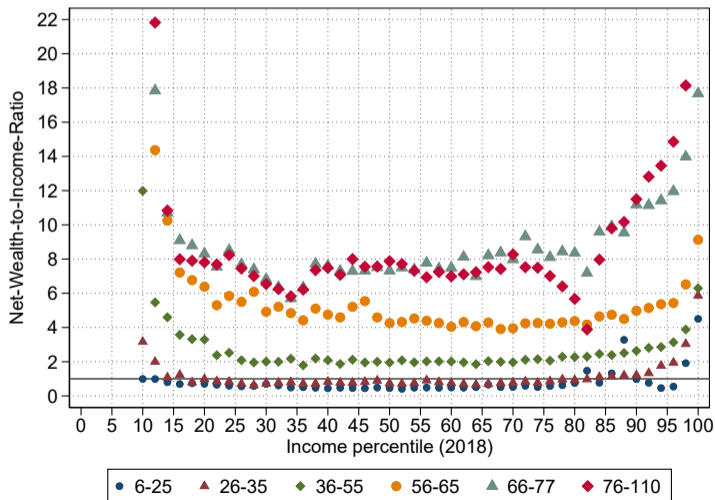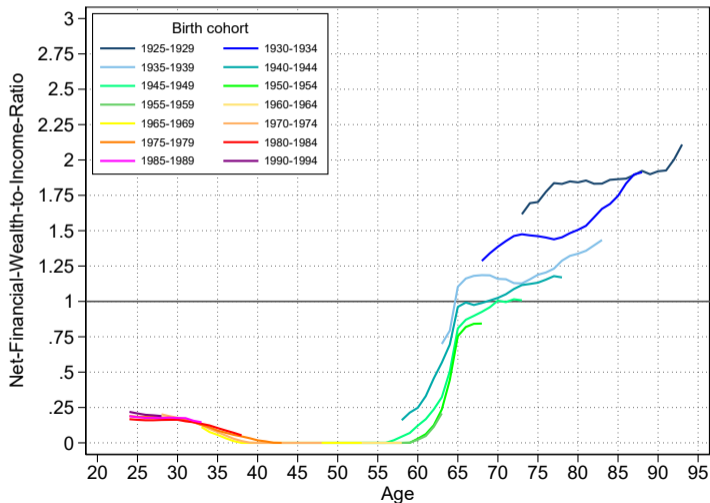Wealth (2018)

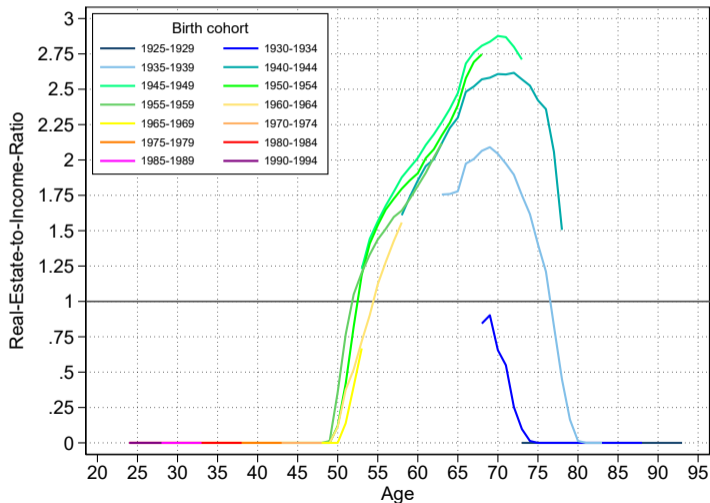# Wealth-Income Ratios Rise With Age (Median, 2018)
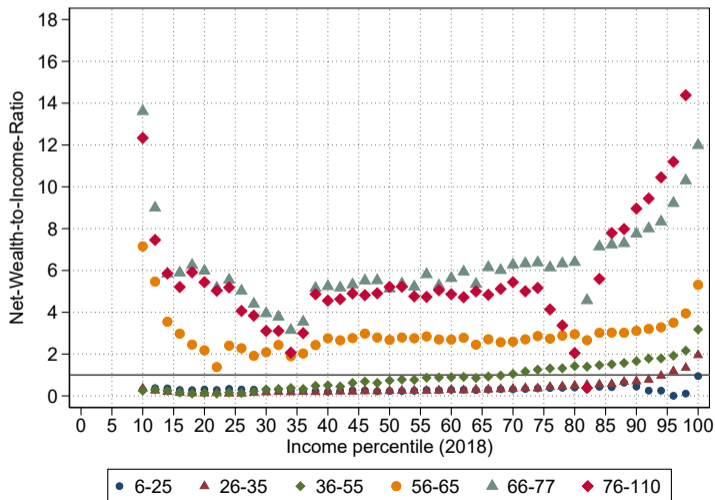
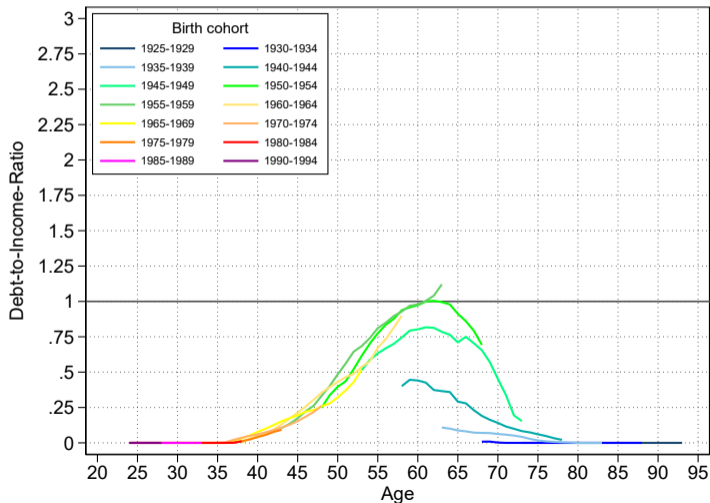# Rising Wealth-Income Ratios by Age Group (Mean, 2018)

Financial Wealth-Income Ratios by Cohort (Median, 2002-2018)

Real Estate Wealth–Income Ratios by Cohort (Median, 2002-2018)
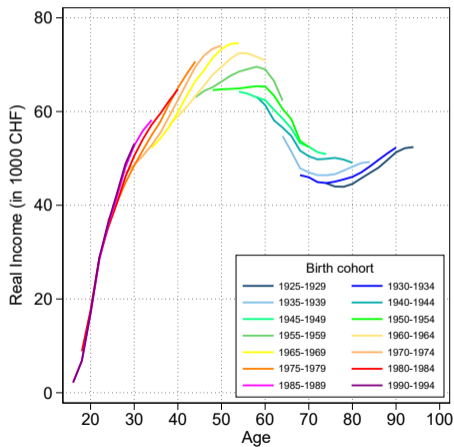
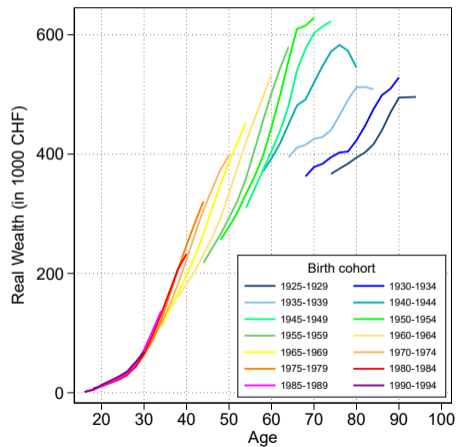# Debt-Income Ratios by Cohort (Median, 2002-2018)

Income and Wealth Over The Life-Cycle (Mean, 2002-2018)

Income

Wealth

Life Events Associated With Higher Income Mobility

$$P(Income)_{i,t} = \alpha + \beta \cdot P(Income)_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) got married	(2) had kids	(3) got divorced	(4) widowed
P^Y_{t-9}	0.638	0.679	0.507	0.513
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	22.154	18.611	36.332	33.348
	(0.26)	(0.22)	(0.26)	(0.20)
R^2	0.194	0.262	0.295	0.308
Obs.	388,038	482,852	188,008	163,383
Ind.	101,502	127,860	49,536	43,183
HH.	71,021	95,982	52,500	43,375

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).

Wealth Shocks Only Marginally Affect Income Mobility

$$P(\text{Income})_{i,t} = \alpha + \beta \cdot P(\text{Income})_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) gift made	(2) gift received	(3) inherited	(4) won lottery
P^Y_{t-9}	0.723	0.735	0.744	0.738
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	11.355	16.609	12.345	12.629
	(0.18)	(0.17)	(0.12)	(0.21)
R^2	0.501	0.414	0.502	0.501
Obs.	244,095	427,517	635,349	235,897
Ind.	71,897	121,739	178,707	58,282
HH.	51,789	90,759	130,616	43,827

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).

Life Events Associated With Higher Wealth Mobility (Except Widowhood) _{back}

$$P(\text{Wealth})_{i,t} = \alpha + \beta \cdot P(\text{Wealth})_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) got married	(2) had kids	(3) got divorced	(4) widowed
P_{t-9}^{W}	0.656	0.787	0.760	0.909
	(0.00)	(0.00)	(0.01)	(0.00)
Constant	22.299	15.686	8.414	8.098
	(0.22)	(0.19)	(0.30)	(0.28)
R^2	0.289	0.405	0.368	0.570
Obs.	353,671	436,755	166,932	167,495
Ind.	95,321	120,244	45,588	43,157
HH.	66,118	86,701	47,804	43,326

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).

Wealth Shocks Associated With Higher Wealth Mobility

back

$$P(Wealth)_{i,t} = \alpha + \beta \cdot P(Wealth)_{i,t-9} + \gamma_{age} + \lambda_t + \varepsilon_{i,t}$$

	(1) gift made	(2) gift received	(3) inherited	(4) won lottery
P_{t-9}^{W}	0.794	0.691	0.752	0.832
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	15.614	26.110	21.455	12.817
	(0.40)	(0.22)	(0.18)	(0.28)
R^2	0.487	0.443	0.529	0.541
Obs.	256,413	442,602	658,343	226,824
Ind.	73,950	126,856	184,149	57,000
HH.	50,971	90,236	125,970	40,440

Note: All regressions include age and decade fixed effects. Standard errors clustered at individual and household levels (individuals may live in different households due to marriage, divorce, widowhood).