Measuring Inequality in Wealth and Income - Evidence from Swiss Tax Data

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AK Young Economist Conference, Vienna

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Top 0.01% Wealth Shares in International Comparison

Source: www.wid.world; Piketty (2014), Föllmi and Martínez (2017)
Why so much emphasis on measurement?

In academia:
- Measuring distribution has a long tradition in inequality research (Pareto, 1896; Kuznets, 1953, 1955; Atkinson et al., 1970, and many more)
- More recent contributions:
  - Long-run evolution (Piketty, 2001; Piketty and Saez, 2003; Atkinson and Piketty, 2007; Atkinson et al., 2010; Föllmi and Martínez, 2017)
  - Estimate top wealth shares in the U.S. (Kopczuk and Saez, 2004; Fagereng et al., 2016)
  - Wealth income ratios (Piketty and Zucman, 2014; Piketty, 2014)
  - Capture the entire population and economy, e.g., DINA (Garbinti et al., 2018; Alvaredo et al., 2017)

In practice:
- Policies depend on and affect the distribution
Knowing the distribution is crucial for optimal policy

- **Pension policy:**
  - How rich are the elderly in terms of income and wealth?

- **Wealth tax policies:**
  - OECD (2018): The Role and Design of Net Wealth Taxes
  - US: wealth tax proposals (Warren, Sanders)
  - CH: national inheritance tax initiative (2015)
  - CH: higher tax on capital incomes (99% initiative)

- Sensitivity of wealth to taxation
  (Brülhart and Parchet, 2014; Brülhart et al., 2019)
The tax system helps measuring income and wealth

Aggregated Data
- Income / Wealth tax statistics
  - Can approximate distribution very well
  - + Very long-run series (entire centuries)
  - + Top very well covered

Individual Data
- Individual tax records
  - + Detailed income and wealth measures
  - + Joint distribution income / wealth
  - − Few individual characteristics

Survey data
- + Individual characteristics
- − Top not well covered

→ Access to admin data key: advance research + improve policies!
What’s there to measure? (or: the paper)

- Wealth inequality
  - Understudied compared to income
  - Wealth highly concentrated

- Composition matters
  - Changes in wealth components influence inequality differently

- Joint distribution of income and wealth important
  - have those with low income also little wealth?

- Mobility and opportunities
  - Life-cycle dynamics
  - Intergenerational: who will receive large inheritances?
Outline

1. Introduction

2. Insights from Individual Tax Data
   - Tax Data (2010)
   - Wealth Composition (skipped)
   - Joint Distribution
   - Inheritances

3. Conclusion
Outline

1. Introduction

2. Insights from Individual Tax Data
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3. Conclusion
Data: Cantonal Income and Wealth Tax Data

Institutional background:
- Federal country with strong tax autonomy at cantonal level
- Federal income tax
- Cantonal income and wealth tax
- Residence-based taxation
- Cantons collect cantonal + federal tax

Data:
- Individual tax register data from 8 cantons: ZH, BE, LU, BS, SG, AG, OW, JU
- 53% of the total population of taxpayers
- Varying years 2001-2016 – but only 2010 for all cantons!
- Unit of analysis: individual
  → income / wealth of married couples split equally
Data: Cantonal Income and Wealth Tax Data (2010)

Share of Swiss taxpayers in %

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Total coverage: 52.8%

#### Table 1: Income and wealth percentiles, 2010

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<th>Gross income (in 1000 CHF)</th>
<th>Net wealth (in 1000 CHF)</th>
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**Note:** Summary statistics based on individual data, where wealth and income are split equally among married adults. Pooled tax data including the cantons BE, LU, OW, BS, AG, SG, JU in the year 2010 and ZH (2011).

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3 Conclusion
### Joint Distribution Matrix (2010)

![Joint Distribution Matrix](image)

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**Position in net wealth distribution**

Relative row frequencies.
Joint Distribution Matrix (2010)

Relative row frequencies.

Position in gross income distribution

P0-P20
P20-P30
P30-P40
P40-P50
P50-P60
P60-P70
P70-P80
P80-P90
P90-P95
P95-P99
P99-P99.5
P99.5-P99.9
P99.9-P99.99
P99.99-P100

Position in net wealth distribution

P0-P20
P20-P30
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Relative row frequencies.
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Position in net wealth distribution

Relative row frequencies.
Joint Distribution Matrix (2010)

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Relative row frequencies.
Mean Wealth Rank by Income Rank (2010)

Note: Binned scatter plot by 2-percentile bins with RD’s.
Joint Distribution for Different Age Groups (2010)

- Slope age group 16-35: 0.30
- Slope age group 36-55: 0.37
- Slope age group 56-65: 0.33
- Slope age group 66-75: 0.41
- Slope age group 76-110: 0.50
Wealth-to-Income Ratios by Age Group (Median, 2010)
Outline

1. Introduction

2. Insights from Individual Tax Data
   - Tax Data (2010)
   - Wealth Composition (skipped)
   - Joint Distribution
   - Inheritances

3. Conclusion
Likelihood of Inheritances and Gifts by Age
(BE, 2002-2012 pooled)
Likelihood of Inheritances and Gifts by Wealth Percentile
(BE, 2002-2012 pooled)

![Graph showing the likelihood of inheritances and gifts by wealth percentile. The graph includes lines for total, inheritance, and gift, with the x-axis representing wealth percentile and the y-axis representing the likelihood in percent. The graph shows an upward trend for all categories, with inheritance gifts being higher than the total in the higher percentiles.]

- Avg. amount
Conclusions: Distribution and Composition

- Substantial differences in wealth (and income) composition along the distribution

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

- Strong, positive age-wealth nexus

- Wealth-income ratios
  - rise with income
  - very high for retirees, low for people below age 50
Conclusions: Mobility

- Climbing the wealth distribution is harder than climbing income distribution

- Intra-generational wealth mobility (s)low

- Inheritances increase intra-generational mobility

- Inheritances more likely...
  - ... around retirement age
  - ... for wealthier individuals

→ Inter-generational link in wealth transmission seems strong
Thank you.

Comments and questions welcome: martinez@kof.ethz.ch
Appendix
Example: Poverty Rates Incl./Excl. Wealth

*Diese Werte beruhen auf geringen Fallzahlen und sind mit Vorsicht zu interpretieren.*
Data: Variables I

Total income sum from different sources:
- employment
- self-employment
- financial assets
- real estate (incl. imputed rent)
- public pension (pillar 1)
- occupational pension (pillar 2) + private pensions (pillar 3)
- UI benefits, DI benefits
- family and child allowances
- alimony and transfers from other households

Deductions
- contributions retirement savings plans
- political party donations / memberships
- charity donations
Data: Variables II

Sum of different wealth components:
- financial assets
- business assets
- movable assets (cars, art, ...)
- real estate
- debt
- in Bern (BE): inheritances and inter vivos gifts

Demographics:
- Gender, age, single/married, # of children
- Income attributable to main taxpayer or spouse
- Wealth held in common
Income Percentile Thresholds
Wealth Composition: Married vs. Singles

Position in the gross wealth distribution
individuals, 2010 - ZH, BE, LU, OW, SG, BS, JU

Position in the gross wealth distribution
individuals, 2010 - ZH, BE, LU, OW, SG, BS, JU
Income Composition

Position in the gross income distribution
individuals, 2010 - ZH, BE, LU, OW, BS, SG, AG, JU. N = 2,553,528
Joint Distribution: Bottom 10%

Distribution of 1st gross income decile... over net wealth deciles

2001

2011
Joint Distribution: Middle 20%

2001

2011

Distribution of 5th and 6th gross income decile...

... over net wealth deciles

AG

AG
Wealth-Income Ratio over Time (Median, OW)

![Wealth-Income Ratio over Time Graph](image)

- Total net wealth to income ratio
- Ventiles of total income distribution

**Diagram Description:**
- The graph displays the wealth-income ratio over time for different ventiles of the total income distribution.
- Each year (2001, 2006, 2010) is represented by a different line color:
  - 2001: Blue
  - 2006: Red
  - 2010: Green
- The x-axis represents the ventiles of the total income distribution, ranging from 0 to 100.
- The y-axis represents the total net wealth to income ratio, ranging from -2 to 4.

**Data Points:**
- OW mean
Real-Estate-to-Income Ratios (2010)

![Graph showing real-estate-to-income ratios across different income percentiles. The graph displays the mean and median values.](image-url)
Debt-to-Income Ratios (2010)
### Average Inheritances by Age

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**Graph:**
- **Legend:**
  - △ Inheritance
  - ○ Gift

**Axes:**
- **X-axis:** Age (0-100)
- **Y-axis:** Avg. amount received (in 1000 CHF) as inheritance or inter-vivos gift

**Note:** The graph illustrates the average inheritance received as of age 0, increasing with age, and showing a peak around age 75. After age 75, the inheritance amount decreases.
Average Inheritances by Wealth Percentile

![Graph showing average inheritances and gifts by wealth percentile.](image-url)


