

A Safe Harbor: Wealth-Income Ratios in Switzerland over the 20th Century and the Role of Housing Prices

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Motivation

- How important is wealth relative to income in an economy?
- How and why their relationship changes over time?
 - income growth (slowdown)
 - savings
 - capital gains
- Why studying Switzerland?
 - small open, but major industrialized economy
 - not directly involved in military conflicts
 - low and stable taxes
 - no anticapital policies after WW

This Paper

- New estimate of the ratio of private wealth to national income for Switzerland, 1900–2018.
- For the post-1990 period:
 - Breakdown of the Swiss national wealth into its components.
 - Decomposition of wealth accumulation into a saving and capital gains part.
- The role of price dynamics in housing wealth in international comparison.

Outline

1 Introduction

2 Related Literature

3 Data

4 Results

- Switzerland's Private Wealth-Income Ratio, 1900–2018
- Swiss National Wealth and its Components, 1990–2018
- What Explains the Rising Wealth-Income Ratio?

5 Conclusion

Related Literature

- Long-run evolution of wealth inequality:
 - US: Kopczuk and Saez (2004), Saez and Zucman (2016)
 - Switzerland: Dell et al. (2007) Föllmi and Martínez (2017)
- Growing literature on aggregate wealth in relation to income:
 - **U-shape pattern:** Piketty and Zucman (2014), Waldenström (2017), Brülhart et al. (2018)
 - **J-shape pattern:** Artola Blanco et al. (2020)
- The role of increasing house prices for wealth (inequality):
 - Piketty and Zucman (2014), Rognlie (2015), Artola Blanco et al. (2020), Martínez-Toledano (2020), Kuhn et al. (2020)

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Data

Private Wealth:

- 1981–2018: net wealth at market value (SNB, Schmid (2013))
- Our approach to estimate a consistent long-run private wealth series for the period 1900–1980:
 - Backward extrapolation with historical wealth data:
 - aggregate tax data (Dell et al., 2007)
 - total pension fund assets (Leimgruber, 2008)

Additional wealth data for the post-1990 period:

- Public wealth at market value (Federal Finance Administration)
- Net foreign wealth (SNB)

► Additional Data

Outline

1 Introduction

2 Related Literature

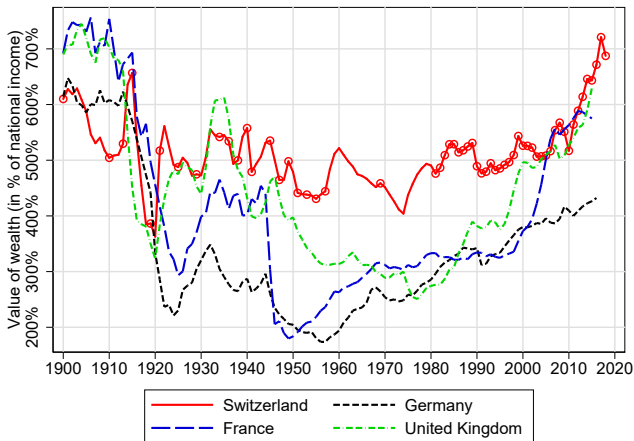
3 Data

4 Results

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Private Wealth-Income Ratios in International Comparison



► Estimates, 1975–2018

► Tax wealth extrapolation

► Comparison with Brülhart et al. (2018)

► CH, ES, SE, US

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1 Introduction

2 Related Literature

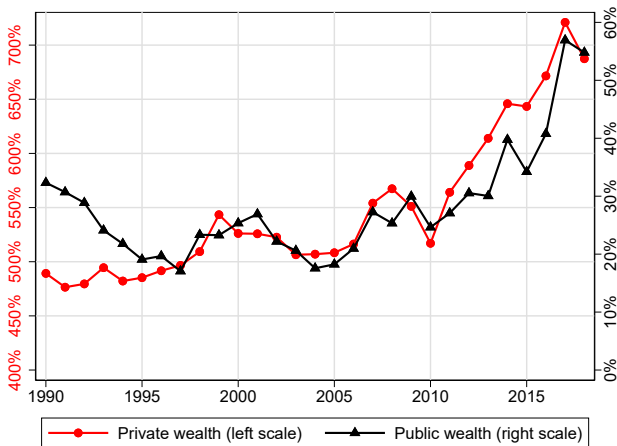
3 Data

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Public & Private Wealth, 1990–2018



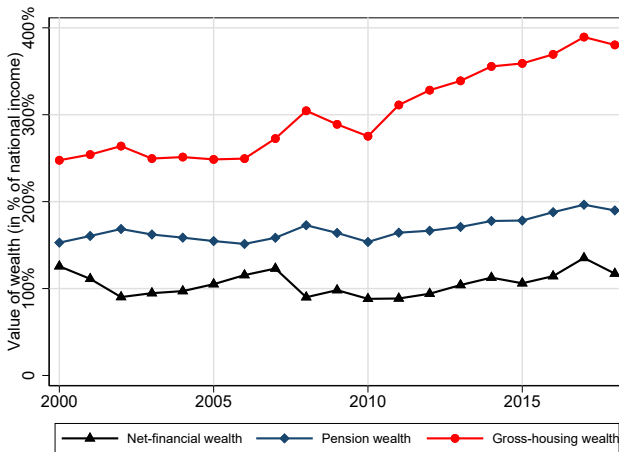
► National WIR; CH, DE, FR, IT, SE, US

► Domestic & Net Foreign Wealth

► Public WIR; CH, DE, FR, IT, SE, US

► Public Wealth Decomposition

Private Wealth and the Rise in Housing Wealth, 2000–2018



► Housing WIR: CH, DE, FR, IT, SE, US

► Private Debt-Income Ratios

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Decomposition of Wealth Accumulation

- Additive decomposition:

$$W_{nt+1} = W_{nt} + S_t + KG_t$$

- Multiplicative decomposition:

$$\beta_{nt+1} = \frac{(1 + g_{st}^w)(1 + q_t)}{1 + g_t} \beta_{nt}$$

Wealth Accumulation: Income, Savings or Capital Gains?

		1995–2018	Sub-Periods		
			1995–2002	2002–2010	2010–2018
Wealth-income ratio					
Change	$\Delta\beta_{n,t}$	+238 pp.	+40 pp.	-3 pp.	+201 pp.
Capital accumulation					
Net saving rate	s	15.7%	14.6%	16.4%	15.9%
Real wealth growth rate	g^w	3.4%	2.4%	2.9%	4.9%
... savings-induced ($g_s^w = s/\beta_n$)	g_s^w	2.7%	2.8%	2.8%	2.5%
... capital gains induced	q	0.7%	-0.4%	0.1%	2.4%
Income growth					
Real income growth rate	g	1.7%	1.2%	3.0%	0.8%

► Structure Savings; CH

► Structure Savings; International

► Growth & Savings; International

► Wealth Accumulation; International

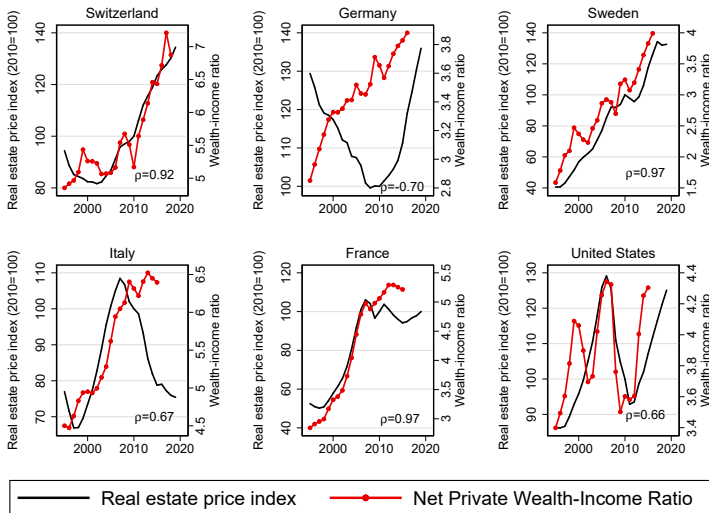
► Decomposition in W_{pt} & W_{gt}

The Accumulation of Private Wealth in Switzerland

	Decomposition of the private wealth growth rate (%)				
	Private wealth-income ratios (%)		Real growth rate of private wealth	Savings-induced wealth growth rate	Capital gains induced wealth growth rate
	$\beta_{p,t}$	$\beta_{p,t+n}$			
Panel A: 2000–2018					
Total Private Wealth	526%	687%	2.9%	2.2%	0.7%
Housing Wealth	248%	380%	3.8%	2.1%	1.7%
Non-Housing Wealth	278%	307%	1.9%	2.2%	-0.3%

► Decomposition by Sub-periods

Wealth-Income Ratios and Real Estate Prices



► AU, CA, ES, GB, JP, NO

Multi-Country Panel Analysis

	(1) House prices	(2) Share prices	(3) both	(4) +world share price index
1970–2018				
House prices	0.22*** (0.03)		0.24*** (0.03)	0.24*** (0.03)
Share prices		0.03** (0.02)	0.03* (0.02)	0.03* (0.02)
MSCI world				1.00 (0.77)
Adj. R ²	0.153	0.075	0.176	0.176
Obs.	485	471	471	471
1990–2018				
House prices	0.31*** (0.05)		0.31*** (0.05)	0.31*** (0.05)
Share prices		-0.01 (0.03)	-0.01 (0.02)	-0.01 (0.02)
MSCI world				-0.31 (0.23)
Adj. R ²	0.217	0.098	0.215	0.215
Obs.	306	306	306	306

Note: Panel regressions including 12 countries of changes in wealth-income ratios on changes in real house prices (Column 1), changes in real share prices (Column 2) and both (Column 3). Column (4) includes the global MSCI world share price index as a control. All specifications in Panel B include year and country fixed effects. Standard errors shown in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

► Data by Country

► Regression Results CH

► Country Regression Results

Conclusion

- The long-run evolution of the wealth-income ratio in Switzerland is best described by a J-shaped pattern.
- The significant rise in the Swiss wealth income ratio after the Great Recession (+200pp.) is mainly driven by large capital gains in housing wealth and was amplified by a slowdown in income growth.
- We show that real housing prices are systematically correlated ($\epsilon = 0.31$) with wealth-income ratios, while stock prices are not.

Thank you.

Comments and questions welcome:

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Appendix

Net National Income (Y_t):

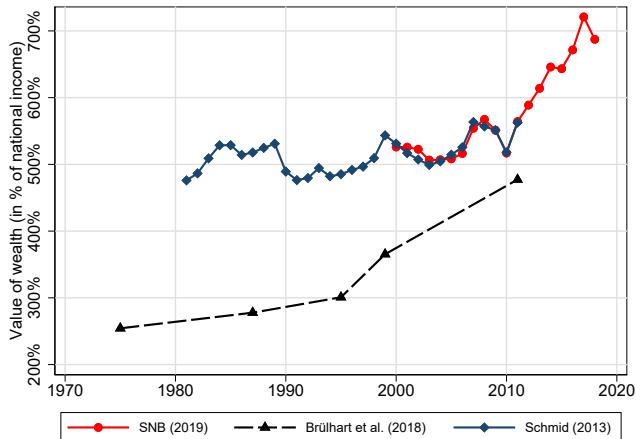
- 1995–2018: Swiss National Accounts; FSO
- 1929–1994: historical (national) income series; HSSO database
- 1900–1928: historical GDP estimates; Stohr (2016)

Additional Macroeconomic Data:

- population data; FSO
- price data (CPI); FSO and HSSO database
- savings data; Swiss National Accounts (FSO)
- international data on wealth-income ratios; WID.world
- house price index data and stock market index data; OECD

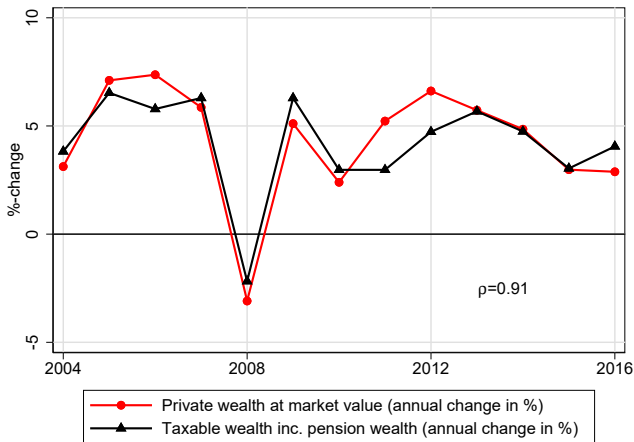
► Data

Different Private Wealth Estimates for Switzerland, 1975–2018



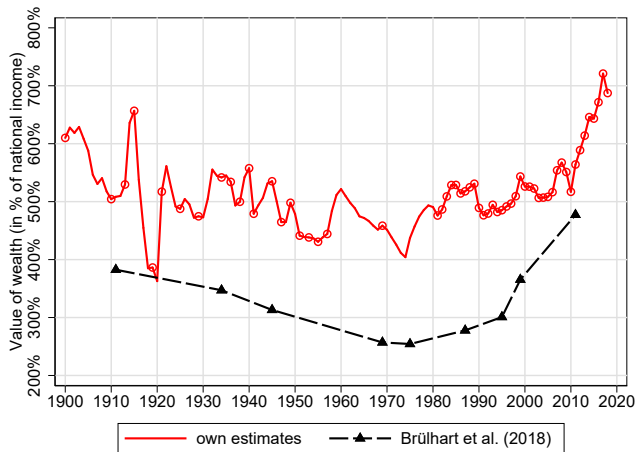
► CH, DE, FR, GB

Change in Taxable Wealth and Total Private Wealth at Market Value, 2003–2016



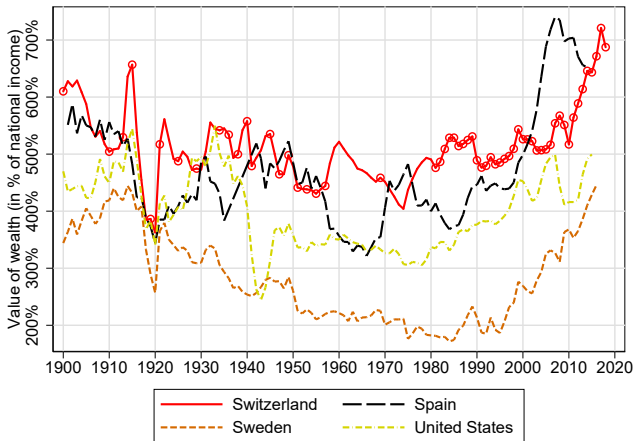
► CH, DE, FR, GB

Switzerland's Private Wealth-Income Ratio, 1900–2018



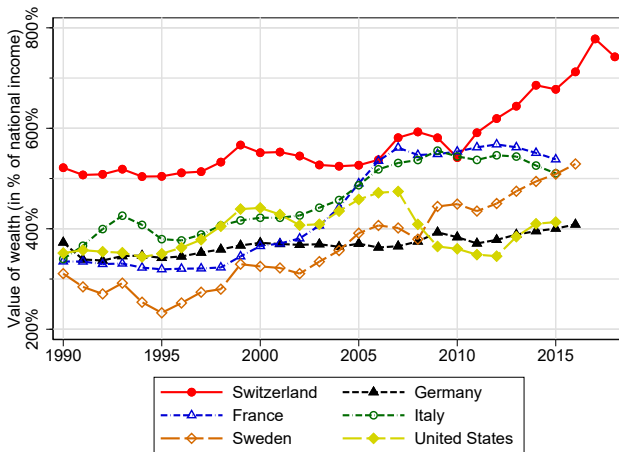
► CH, DE, FR, GB

Private Wealth-Income Ratios in International Comparison



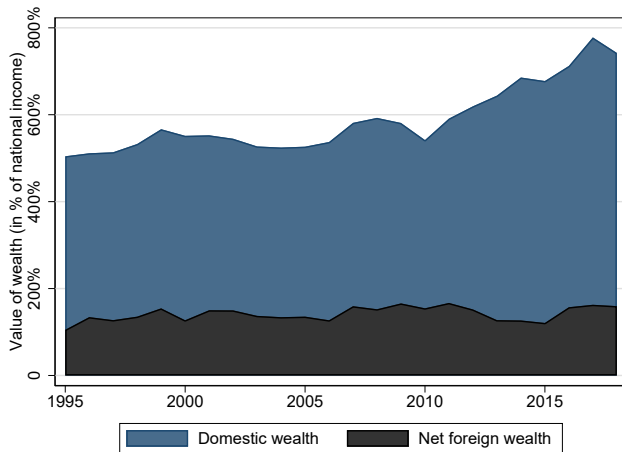
► CH, DE, FR, GB

National Wealth, 1990–2018



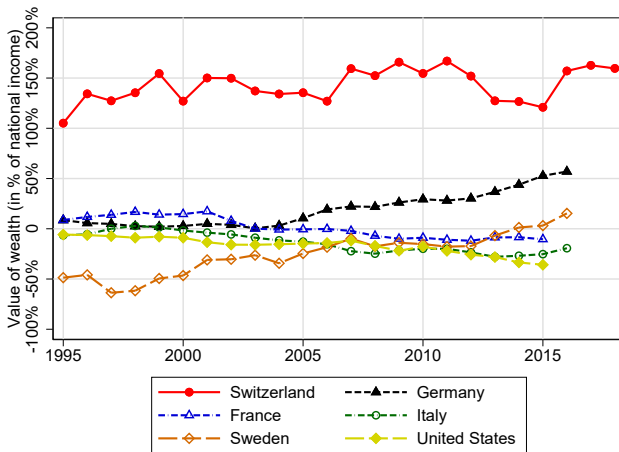
► Public & Private Wealth

Net Foreign Wealth



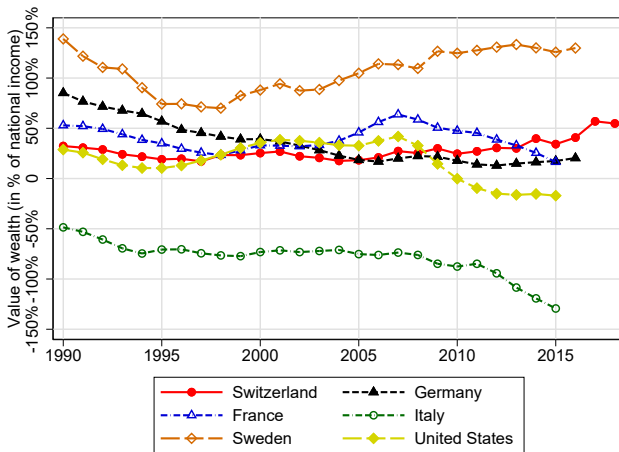
► Public & Private Wealth

Net Foreign Wealth



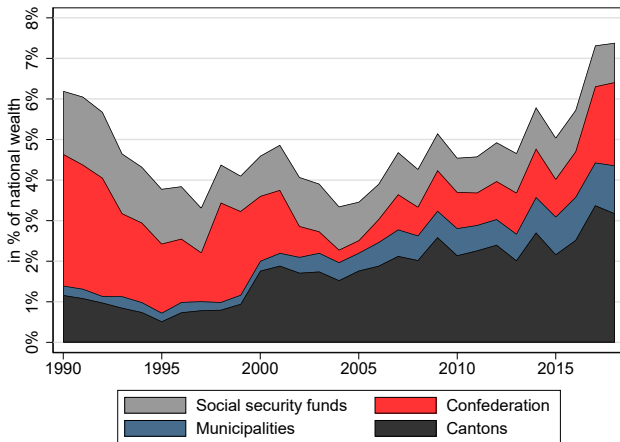
► Public & Private Wealth

Public Wealth-Income Ratios in International Comparison



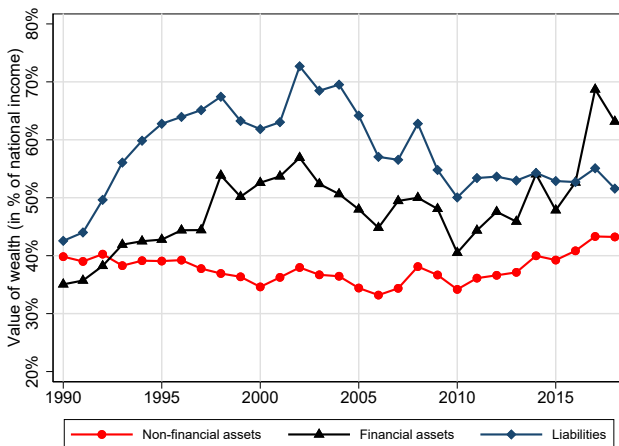
► Public & Private Wealth

Public Wealth as Share of National Wealth, 1990–2018



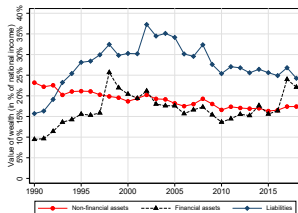
► Public & Private Wealth

Decomposition of Total Net Public Wealth in Switzerland, 1990–2018

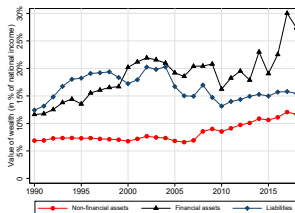


► Public & Private Wealth

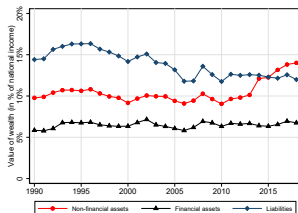
Public Wealth by Government-levels, 1990–2018



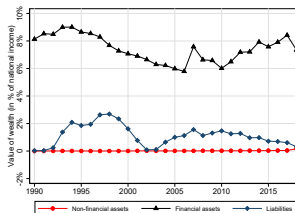
(a) Confederation



(b) Cantons



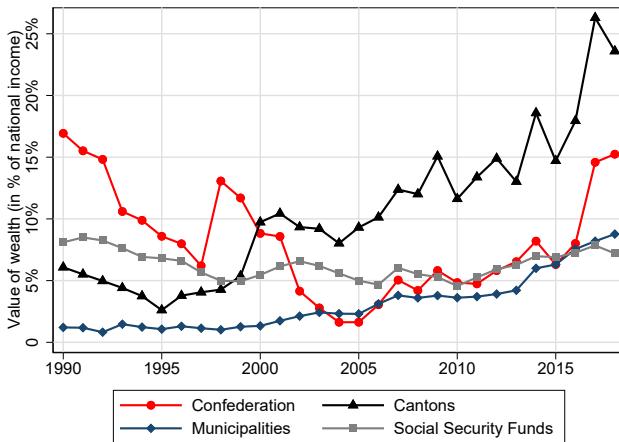
(c) Municipalities



(d) Social Security Funds

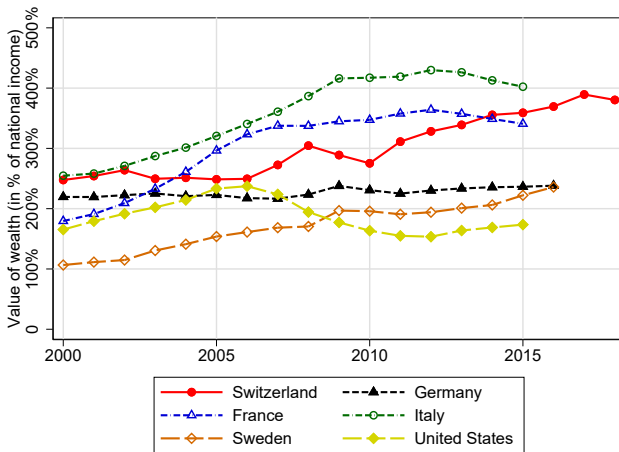
► Public & Private Wealth

Public Wealth-Income Ratios in Switzerland by Government-level, 1990–2018



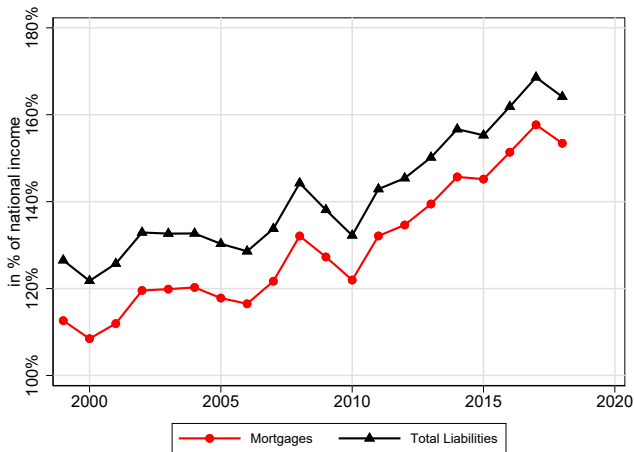
► Public & Private Wealth

Housing Wealth-Income Ratios in International Comparison



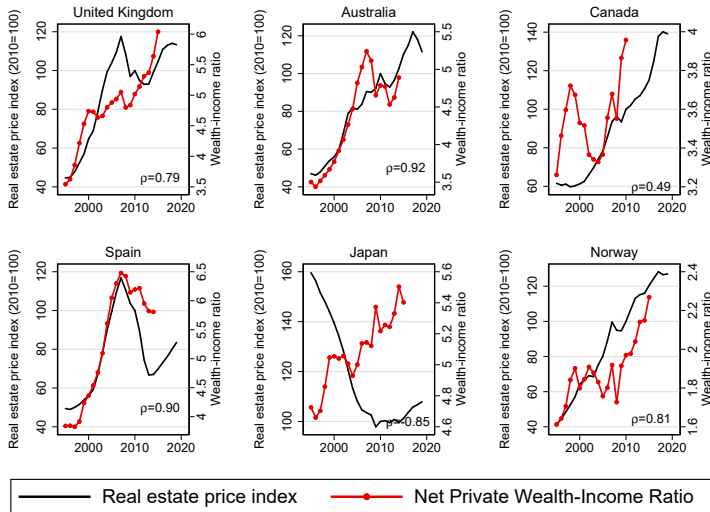
► Private Wealth Decomposition

Private Debt-Income Ratios in Switzerland, 1990–2018



► Private Wealth Decomposition

Wealth-Income Ratios and Real Estate Price Indices



► CH, DE, FR, IT, SE, US

Structure of National Savings in Switzerland

	Net private saving (household & corporate) (%)	Net household saving (%)	Net corporate saving (retained earnings) (%)	Net public saving (%)	Net national saving (%)
1995–2018	14.1	12.3	1.8	1.6	15.7
1995–2002	14.0	10.8	3.3	0.5	14.6
2002–2010	14.7	11.4	3.3	1.7	16.4
2010–2018	13.7	14.0	-0.3	2.2	15.9

► Wealth Accumulation

International Structure of National Savings

	Net private saving (household & corporate) (%)	Net household saving (%)	Net corporate saving (retained earnings) (%)	Net public saving (%)	Net national saving (%)
Switzerland (1995–2015)	14.6	11.9	2.6	1.4	16.0
Germany (1995–2013)	11.2	6.3	4.8	-3.0	8.2
France (1995–2010)	11.1	8.5	2.6	-3.1	8.0
Italy (1995–2014)	8.4	6.4	2.0	-3.8	4.7
Sweden (1995–2015)	16.1	7.4	8.7	2.6	18.7
United States (1995–2013)	7.9	4.3	3.6	-4.8	3.1

► Wealth Accumulation

International Growth and Saving Rates

	Real growth rate of national income (%)	Population growth rate (%)	Real growth rate of per capita national in- come (%)	Net national saving (%)*	$\Delta \beta_{nt}$
Switzerland	1.86	0.82	1.04	16.0	+ 173 pp.
Germany	1.38	0.05	1.33	8.2	+ 58 pp.
France	1.49	0.53	0.96	8.0	+ 219 pp.
Italy	0.31	0.35	-0.04	4.7	+ 131 pp.
Sweden	3.03	0.55	2.48	18.7	+ 276 pp.
United States	2.42	0.94	1.48	3.1	+ 63 pp.

► Wealth Accumulation

The Accumulation of Private Wealth in Switzerland

	Decomposition of the private wealth growth rate (%)				
	Private income ratios (%)	wealth-ratios (%)	Real growth rate of private wealth	Savings-induced wealth growth rate	Capital gains induced wealth growth rate
	$\beta_{p,t}$	$\beta_{p,t+n}$	g_w	$g_{ws} = s/\beta_p$	q
Panel A: 2000–2018					
Total Private Wealth	526%	687%	2.9%	2.2% 76	0.7% 24
Housing Wealth	248%	380%	3.8%	2.1% 56	1.7% 44
Non-Housing Wealth	278%	307%	1.9%	2.2% 113	-0.3% -13
Panel B: 2000–2010					
Total Private Wealth	526%	517%	1.6%	2.1% 130	-0.5% -30
Housing Wealth	248%	275%	2.9%	1.8% 63	1.1% 37
Non-Housing Wealth	278%	242%	0.4%	2.4% 625	-2.0% -525
Panel C: 2010–2018					
Total Private Wealth	517%	687%	4.5%	2.3% 51	2.2% 49
Housing Wealth	275%	380%	5.0%	2.6% 51	2.4% 49
Non-Housing Wealth	242%	307%	3.9%	1.9% 48	2.0% 52

► Private Wealth Decomposition

International Accumulation of National Wealth, 1995–2013

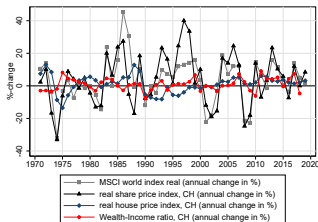
	National income (%)	wealth- ratios	Decompositon of the wealth growth rate (%)		
			Real growth rate of national wealth	Savings-induced wealth growth rate	Capital gains induced wealth growth rate
	$\beta_{n,t}$	$\beta_{n,t+n}$	g_w	$g_{ws} = \frac{s}{\beta_n}$	q
Switzerland	504%	644%	3.2%	2.9% 90%	0.3% 10%
Germany	342%	388%	2.1%	2.2% 106%	-0.1% -6%
Italy	379%	544%	2.3%	1.2% 52%	1.1% 48%
Sweden	233%	475%	6.9%	5.4% 78%	1.5% 22%
United States	350%	384%	2.9%	0.8% 28%	2.1% 72%

► Wealth Accumulation

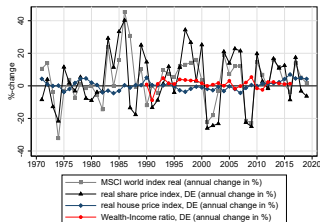
Decomposition of National Wealth Accumulation

	Wealth-income ratios (%)		Decomposition of the real wealth growth rate (%)		
			Real growth rate of wealth	Savings-induced wealth growth rate	Capital gains induced wealth growth rate
	β_t	β_{t+n}	g_w	$g_{ws} = s/\beta$	q
<u>2000–2018</u>					
National Wealth	551%	742%	3.1%	2.7% 89	0.3% 11
Public Wealth	25%	55%	5.8%	6.7% 115	-0.9% -15
Private Wealth	526%	687%	2.9%	2.2% 76	0.7% 24
<u>2000–2010</u>					
National Wealth	551%	542%	1.6%	2.9% 177	-1.3% -77
Public Wealth	25%	25%	1.5%	7.3% 475	-5.7% -375
Private Wealth	526%	517%	1.6%	2.1% 130	-0.5% -30
<u>2010–2018</u>					
National Wealth	542%	742%	4.9%	2.5% 52	2.4% 48
Public Wealth	25%	55%	11.4%	6.0% 53	5.4% 47
Private Wealth	517%	687%	4.5%	2.3% 51	2.2% 49

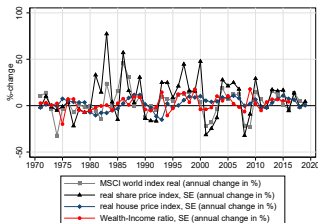
Annual Changes in β_{pt} , Real House and Share Prices I



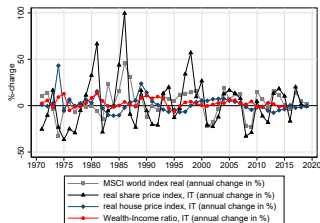
(a) Switzerland



(b) Germany



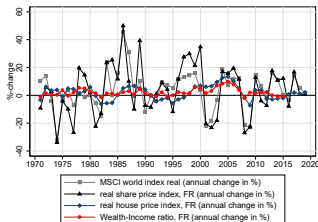
(c) Sweden



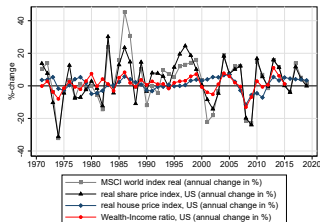
(d) Italy

► Panel Analysis

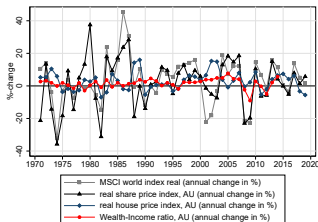
Annual Changes in β_{pt} , Real House and Share Prices II



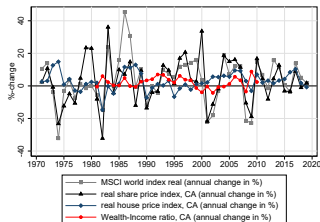
(e) France



(f) United States



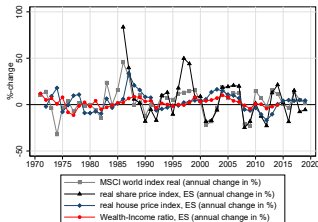
(g) Australia



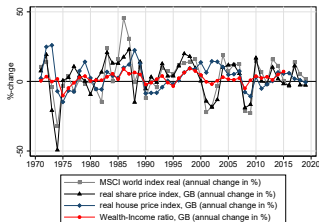
(h) Canada

► Panel Analysis

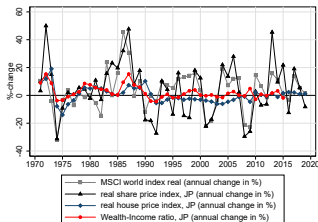
Annual Changes in β_{pt} , Real House and Share Prices III



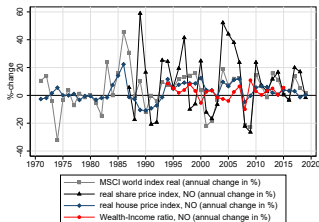
(i) Spain



(j) United Kingdom



(k) Japan



(l) Norway

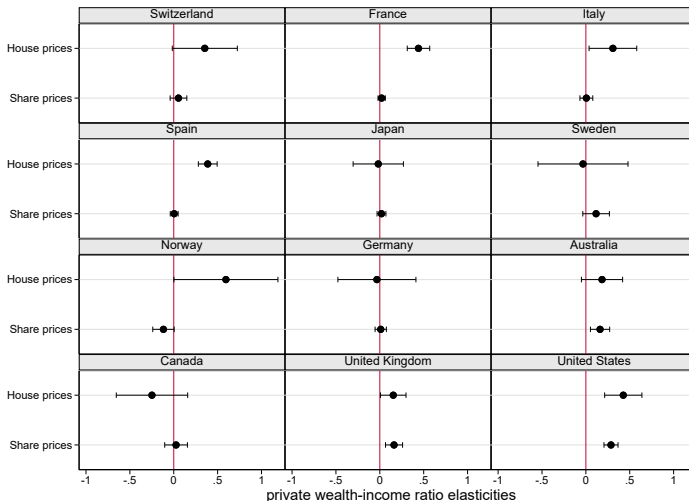
► Panel Analysis

The effect of Stock & House Prices on WIR, Switzerland

	(1) House prices	(2) Share prices	(3) both	(4) +world share price index
1970–2018				
House prices	-0.05 (0.10)		-0.05 (0.10)	-0.07 (0.11)
Share prices		0.04 (0.03)	0.04 (0.03)	0.02 (0.06)
MSCI world				0.03 (0.07)
Constant	1.00* (0.56)	0.74 (0.55)	0.84 (0.58)	0.84 (0.58)
Adj. R ²	-0.017	0.011	-0.011	-0.029
Obs.	48	49	48	48
1990–2018				
House prices	0.34* (0.18)		0.35* (0.18)	0.28 (0.19)
Share prices		0.05 (0.05)	0.05 (0.05)	-0.04 (0.08)
MSCI world				0.14 (0.11)
Constant	1.00 (0.74)	0.70 (0.83)	0.67 (0.79)	0.77 (0.78)
Adj. R ²	0.080	-0.004	0.092	0.116
Obs.	29	29	29	29

Note: OLS regressions of changes in wealth-income ratios on changes in real house prices (Column 1), changes in real share prices (Column 2) and both (Column 3). Column (4) includes the global MSCI world share price index as a control. Standard errors shown in parentheses. * $p < .1$, ** $p < .05$, *** $p < .01$

The effect of Stock & House Prices on WIR, 1990–2018



Note: Coefficients along with the 95% confidence intervals from regression of annual changes in the wealth-income ratio on changes of real housing prices and real share prices by country.

► Panel Regression Results

References I

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