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Inequality by Demographic Factors

Findings from Individual-Level Cantonal Tax Data

The Evolution of Economic and Social Inequalities in Switzerland (and Beyond): International Conference, Switzerland

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Introduction

- Income inequality is often understood as a result of an unequal market outcome (economic factors e.g. wages), which is more or less moderated by redistribution (institutional factor e.g. tax system). But research on the role of demographic factors is gaining attention.
- (1) Von Weizsäcker (1996) argues that *ageing* of society affects income inequality. It potentially increases when inequality among retired is higher than among workforce (Grabka and Kuhn, 2012).
- (2) Change in the «way of people living together» affects inequality. People marry later and divorce more often, which results in an increase of single-earner-HH and therefore increases income inequality (Peichl et. al, 2011; Daly and Valetta, 2006).

- *Research Question:* Is Income inequality affected by demographic change, when looking at age groups and household types?

Data

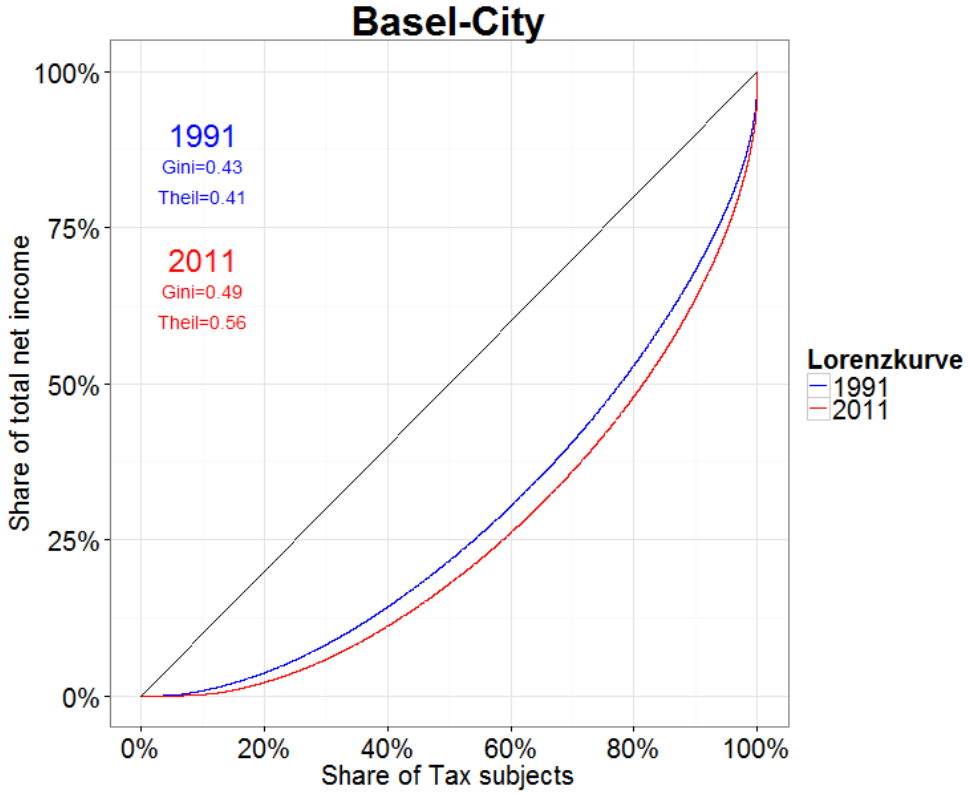
Statistical «case studies» with individual cantonal Tax Data

- Individual cantonal Tax Data which are collected as part of the SNF-Project (http://inequalities.ch/)
- Tax data is administrative data, which means it's a process generated, non-reactive data source (Diekman 2009:653)
  - Nice, because data coverage is good (full sample, no sample bias)
- *Basel-City*
  - Urban canton
  - German speaking
  - Time period: 1991-2011
- *Income measure:*

  Net income (Reineinkommen)
  - + Income from labor
  - + Income from property
  - + Direct social transfers
  - - Deductions, but no social deductions

Results

Rise in overall inequality in Basel-City



- *Is rise of inequality affected by demographic factors?*
- *Changes are possible due to*
  - *(a) Changing shares (e.g. poor group got bigger)*
  - *(b) Groups diverge (mean of subgroups differ stronger)*
  - *(c) Changing within subgroup inequality (e.g. something non demographic happened)*

Method

Decomposing Overall inequality into within and between group components (Hao & Naiman 2010)

- Theil-Index, an inequality measure developed from information theory (General Entropy class), is additively decomposable (Gini is not). Theil can be expressed as the between-group inequality plus the weighted sum of the inequality within each group
  - $\mathrm{T}(y;\theta) = \underbrace{\sum_{l=1}^{L} \emptyset^l \left(\frac{\mu^l}{\mu}\right)^{\theta}}_{\textit{Population-weights}} \underbrace{T\left(y^l;\theta\right)}_{\textit{within}} + \underbrace{T(\mu^1,\dots,\mu^l,\dots\mu^L;\theta)}_{\textit{between}}$
- By decomposing the Theil-Index we partitioned the total income inequality into between-group inequality (e.g. between age groups and household types) and within-group inequality. Hence we see, how the differences between and within each group contribute to overall inequality

Results

Age groups - Share of age groups and change over time

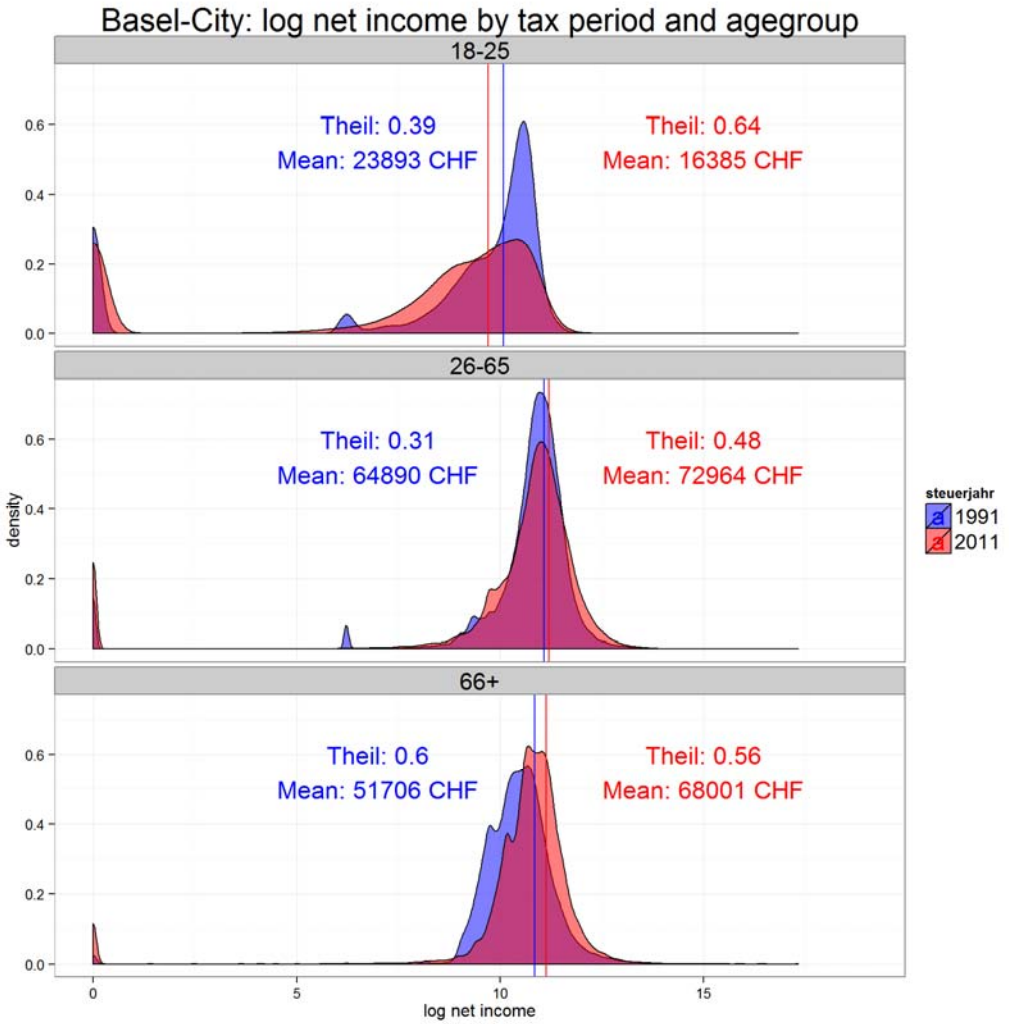
- *Three age groups*
  - *-25:* young adults (education is important)
  - *26 – 65:* working population (wages)
  - *65>:* Retired (pensions)

Agegroup	Population Shares		
	1991 (share)	2011 (share)	Change (ΔPP)
18-25	11.9	12.2	0.3
26-65	62.6	62.7	0.1
65+	25.5	25.1	-0.4
	100.0	100.0	

Results

Age groups - Between and within group inequality

- *On average young adults lost, while workforce and especially retired gained*
- *But: Inequality within workforce and among young adults increased*



Results

Age groups - Contribution of within and between inequality to overall inequality

Agegroup	*Contribution to overall inequality*		
	1991	2011	Δ
18-25	0.02	0.02	0.0002
26-65	0.22	0.34	0.1222
65+	0.14	0.15	0.0077
Between-group	*0.03*	*0.05*	*0.0210*
Overall Theil	0.41	0.56	0.1511

- *Inequality among Workforce (26-65) contributes most to overall inequality (big group) and relevance of inequality within this age group did rise.*
- *Small increase of between-group component is because young adults "lost" relatively*

Results

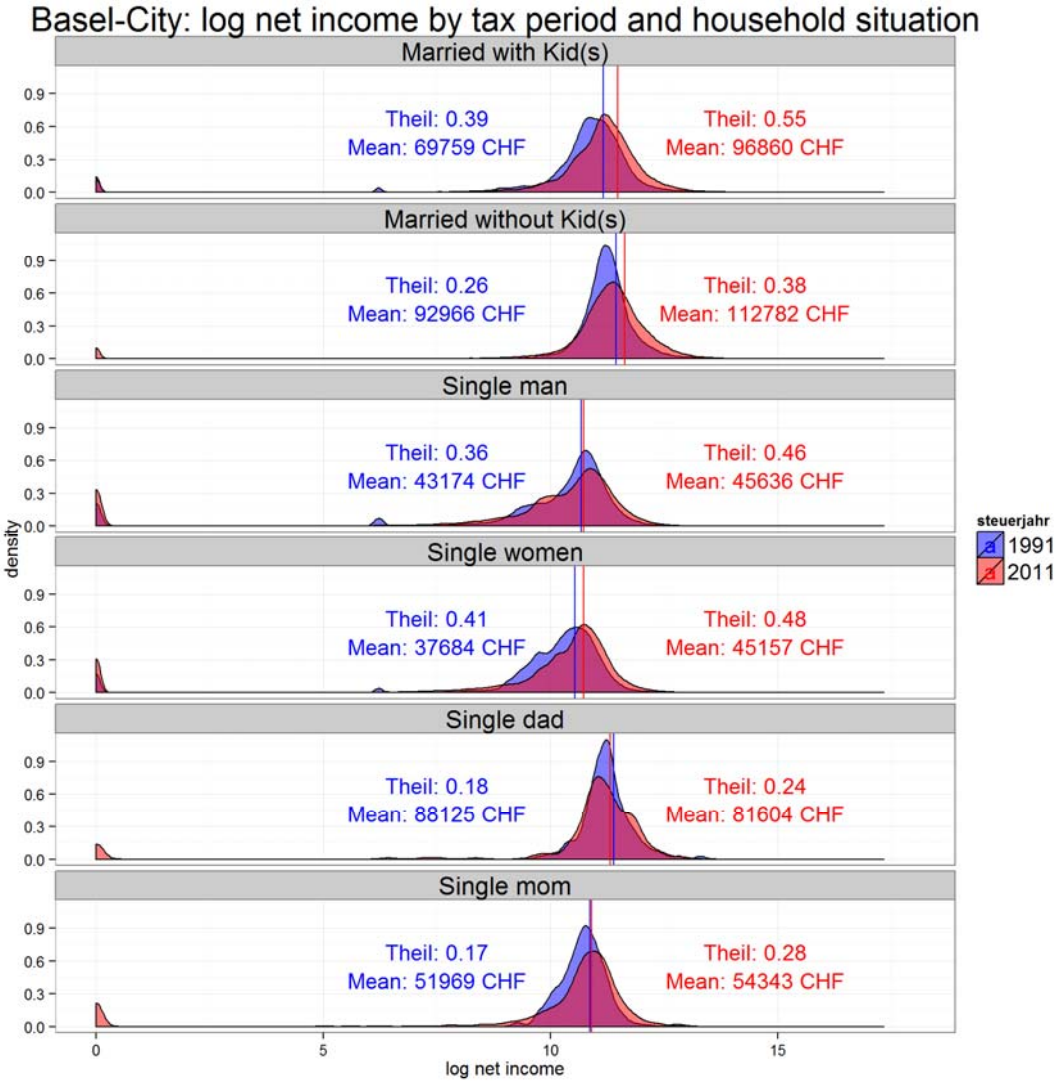
Households - Share of Household types and change over time

- *Global trend is reflected in cantonal data: decline of married and rise of single households*

Household	Population shares		
	1991 (share)	2011 (share)	Change (ΔPP)
Married w. kids	29.6	20.6	-9.0
Married no kids	14.1	12.9	-1.2
Single mom	0.6	1.1	0.5
Single dad	0.6	0.2	-0.4
Single man	22.9	29.5	6.6
Single woman	32.1	35.7	3.6
	100.0	100.0	

Results

Households- Between and within inequality



- *Between group differences are high between married and single*
- *married HH gained more on average*
- *But: Between group Inequality reaches a maximum at a single-share of 63%*

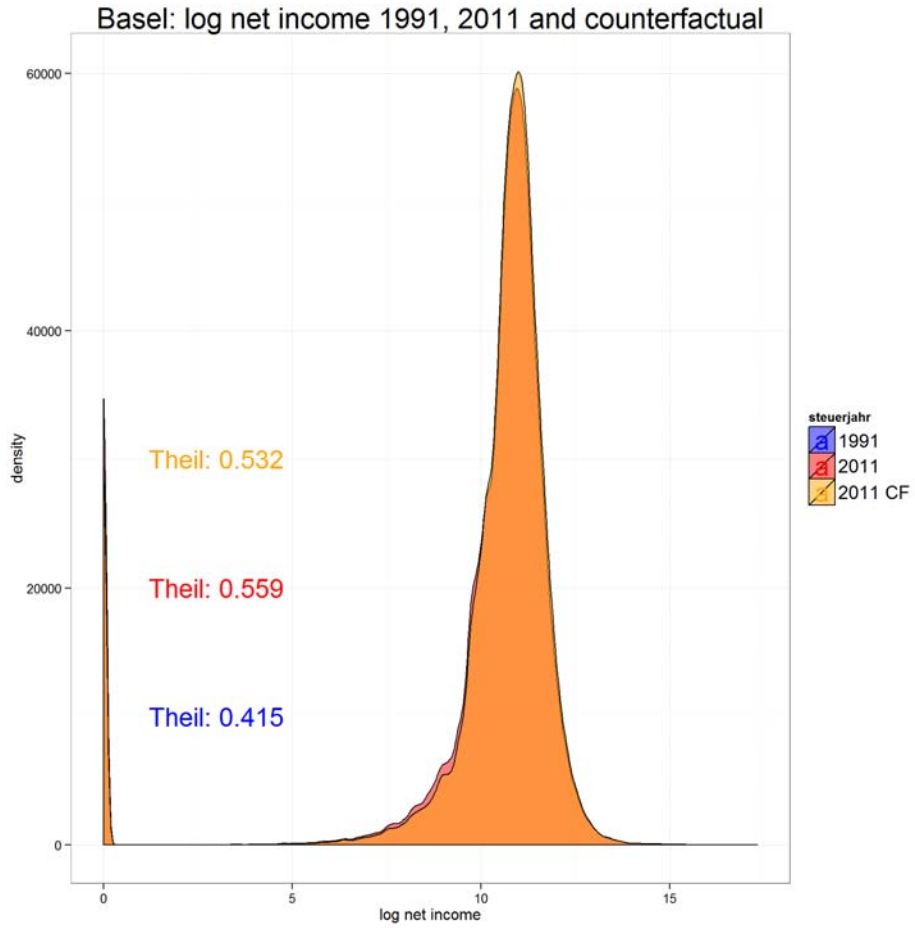
Results

Households - Contribution of within and between inequality to overall inequality

- *Married HH gained more on average* (*pronunciation of between group differences)*
- *But: Between group Inequality reaches a maximum at a single-share of 63%*
- *Inequality increase within all subgroups is the main driver*

Household	Basel-City		
	1991	2011	Δ
Married w. kids	0.14	0.17	0.029
Married no kids	0.06	0.09	0.027
Single mom	0.001	0.002	0.002
Single dad	0.002	0.001	-0.001
Single man	0.06	0.10	0.032
Single woman	0.09	0.12	0.032
Between group	*0.06*	*0.08*	*0.024*
Overall Theil	0.42	0.56	*0.144*

Counterfactual Distribution – How would inequality look like, if demographic structure wouldn't have changed?



Method

- *Weighting of 2011 distribution with 1991 weights calculated with inverse probability weighting*

Result

- *Inequality would be smaller*
- *19% of rise of inequality is due to change in demographic variables (age, household)*

Conclusion

Von Weizsäcker (1996) assumes that ageing of society leads to higher income inequality

→ Indeed, people within workforce and retired gained on average, while young adults lost (groups diverge).
→ Overall inequality is strongly affected (61%) by inequality within workforce (25-65).
→ Inequality among retired is highest. Ageing of society is associated with increase of inequality?

Rise in inequality in the US due to more people living alone (Daly/Valetta (2006)

→ People indeed live less and less in married households
→ Contribution of within single inequality and importance of between component to overall inequality did rise
→ does a „single“ equal a single household? Further analyses with Bern data