Saving effects of a real-life imperfectly implemented net wealth tax. Evidence from Norwegian micro data

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October 2020

This is the world premier, with apologies, because it is as preliminary as it gets

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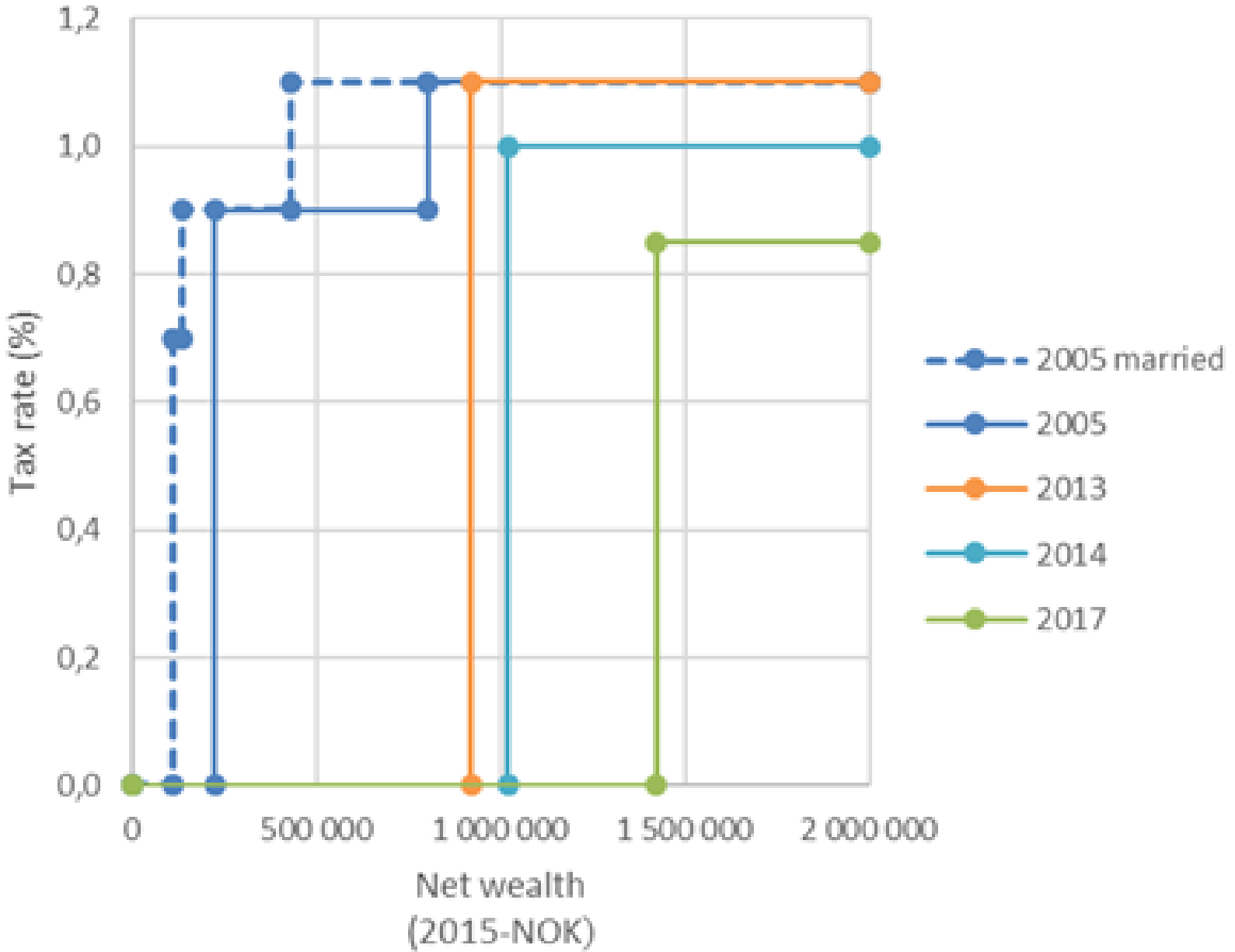
Motivation

- Policy interest in wealth taxation
- What is the effect on saving?
- Valuation rules key to how it works, but how do they affect behavior?
- Broad/narrow base, reallocation opportunities
- Narrower base $\Longrightarrow$ weaker real response (but larger tax effect?)
- Recent work in various countries: Switzerland by Brülhart et al (2019); Denmark by Jakobsen et al. (2020); Sweden by Seim (2017); Colombia by Avila and Londoño-Vélez (2020).
- Large elasticities from diff-in-diff designs, small from "bunching" studies. Evasion, mobility
- Work on tax responsiveness to estate tax (reviewed in Kopczuk, 2013)

Wealth tax in Norway

- Annual tax on individuals' net wealth (total assets – debt) exceeding a given threshold
- Married couples are taxed together (with 2 basic allowances)
- Levied on Norwegian residents on their assets world-wide
- In principle, all assets and liabilities are included, excl. funded pension wealth
- The top marginal tax rate was 1.1% in 2005-2013, 1% in 2014, and 0.85% in 2015.
- The basic allowance is substantially increased, gradually from NOK 151,000 in 2005 to NOK 1,200,000 in 2015 (the share of the population paying wealth tax decreased from 33% to 12%).

Tax schedule changes



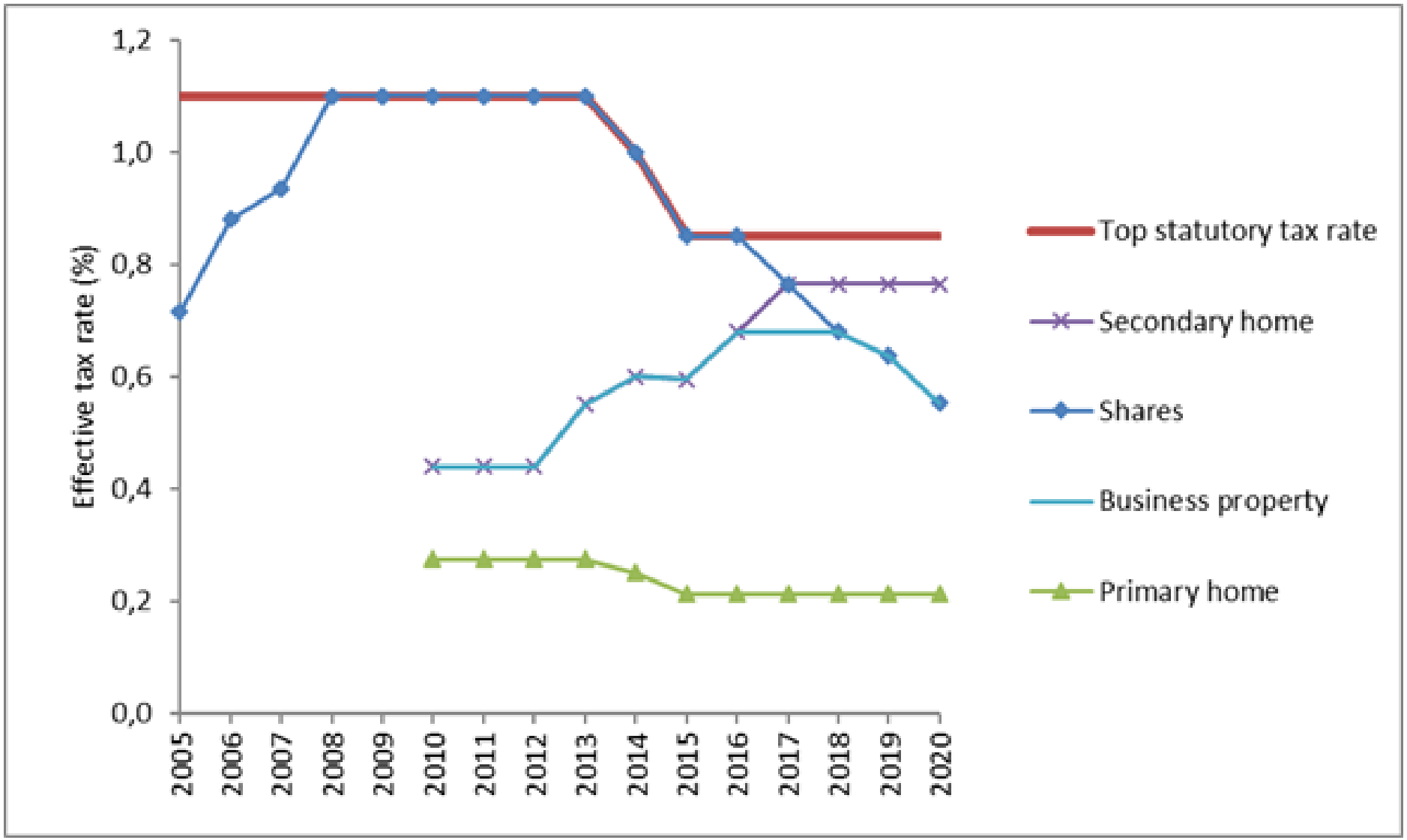
Base and valuation

- Assets and liabilities are mostly third-party reported
- Housing wealth is determined by the tax authorities (from 2010, owner-occupied housing is valued at 25% of assessed market value)
- Unlisted shares are valued based on firms' underlying assets (book values, excl. goodwill) as reported by the firm
- There have been several changes in valuation rules (discount for shares removed gradually 2006-2008, new valuation of real estate in 2009/2010).

Rates and valuation rules

	Tax rates and thresholds				Valuation of assets for tax purposes PY: % adjustment of previous year's tax value MV: % of assessed market value				
Year	Tax rate 1 %	Threshold 1	Tax rate 2 %	Threshold 2	Primary home[1]	Leisure home[1]	Secondary home[1]	Business property	Listed and unlisted shares
2005[2,3]	0.90	151 000	1.10	540 000	PY: 0	PY: 0	PY: 0	PY: 0	MV: 65
2006[3]	0.90	200 000	1.10	540 000	PY: 25	PY: 25	PY: 25	PY: 25	MV: 80
2007[3]	0.90	220 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 85
2008[3]	0.90	350 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 100
2009	1.10	470 000	removed		PY: 10	PY: 10	PY: 10	PY:60/MV:40[4]	MV: 100
2010	1.10	700 000			MV: 25	PY: 10	MV: 40	MV: 40	MV: 100
2011	1.10	700 000			MV: 25	PY: 0	MV: 40	MV: 40	MV: 100
2012	1.10	750 000			MV: 25	PY: 10	MV: 40	MV: 40	MV: 100
2013	1.10	870 000			MV: 25	PY: 0	MV: 50	MV: 50	MV: 100
2014	1.00	1 000 000			MV: 25	PY: 10	MV: 60	MV: 60	MV: 100
2015	0.85	1 200 000			MV: 25	PY: 0	MV: 70	MV: 70	MV: 100
2016	0.85	1 400 000			MV: 25	PY: 0	MV: 80	MV: 80	MV: 100
2017	0.85	1 480 000			MV: 25	PY: 0	MV: 90[5]	MV: 80[5]	MV: 90[5]
2018	0.85	1 480 000			MV: 25	PY: 0	MV: 90[5]	MV: 80[5]	MV: 80[5]
2019	0.85	1 500 000			MV: 25	PY: 0	MV: 90[5]	MV: 75[5]	MV: 75[5]
2020	0.85	1 500 000			MV: 25	PY: 0	MV: 90[5]	MV: 65[5]	MV: 65[5]

Effective marginal tax rates for different types of assets



Framework

- After-tax wealth (M_t) accumulation/saving decision

$$M_{t+1} = (M_t + y_t - C_t) \cdot (1 + r_t) \cdot (1 - \tau)$$

  Net-of-tax rate determines the return on wealth, acts analogously to tax on rate of return

- Multiple types of assets with portfolio choice and/or evasion opportunities. Taxable wealth given by

$$Z_t = \sum_{i=1}^{N} d_{it} M_{it}$$

  with asset-specific discount/valuation/noncompliance adjustments. Marginal effective net-of-tax rates given by $1 - d_{it}\tau$

- Alternatively (Kopczuk, 2005), tax base of $1 - \gamma = \frac{Z}{M}$, with tax system characterized by τ and γ

Empirical specification

- Saving decisions of person j at time t

$$\Delta \ln(M_{j,t+1}) = \beta_1 \ln(1 - \tau_{j,t+1}) + \delta X_{jt} + \varepsilon_{j,t+1}$$

- ...or if base taken into account:

$$\Delta \ln(M_{j,t+1}) = \beta_1 \ln(1 - \tau_{j,t+1}) + \beta_2 \cdot \gamma \ln(1 - \tau_{j,t+1}) + \delta X_{jt} + \varepsilon_{j,t+1}$$

  with $\beta_1 + \beta_2\gamma$ the relevant elasticity

- ...or if tax rates on different assets separately modeled

$$\Delta \ln(M_{j,t+1}) = \sum_i \beta_i \ln(1 - d_{i,t+1}\tau_{j,t+1}) + \delta X_{jt} + \varepsilon_{j,t+1}$$

  with asset-specific-tax-rate elasticites of β_i

- Other outcomes — components of wealth, taxable wealth (not today)

Identification

- Variation in τ, γ and d driven by reforms
- However (focusing on τ): $\tau_{t+1}(M_{j,t+1})$ and thus correlated with $\varepsilon_{j,t+1}$
- Familiar problem from tax literature, especially taxable income elasticity literature — the dependent variable determines the marginal tax rate
- Two-step solution. First, use $\tau_{t+1}(M_{jt})$ i.e. predicted tax rate using past information. It leverages reforms and pre-determined asset information
- Still, $\Delta M_{j,t+1}$ and M_{jt} may be correlated unless M is a random walk. Then, there is a spurious correlation of $\tau_{t+1}(M_{jt})$ and $\varepsilon_{j,t+1}$
- Various solutions in taxable income literature, imperfect
- Idea (Røed et al, 2008) from unemployment/disability context: assume that the correlation is the same regardless of which period K tax schedule is used $\tau_K(M_{jt})$ (there is nothing special about τ_{t+1}) and control for $\sum_K \alpha_K \tau_K(M_{jt})$.
- The remaining residual orthogonal to all hypothetical schedules and the direct effect of $\tau_{t+1}(M_{jt})$ reflects then tax effect only

Data

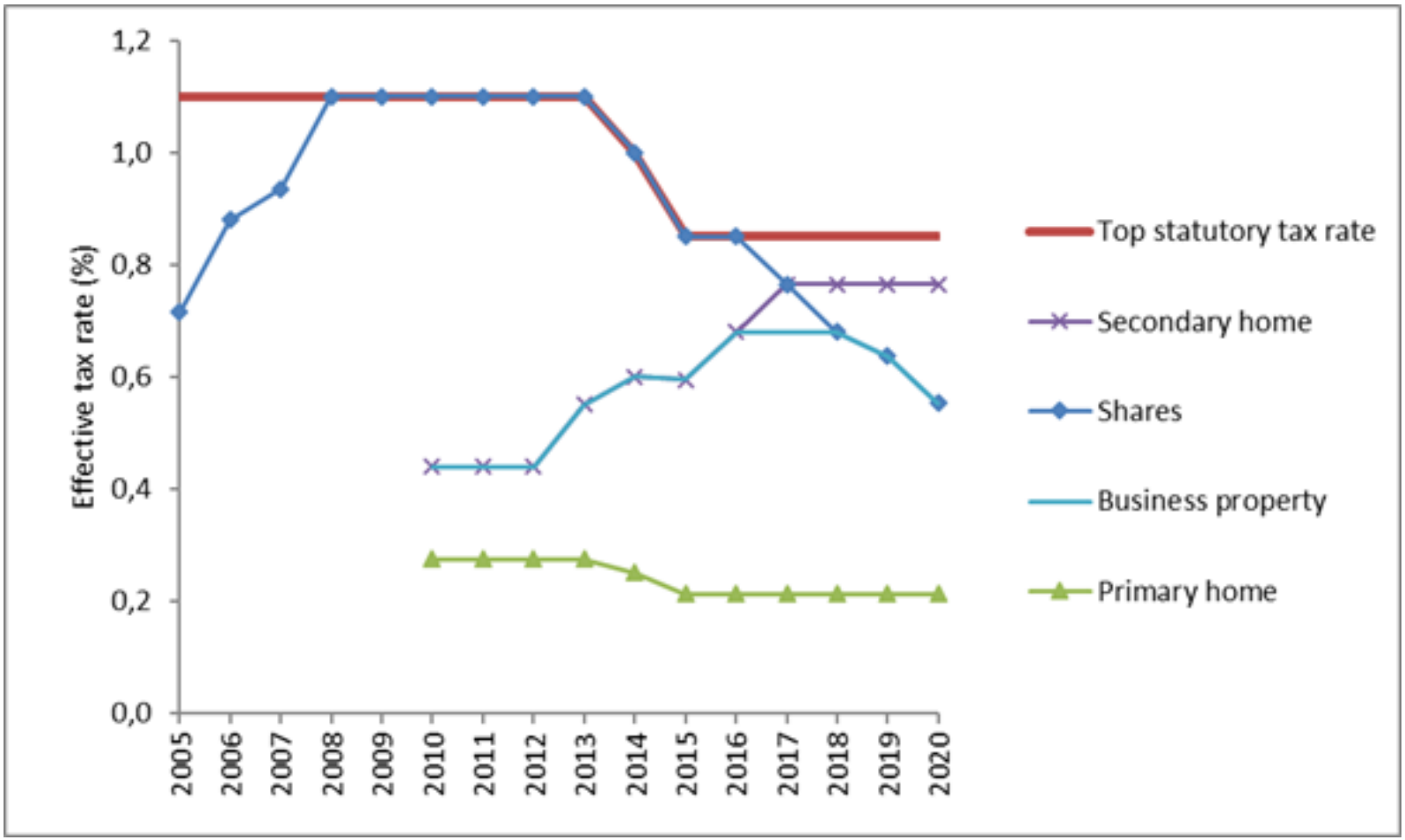
- Administrative data from wealth tax records, with assets details and some demographics
- Today: focus on men 40-60 years old and their spouses (extract we are working with for now; will run on full population later)
- One-year wealth changes (for now)
- Sample limited to people with net wealth above NOK150,000 in year t
- Net wealth in $t+1$ may be smaller than NOK150,000, it can even be negative (debt)
- Solutions — $\Delta \max\{\ln(M_t + C), \ln(C)\}$, $\frac{M_{t+1} - M_t}{M_t}$, censoring large changes $|\Delta \ln(M_t + C)| \leq B$
- Fixed effects — systematic differences in saving behavior (eg preferences, rates of return). But, if identification strategy isolates the effect of rates only, it should not matter.
- Reduced form estimates (IV will use $\tau_{t+1} M_t$ as an instrument for $\tau_{t+1} M_{t+1}$)

Results — tax rate effects only

	OLS	Fixed effects	Random effects	First differences
$\ln(1-t)$	1.620	3.741	1.982	
	(0.206)	(0.216)	(0.212)	
$\Delta \ln(1-t)$				7.156
				(0.259)
N	2926941	2926941	2926941	2517941

Note #1: tax rate of 1% with, e.g., 5% rate of return is comparable to 20% tax on capital income. These elasticities then should be divided by about 20 to be in a more familiar territory.
Note #2: Brülhart et al (2019), elasticity of ≈20 in Switzerland; Jakobsen et al. (2020), elasticity of ≈8 in Denmark
Note #3: Sensitivity to estimation method, but also mis-specified because base varies!

Effective marginal tax rates for different types of assets



Results — accounting for tax base

		Fixed effects		
$\ln(1-t)$	3.741	2.723	8.003	8.494
	(0.216)	(0.219)	(0.742)	(0.803)
γ		0.008		-0.017
		(0.019)		(0.020)
$\gamma \cdot \ln(1-t)$			-6.815	-9.090
			(1.100)	(1.180)
		OLS		
$\ln(1-t)$	1.620	1.541	6.584	7.773
	(0.206)	(0.207)	(0.759)	(0.811)
γ		-0.078		-0.129
		(0.017)		(0.019)
$\gamma \cdot \ln(1-t)$			-8.340	-10.277
			(1.114)	(1.188)
N	2926941	2926941	2926941	2926941

Note mean of γ is 0.79, it's 0.58 in the top decile.

Results — Robustness to outcome manipulation

	$\Delta \ln(y+10)$	$\lvert\Delta \ln(y+10)\rvert<7$	$\lvert\Delta \ln(y+10)\rvert<2$	$\Delta \ln(y+100)$	$\frac{y_1-y_0}{y_0}$
$\ln(1-t)$	8.478	8.494	7.096	8.174	13.402
	(0.804)	(0.803)	(0.530)	(0.520)	(0.902)
γ	-0.017	-0.017	0.038	0.019	0.164
	(0.020)	(0.020)	(0.013)	(0.014)	(0.022)
$\gamma \cdot \ln(1-t)$	-9.065	-9.090	-6.307	-8.092	-15.298
	(1.183)	(1.180)	(0.773)	(0.780)	(1.289)
N	2926941	2926941	2926941	2926941	2926941

Results — portfolio effects

	Debt	Real Estate	Shares	Listed	Nonlisted	Bank	Personal residence
				Fixed effects			
$\ln(1-t)$	-0.343	-0.332	0.234	-0.010	0.166	0.030	0.158
	(0.049)	(0.041)	(0.023)	(0.012)	(0.017)	(0.040)	(0.049)
R^2	0.048	0.006	0.011	0.004	0.009	0.017	0.010
				OLS			
$\ln(1-t)$	-0.529	-0.100	0.092	-0.005	-0.002	0.166	-0.207
	(0.047)	(0.036)	(0.021)	(0.011)	(0.015)	(0.036)	(0.043)
R^2	0.007	0.003	0.004	0.003	0.001	0.004	0.004
N	2926941	2926941	2926941	2926941	2926941	2926941	2926941

Results — portfolio effects

	Debt	Real Estate	Shares	Listed	Nonlisted	Bank	Personal residence
				Fixed effects			
$\ln(1-t)$	-6.697	-0.863	1.518	1.013	-0.481	-2.707	2.404
	(0.269)	(0.217)	(0.158)	(0.095)	(0.125)	(0.196)	(0.245)
$\ln(1-t_{Shares})$	7.937	0.382	-0.798	-0.809	0.275	2.367	-2.374
	(0.290)	(0.242)	(0.181)	(0.106)	(0.145)	(0.222)	(0.272)
$\ln(1-t_{Housing})$	-4.971	0.667	-2.307	-1.141	1.711	2.153	0.096
	(0.375)	(0.316)	(0.251)	(0.127)	(0.197)	(0.319)	(0.377)
R^2	0.049	0.006	0.011	0.004	0.010	0.018	0.010
				OLS			
$\ln(1-t)$	-11.832	-1.537	2.502	1.430	-0.105	1.524	-3.020
	(0.271)	(0.209)	(0.155)	(0.095)	(0.121)	(0.192)	(0.233)
$\ln(1-t_{Shares})$	12.556	1.287	-1.977	-1.237	-0.321	-1.791	2.693
	(0.297)	(0.236)	(0.178)	(0.106)	(0.141)	(0.219)	(0.263)
$\ln(1-t_{Housing})$	-2.248	0.989	-2.409	-1.192	1.774	1.432	1.224
	(0.374)	(0.297)	(0.240)	(0.126)	(0.188)	(0.308)	(0.351)
N	2926941	2926941	2926941	2926941	2926941	2926941	2926941
R^2	0.008	0.003	0.004	0.004	0.002	0.005	0.004

Increased reliance on debt in response to taxation

Conclusions

- None for sure. It is very preliminary and work in progress
- However, so far, evidence that
  - saving is responsive to wealth tax
  - how responsive depends on the implementation
  - imperfect base dampens (closer to "real") saving response but stimulates tax portfolio changes and tax revenue loss

Accounting for Business Income in Measuring Top Income Shares: Integrated Accrual Approach Using Individual and Firm Data from Norway

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October 2020

Measuring top income shares

- Huge and influential literature, most prominently Piketty and Saez (2003) and follow ups
- Reliance on administrative tax data
  - Necessary to get coverage at the top
  - Data problems
    - not all of income taxable and hence not necessarily well observed (eg. fringe benefits, welfare benefits)
    - tax evasion and avoidance
    - income realization decisions
- Our interest: accounting for business income

How is business income observed on individual tax returns

Two general approaches:

- Treat profits as ordinary income, "pass through" taxation (Accrual approach)
  - This is the usual treatment of sole proprietors/self-employed and regular partnerships
  - It may also apply to other businesses depending on the tax regime. In particular, it applies to S-corporations and partnerships in the US
- Two tier system with (usually) corporate tax and individual taxation of dividends and capital gains. It applies to all incorporated businesses in Norway and C-corporations in the U.S. (Realization approach)

What is the problem here?

- Realizing income is under control of taxpayers: paying dividends is a decision of the firm, realizing of capital gains is a decision of the individual.
- Wrong timing may also imply mis-allocation of income in the distribution because of lumpiness of realizations
- Most extremely, business income need not show up on individual returns ever or may show up for different individuals:
  - Transfers
  - Deferral until death
  - Bankruptcy, losses
  - Consumption within a firm
- Different businesses accounted for differently
- Observable symptom: when changes in incentives change the mix of pass-through and realization, the level of inequality should be affected.
- Solution (or at least a step forward): allocate all business income on the pass-through basis

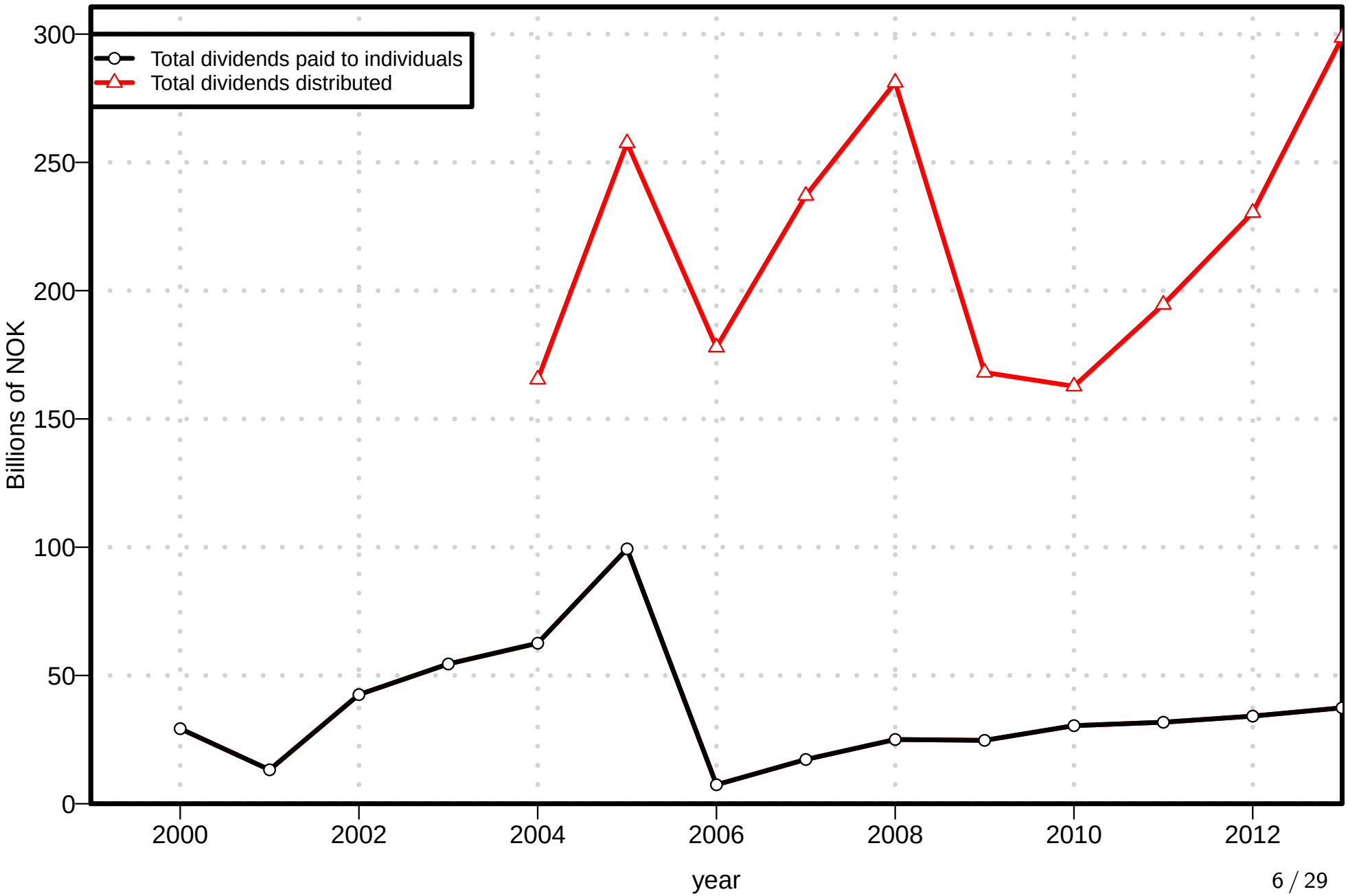
The Norwegian Tax Reform of 2006

- Individual shareholders:
  - Before 2006: no dividend tax, capital gains tax
  - As of 2006: dividend tax (28%), capital gains tax
- Corporate shareholders: no dividend tax, no capital gains tax as of 2004

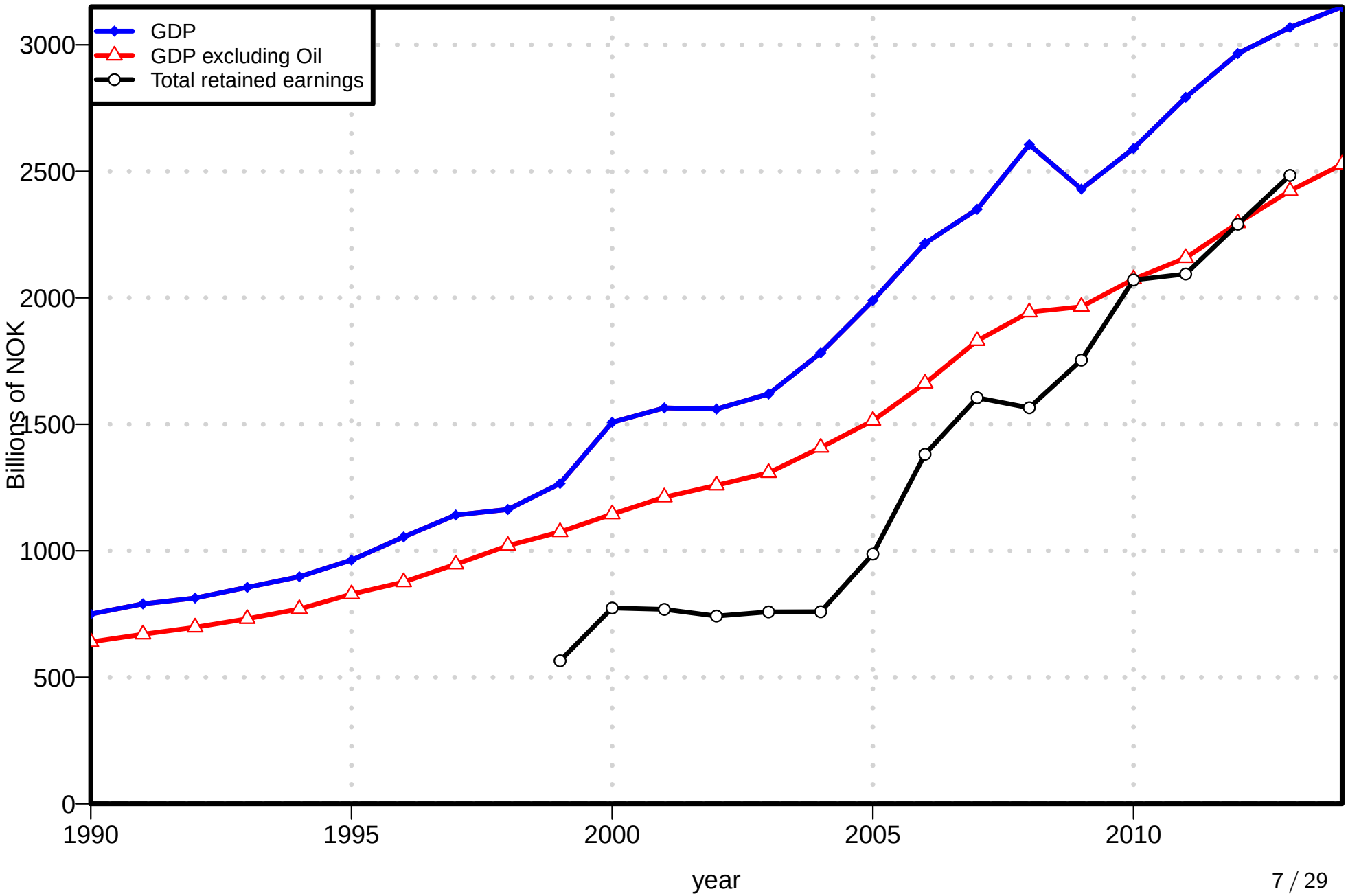
Incentives:

- unrestricted payment of dividends before 2006, effectively close to pass-through treatment
- incentives not to realize income after 2006...
- ...further facilitated by treatment of corporate tax shareholders: a lot of holding companies created (studied in Alstadsæter, Kopczuk and Telle, 2015)
- temporal incentives around the reform itself

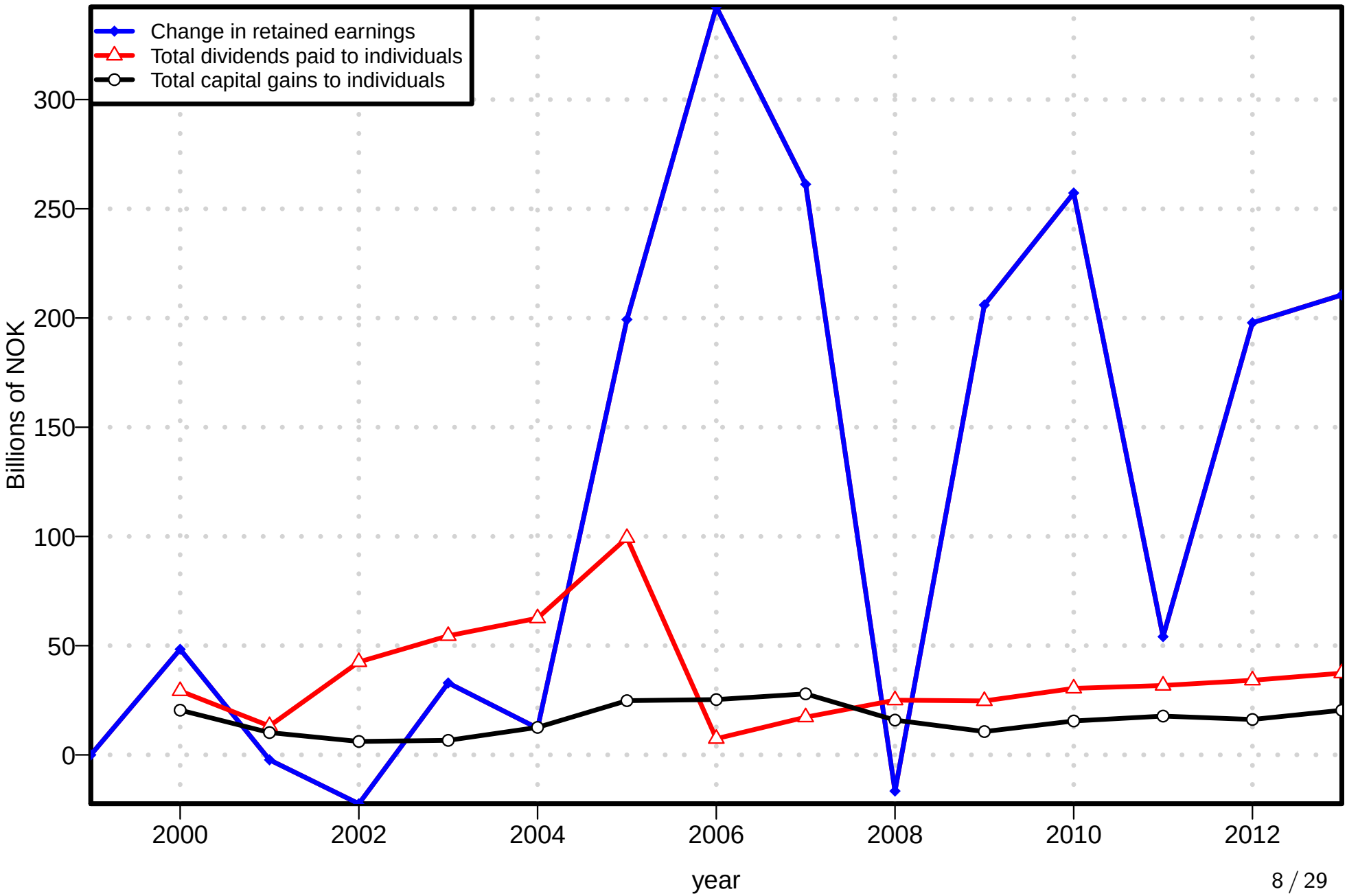
Total dividends distributed and received by individuals



Retained earnings (and GDP)



Dividends to individuals, retained earnings and capital gains



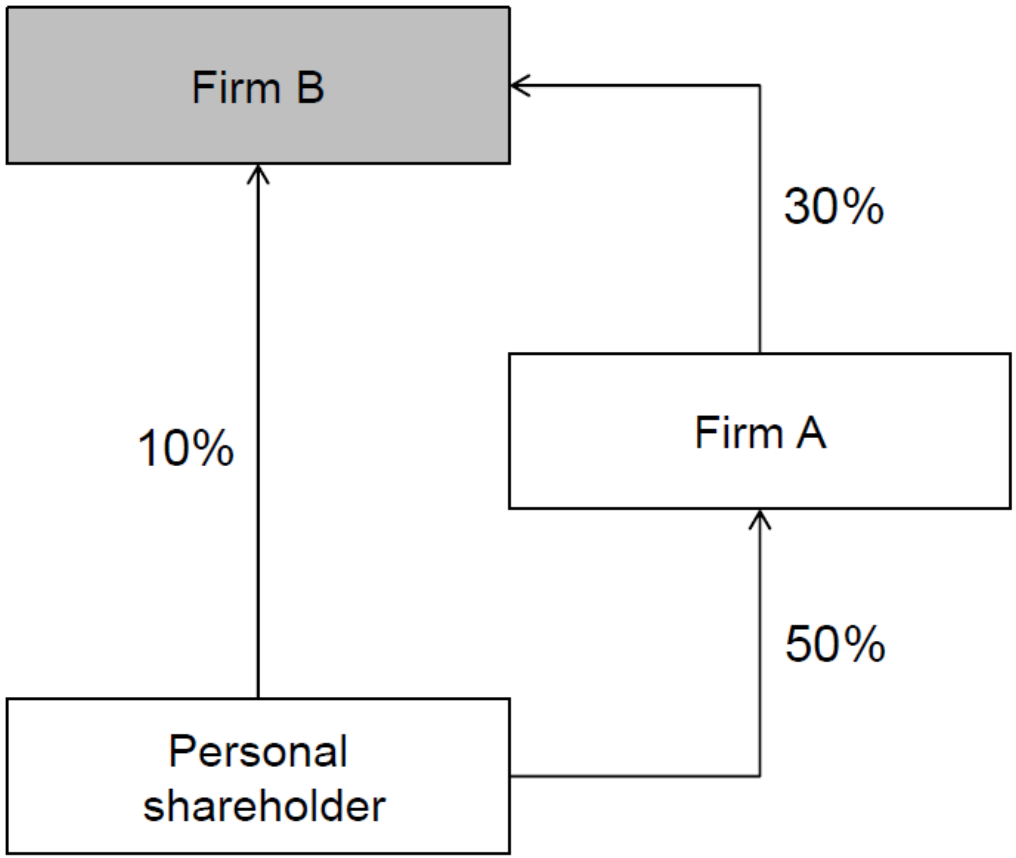
Main findings

- Realization approach understates the level of inequality (see also Fairfield and De Luis (2015) in Chile and Wolfson et al. (2016) in Canada and numerous imputation approaches)
- This understatement is massive: it more than doubles the top 0.1% share after 2005
- The extent of understatement varies over time and depending on the tax regime
- In particular, capital income flows observed on individual tax returns do not come close to reflecting the overall corporate profits, not even with a lag.
- Accrual approach allocates people to top groups in a much more stable way despite changes in the composition of income

Data

- The universe of Norwegian corporations, self-employed and individuals, 2000-2013
- Individual level data from income tax returns
- Corporate level income from tax statements and balance sheet information
- Shareholder register, ownership shares at year end
- Profits $\approx$ dividends to individuals + change in retained earnings

Allocating profits to shareholders



Stake of shareholder in Firm B

10% direct ownership

15% indirect ownerhip

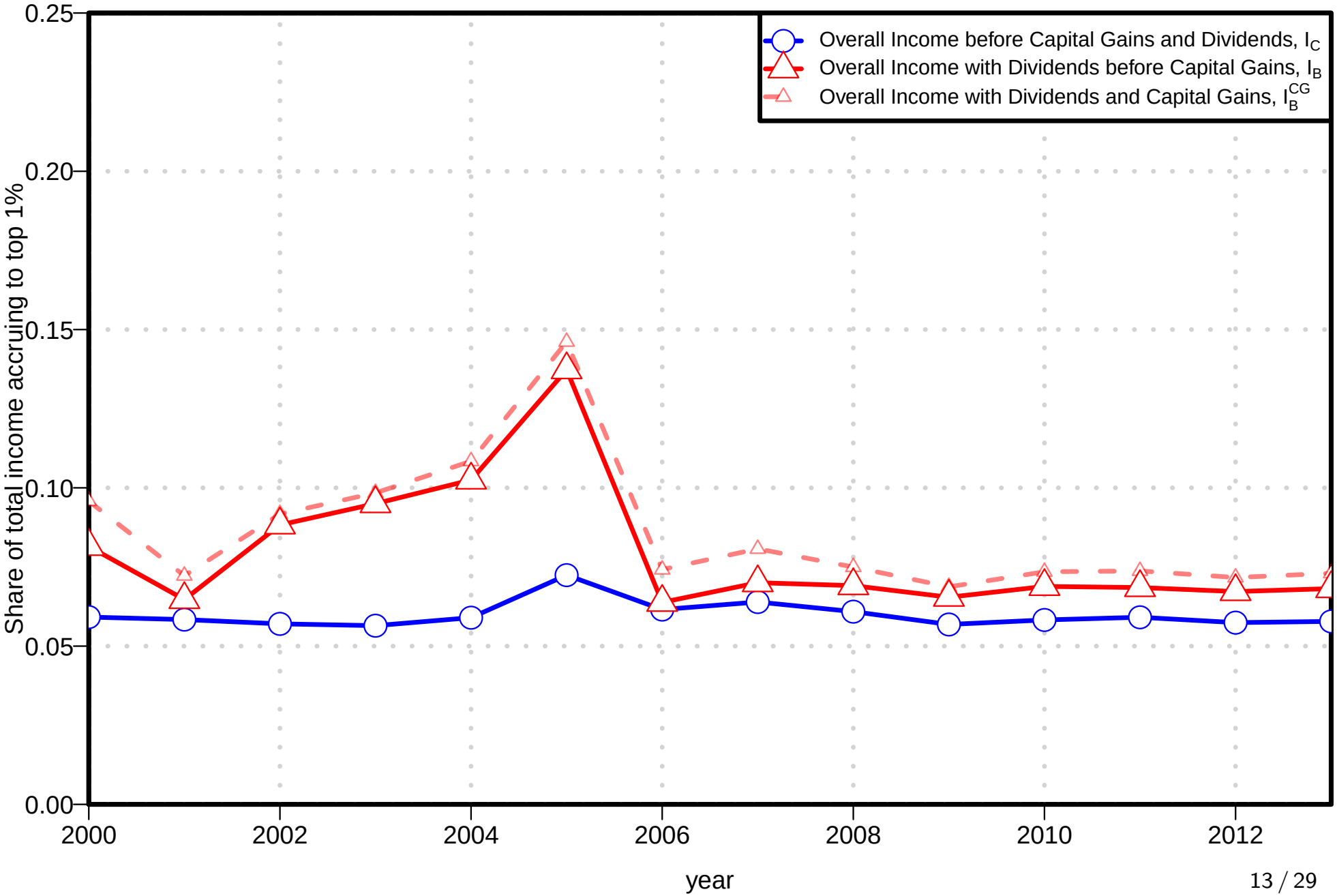
25% total ownership

We trace indirect ownership through 10 layers and allocate changes in retained earnings in proportion to ownership.

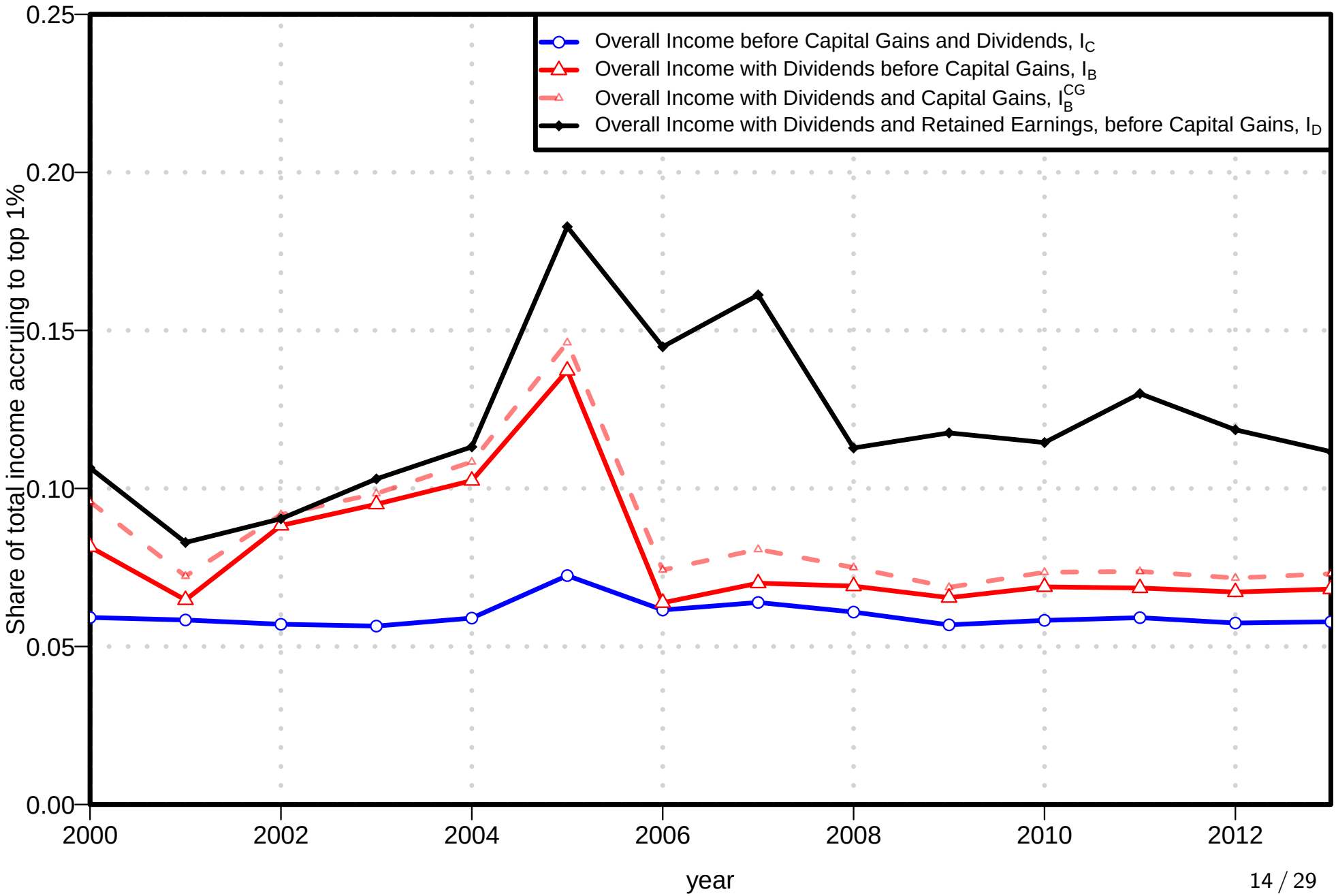
Measures of income

- Gross income before dividends and capital gains
- ...add dividends (I_B)
- ...add capital gains
- Gross income with dividends and retained earnings, i.e. profits (I_D)

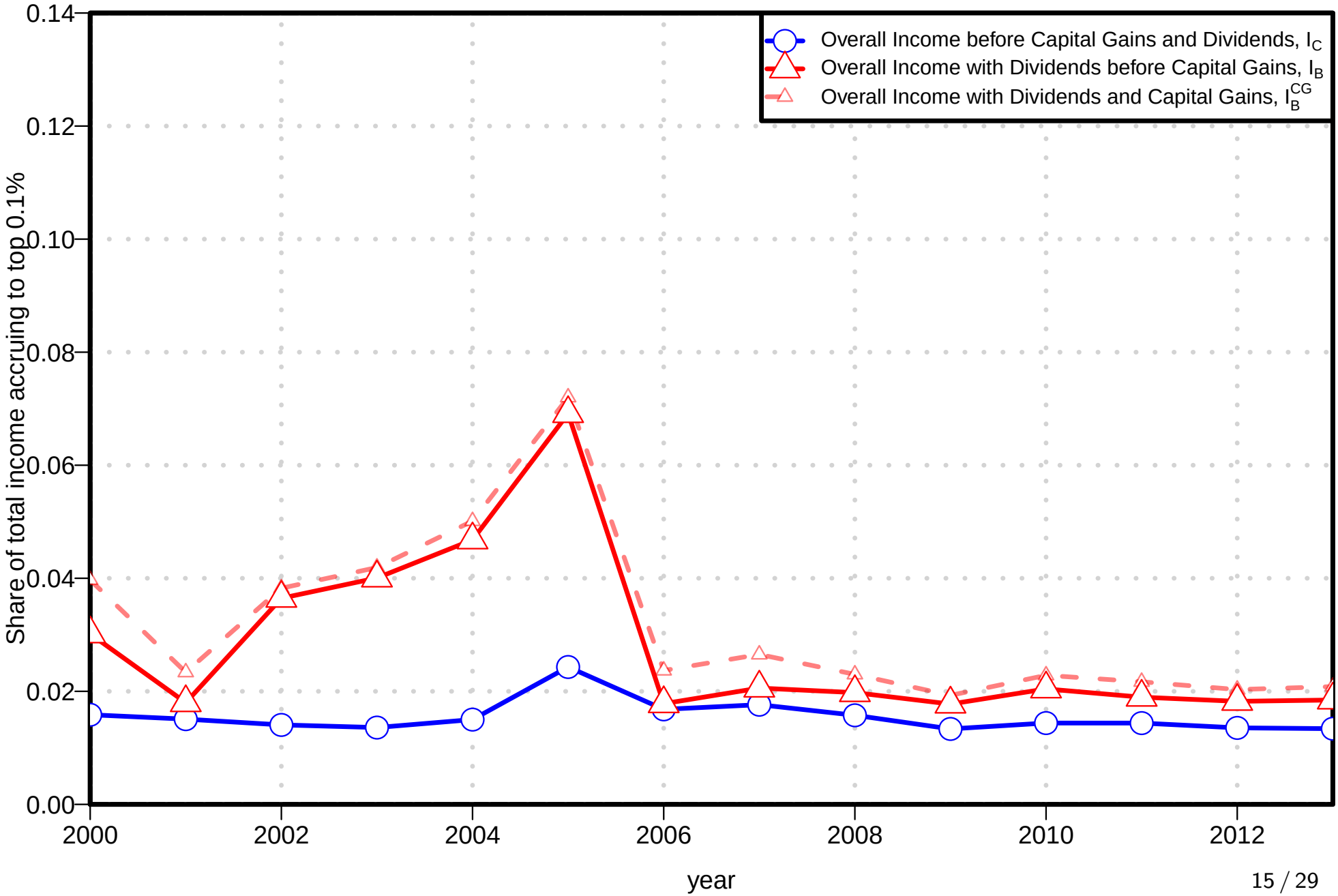
Top 1% share in Norway



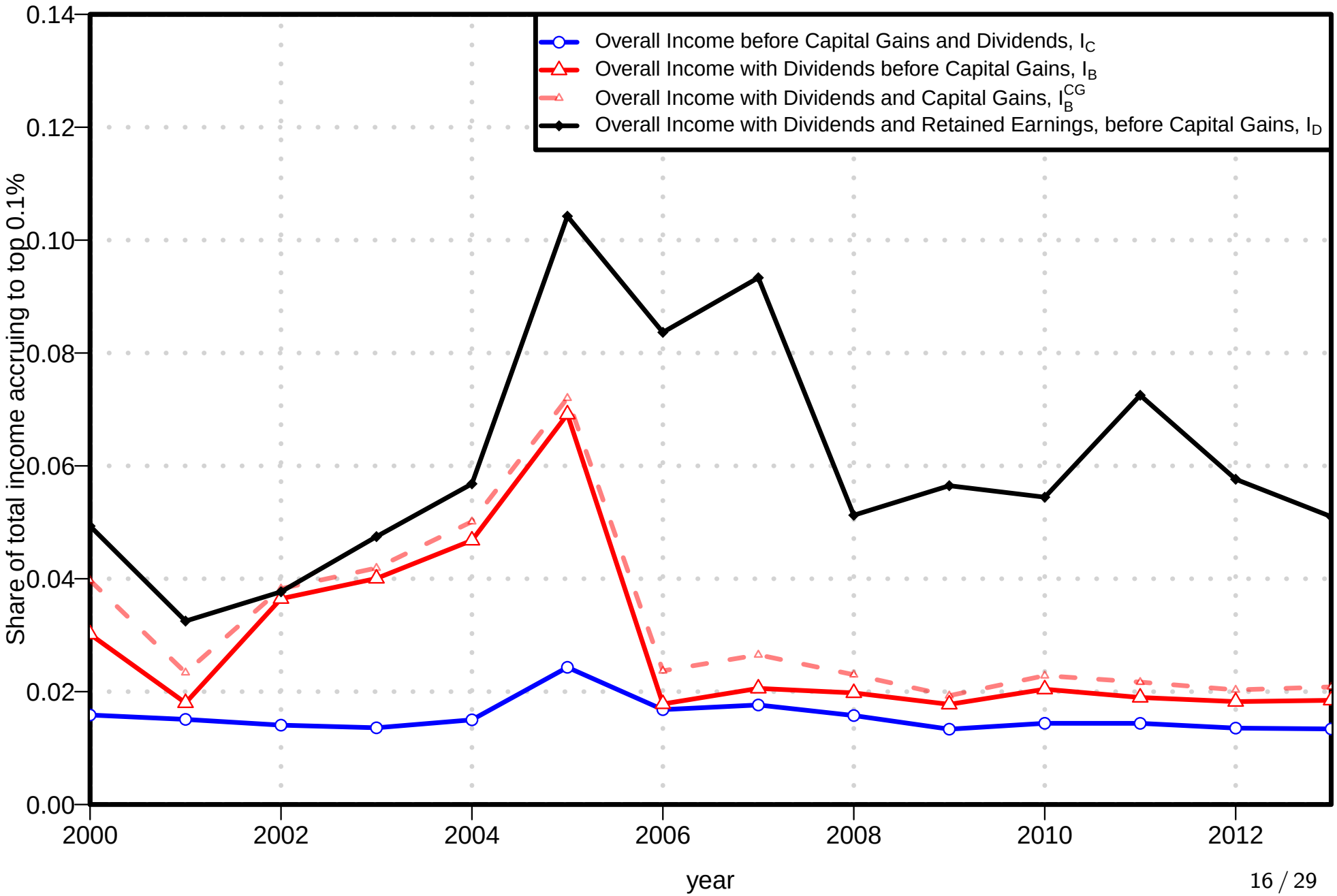
Top 1% share in Norway



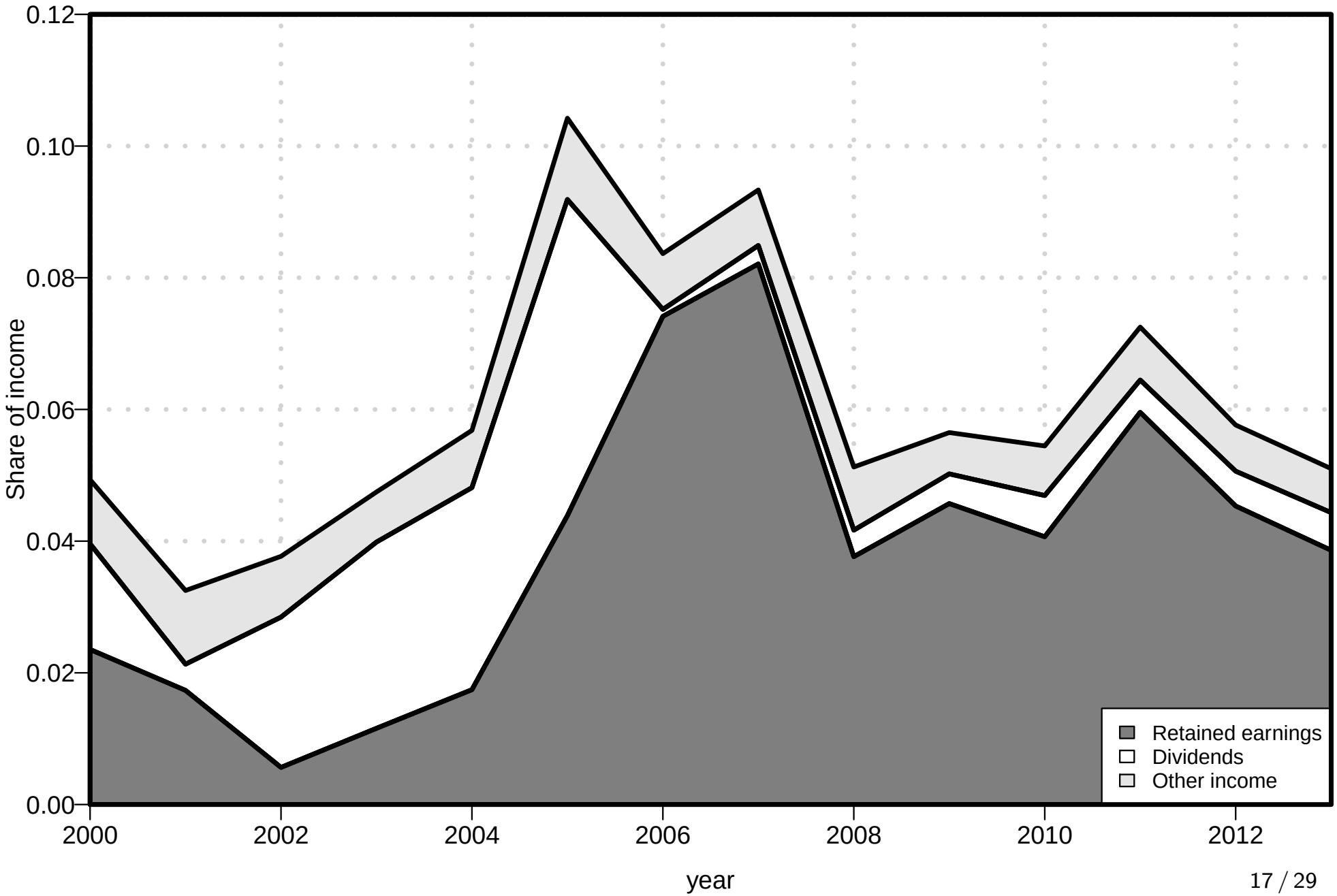
Top 0.1% share in Norway



Top 0.1% share in Norway



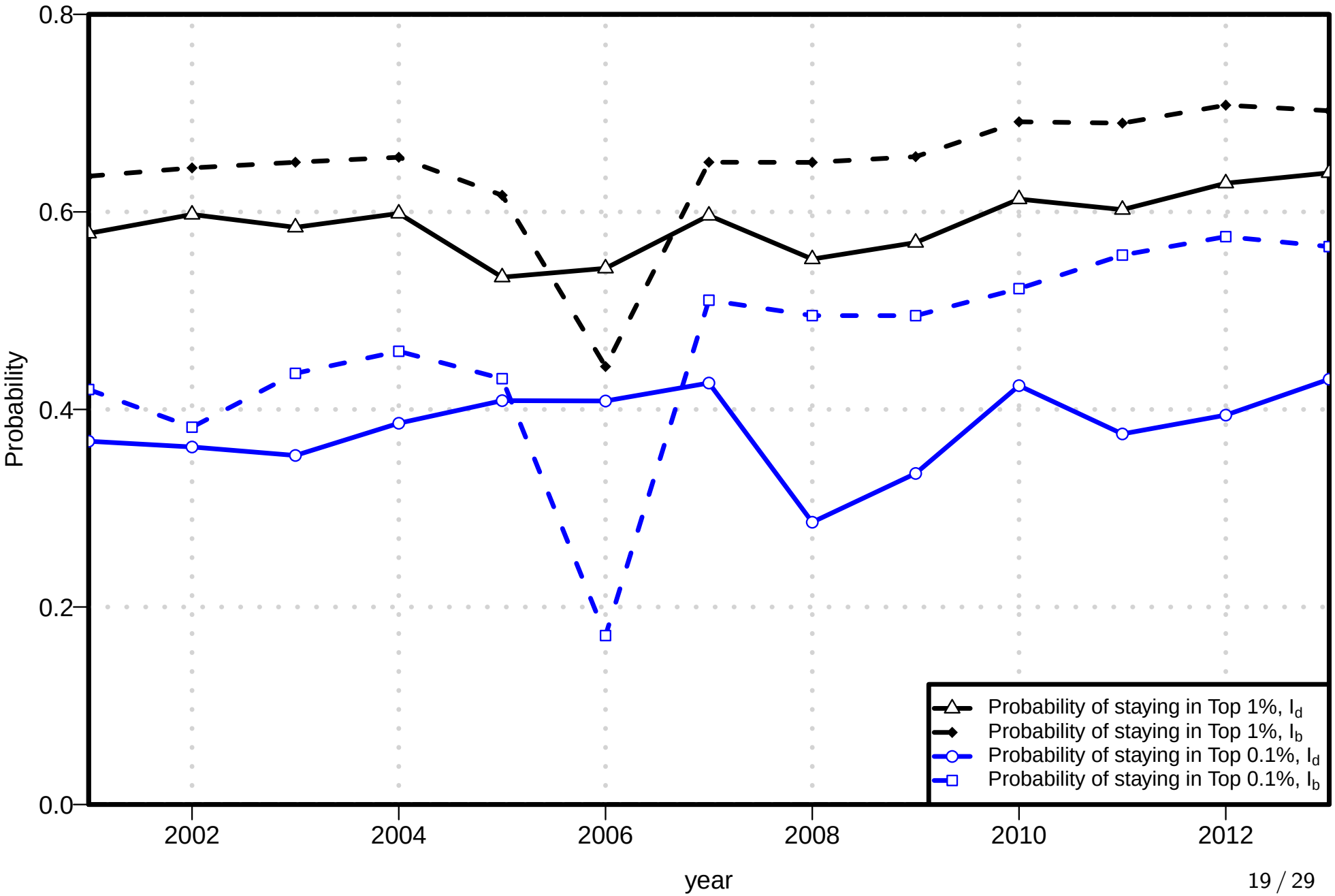
Composition of income of Top 0.1%



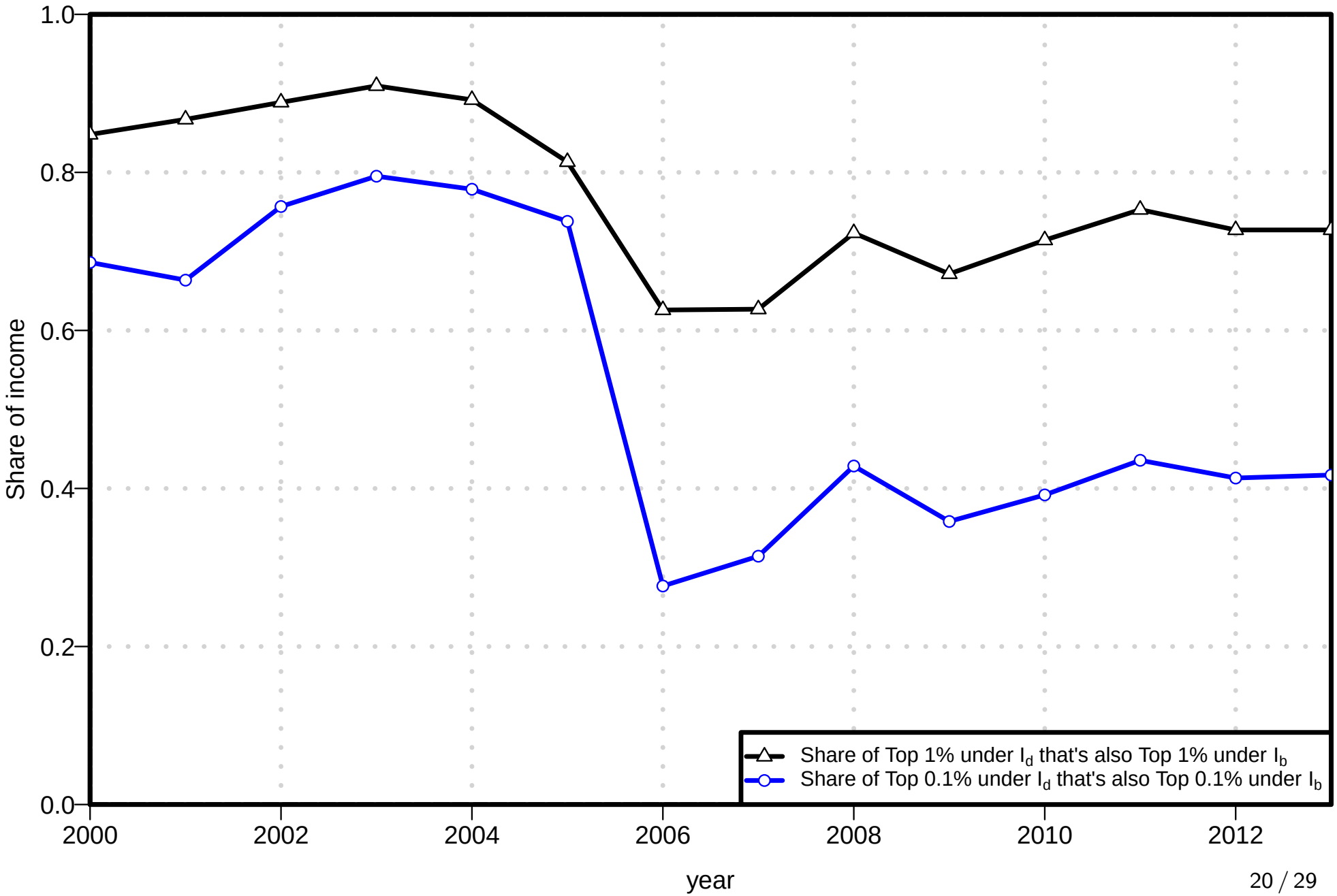
(In)stability of top groups

- Changes in observability of income may result in re-ranking of individuals
- Compare % of individuals who remain in the top group from year $t-1$ to t
- Are we at least getting the right people using the standard realization approach? Compare overlap between the groups

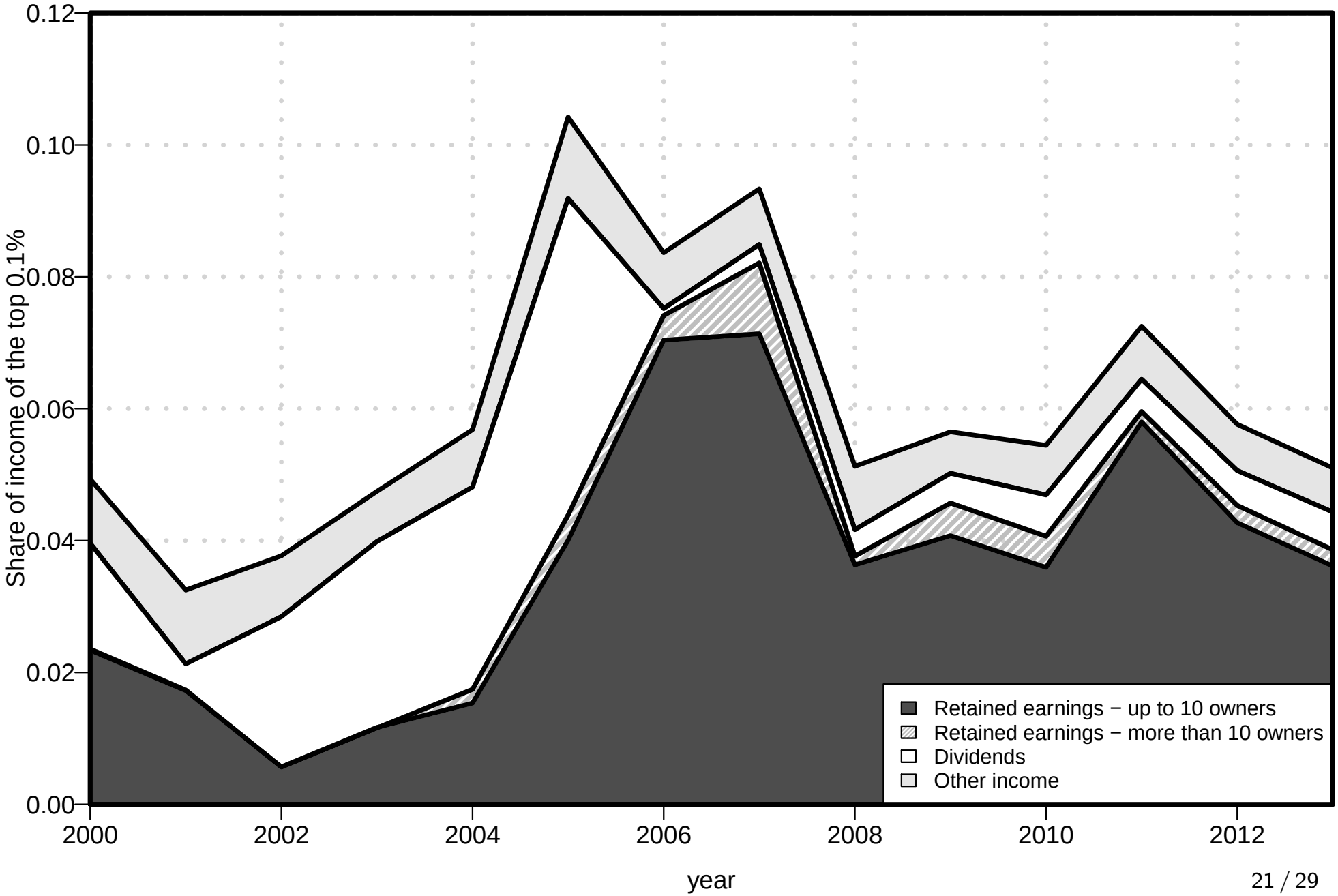
Mobility of top groups



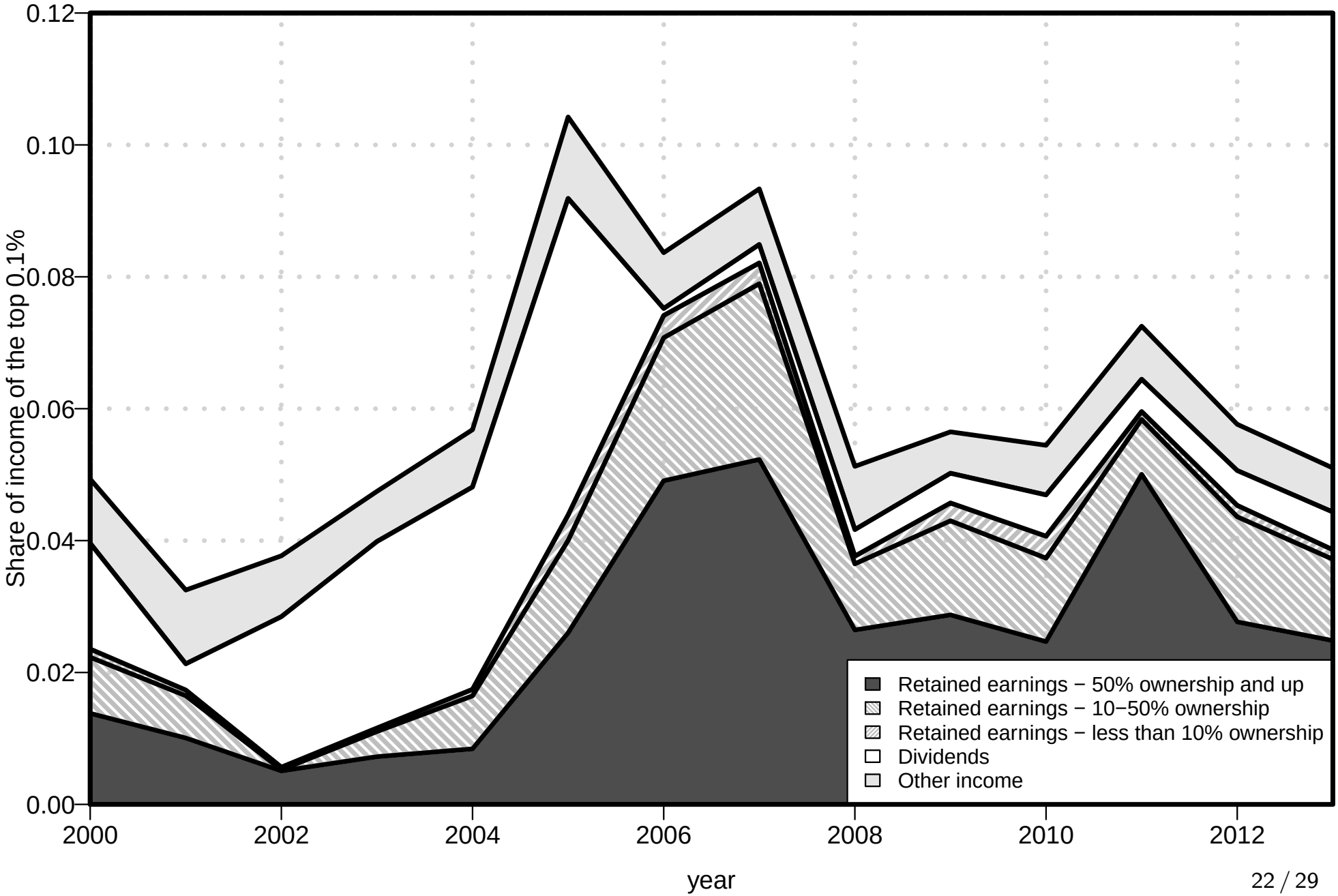
Membership in top groups under different definitions



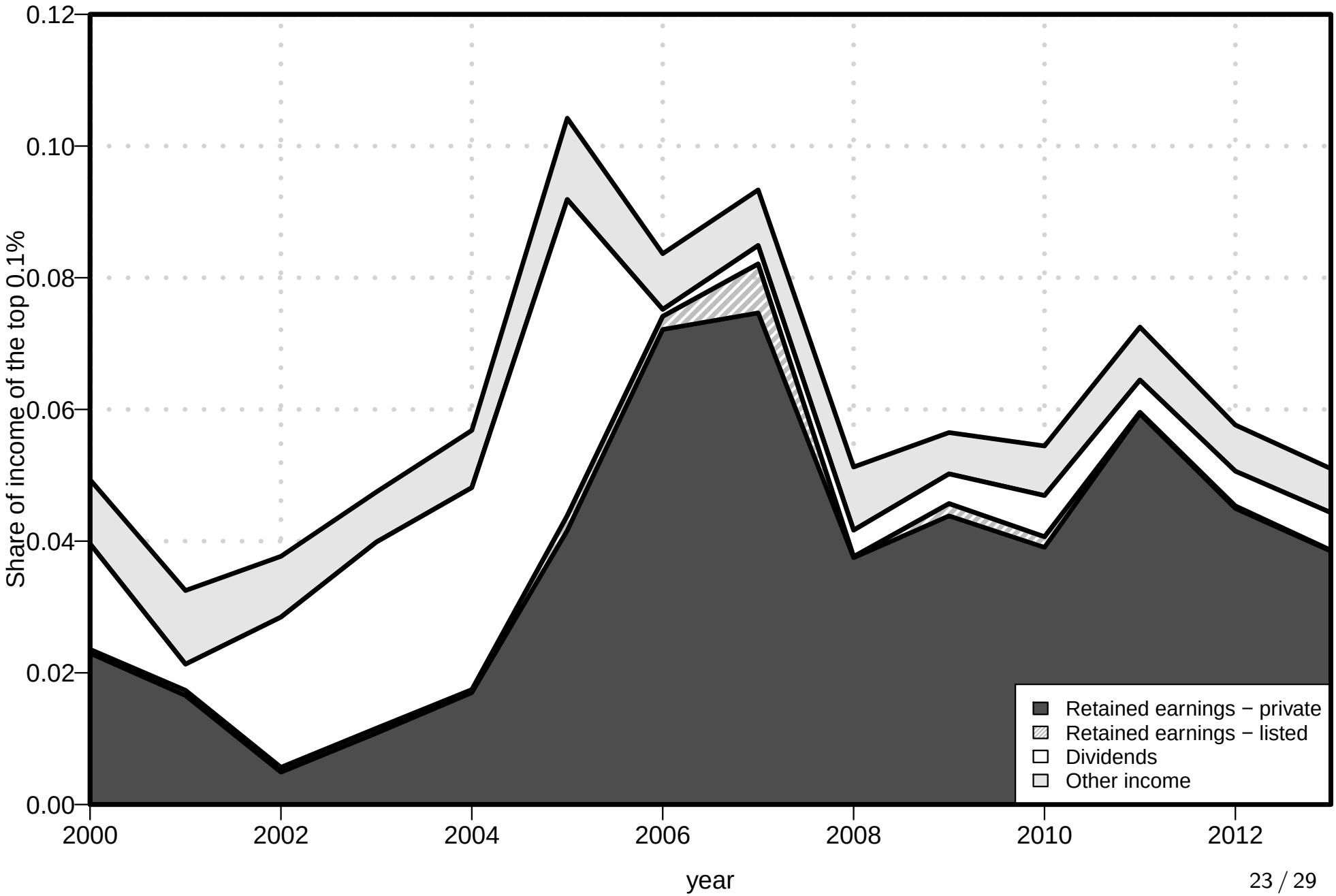
What drives the effect? # Shareholders



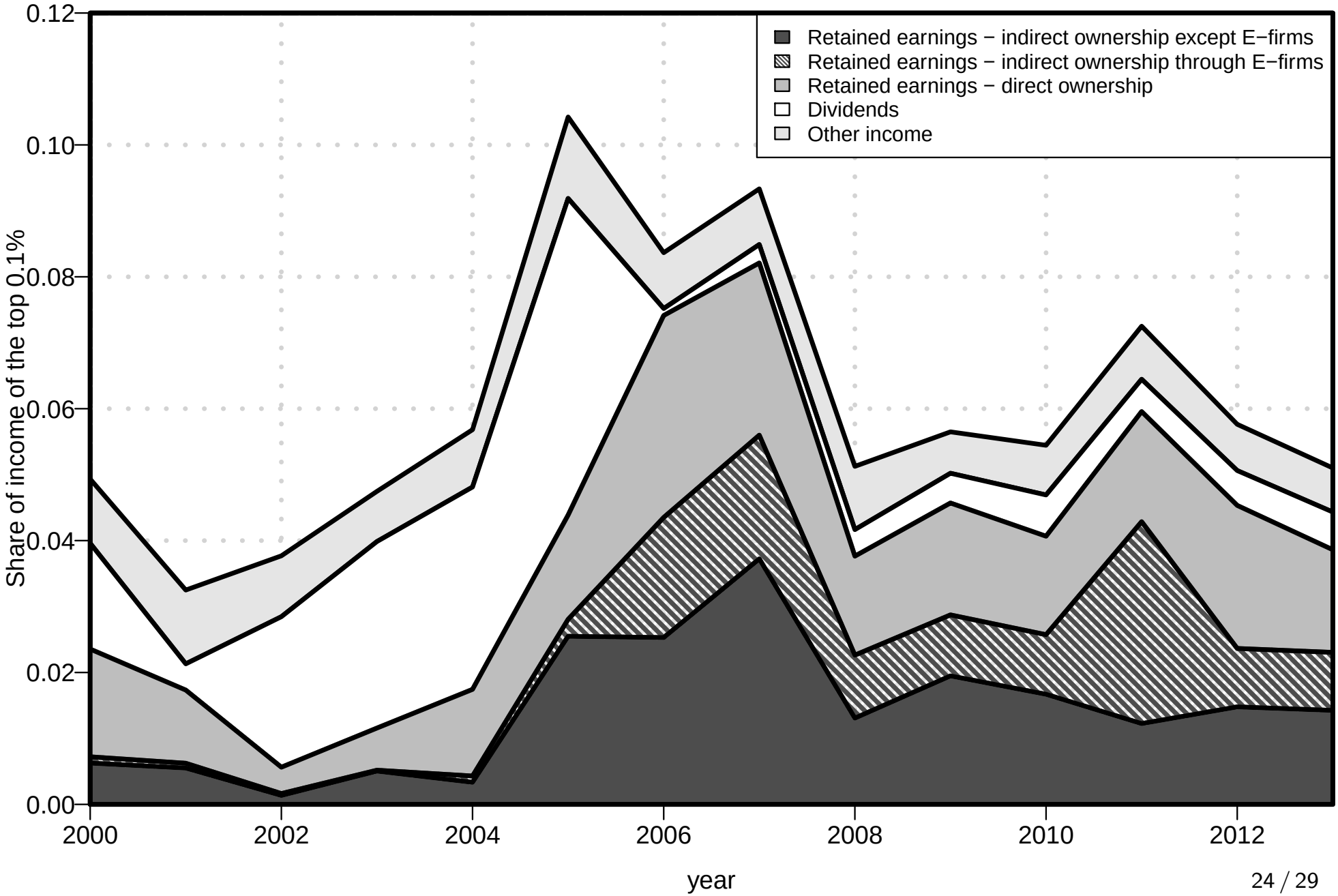
What drives the effect? Majority shareholders



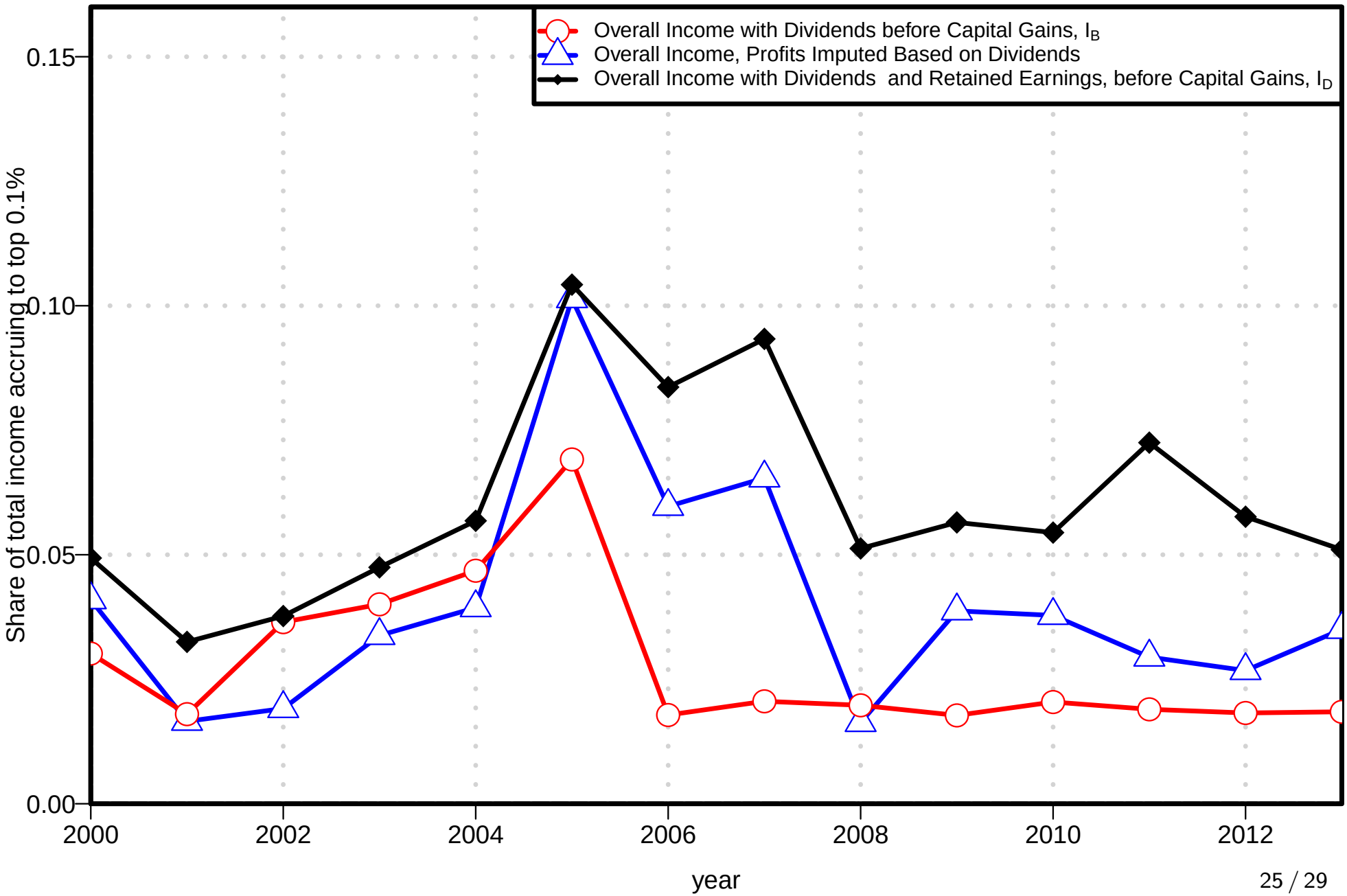
What drives the effect? Private firms



What drives the effect? Indirect ownership



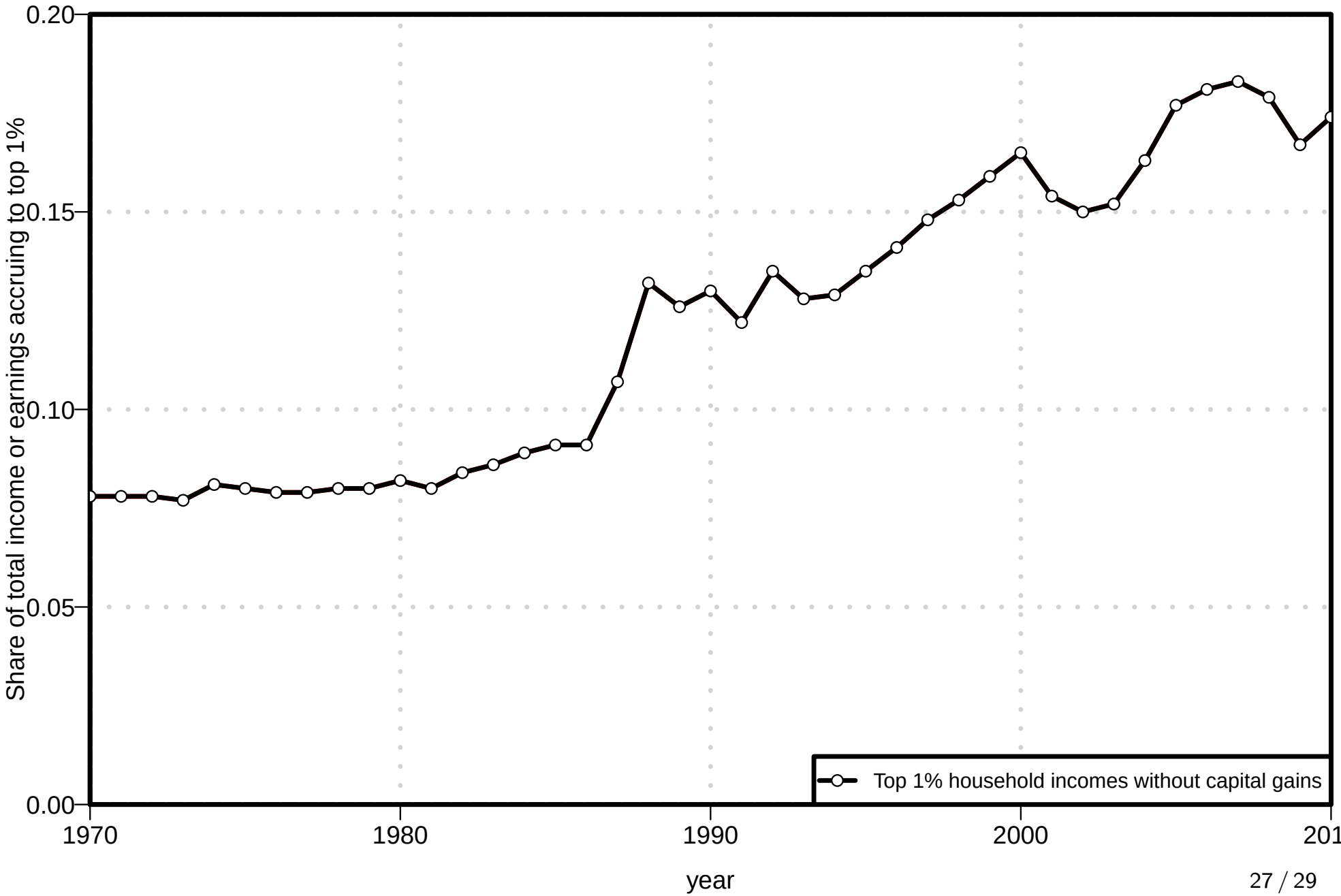
Imputation of retained earnings based on dividends



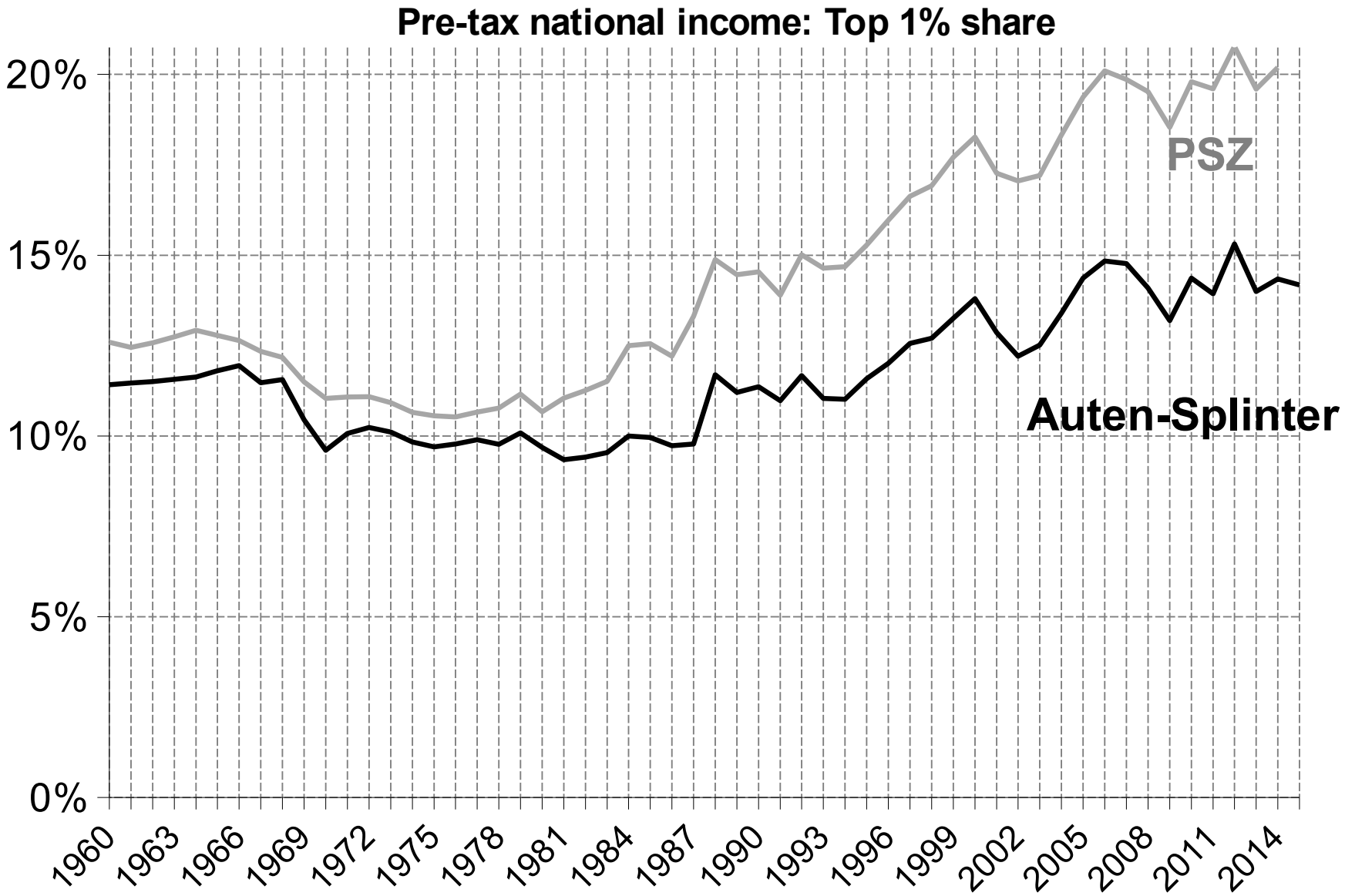
Conclusions/Implications

- How one accounts for business income makes a big difference in measurement of inequality when there are incentives to delay realization
- Allocating retained earnings stabilizes measures of inequality and mobility
- Importance of closely-held firms
- Non-comparability across tax regimes; also across countries
- How about the US? Work in progress.
  - incentives for realization vs pass-through changed after 1986
  - strong trend in the importance of S-corporations and then LLCs afterwards
  - wages are a large part of the increase in top shares after TRA'86
  - however, these are partially wages paid by S-corporations — an alternative way of realizing business income

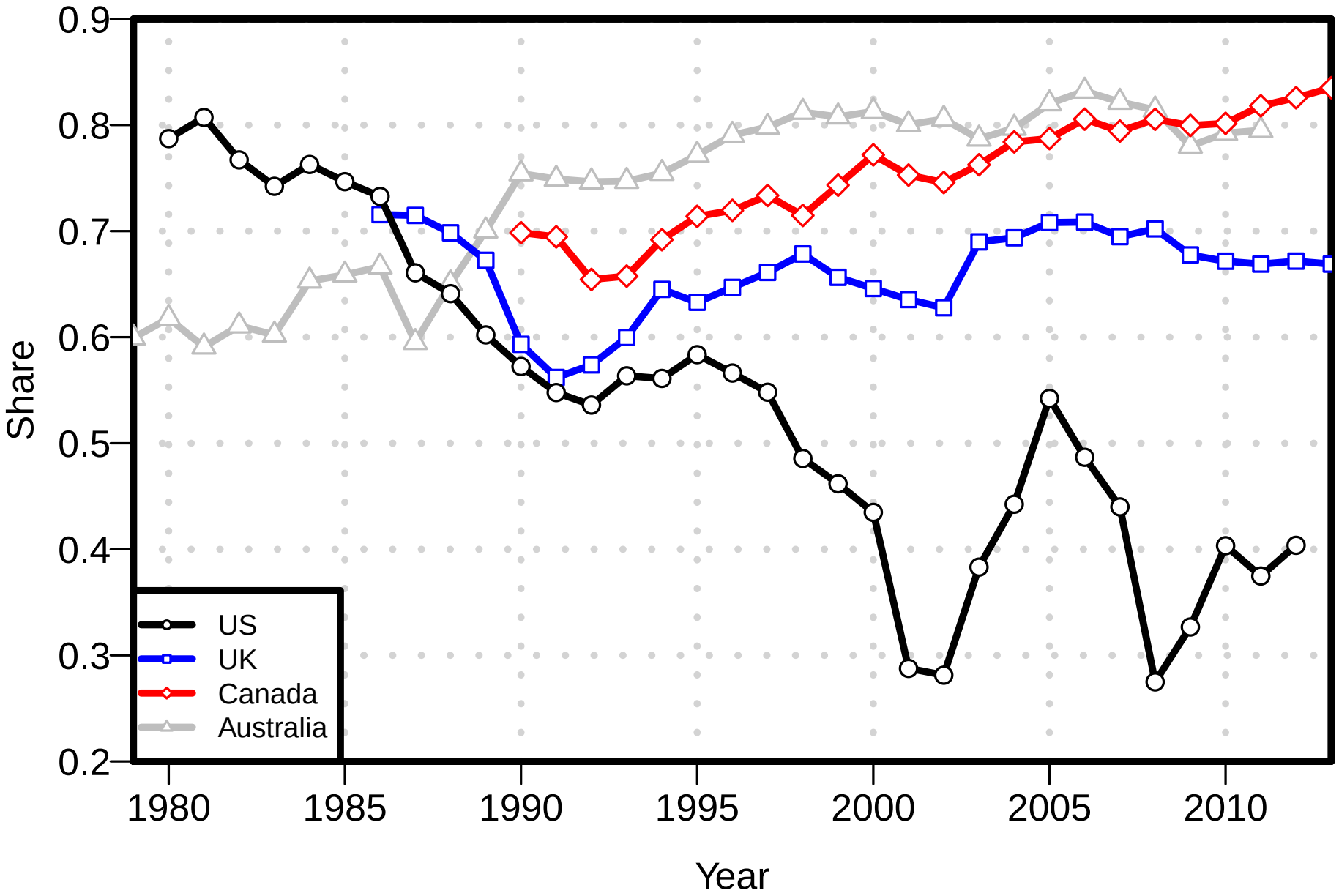
Top income shares in the US (Piketty and Saez, 2003)



Piketty, Saez, Zucman (2017), Auten and Splinter (2019)



Corporate vs pass-through — international differences



Source: Clarke and Kopczuk, 2017