Wealth Inequality: A Hybrid Approach toward Multidimensional Distributional National Accounts in Europe

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The particular importance of wealth inequality

- Wealth inequality – through generation of capital gains – can deepen income inequality, which is known to potentially disrupt social cohesion and may harm economic growth.
- High degrees of wealth inequality are associated with
  - high economic vulnerability
  - unequal political capital
  - limited social mobility (particularly due to inheritances)
  - limited equality of opportunity (particularly due to inheritances)

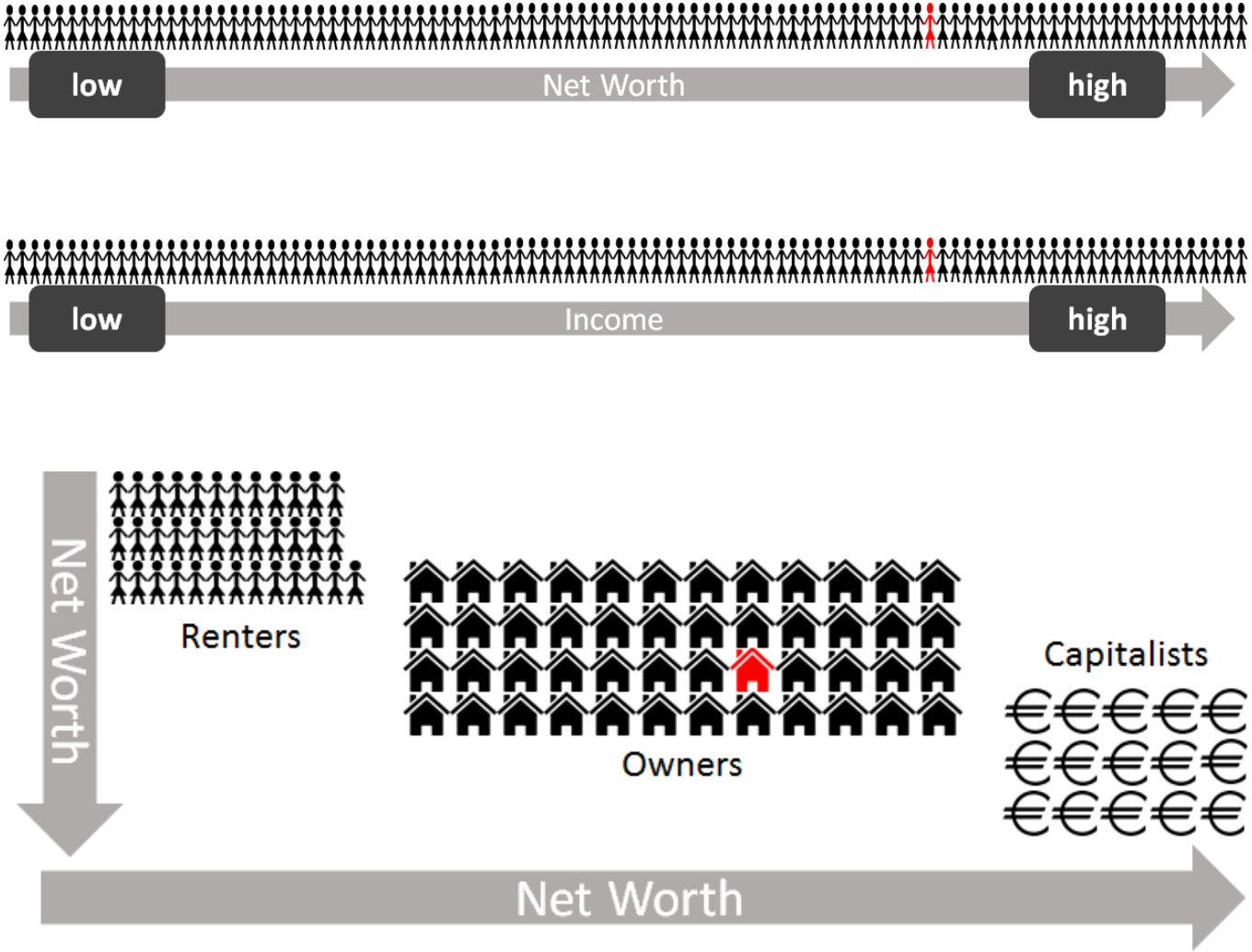
(2018 "OECD Conference on wealth inequalities: Measurement and policies")

Inequality and Macroeconomics

- Link distributional data to macroeconomic aggregates, i.e., the System of National Accounts (SNA)
- Distribution matters – more and more heterogeneity in macro-economic models
- Contribute to establishing internationally well-comparable *Distributional National Accounts* (DINA) and extend it to Multidimensional Distributional National Accounts (MDINA)
- Goal of the paper is not to understand mechanisms, but to provide the information and framework needed to do so $\rightarrow$ public good

- Use of the HFCS as main data source – harmonized questionnaires but country-specific sampling strategies
- Particularly, HFCS countries treat the very top of the wealth distribution quite differently
- Show how to ex post harmonize data by exploiting various external data sources available on very wealthy households
- Focus on Austria, Finland, France, Germany and Spain – countries applying diverse strategies to accurately measure the top of the wealth distribution
- Adjust HFCS data for the missing top – three methodological ways to do so
- Use adjusted data to create better comparable Multidimensional Distributional National Accounts (MDINA)

Isn't the average enough?



A household with average (mean) wealth holdings is not "as average as expected" due to skewness

Conceptual Framework: A Hybrid Approach

MDINA serve two *functions:*

1. linking macro-economic statistics to distributional data
2. providing comprehensive information on the distribution of wealth within a society

Pragmatic approach: Integration whenever possible, supplement accounts whenever needed. Jointly, they form MDINA.

Definition of wealth

Wealth is understood as "ownership of economic capital. It is viewed as a dimension of people's economic (or material) well-being, alongside income and consumption. There are other concepts of capital that are important to people's well-being and complement the concept of economic capital, such as human capital, social capital and collectively-held assets. However, while they may have considerable economic value to the people that possess (or have access to) them, they are not material assets and liabilities over which people can exercise ownership rights. They are, therefore, deemed to fall outside the scope [of the guidelines]." (OECD 2013, page 26)

Linking wealth components

Table 2: Assets and Liabilities part of Net Worth.

		HFCS		National Accounts	
		Code	Description	Code	Description
1	Liabilities	DL1000	Total outstanding balance of household's liabilities	F.4	Loans (Liabilities)
2	Deposits	DA21011	Value of sight accounts	F.22	Transferable deposits
		DA21012	Value of saving accounts	F.29	Other deposits
3	Bonds	DA2103	Market value of bonds	F.3	Debt securities
4	Investment Funds	DA2102	Market value of mutual funds	F.52	Investment fund shares or units
5	Listed Shares	DA2105	Value of publicly traded shares	F.511	Listed shares
6	Other Businesses	DA2104	Value of non self-employment private business		
		DA1140	Value of self-employment businesses		
7	Real Estate (business)	DA1121	Value of other real estate property used for business activities		
8	Real Estate (non-business)	DA1122	Value of other real estate property not for business activities		
9	Household's Main Residence	DA1110	Value of household's main residence		
10	Vehicles	DA1130	Value of household's vehicles		
11	Valuables	DA1131	Value of other valuables		
12	Other	DA2106	Value of additional assets in managed accounts		
		DA2107	Money owned to household		
		DA2108	Value of other assets		
		DA2109	Voluntary pension/whole life insurance		

Horizontal dimension: A Hybrid Approach

	Integrated Account			Supplement Account			Net worth
	Component 1	...	*Component n*	*Component n + 1*	...	*Component n + m*	
Group 1	$a^I_{1,1}$	...	$a^I_{1,i}$	$a^S_{1,n+1}$	...	$a^S_{1,n+m}$	$\sum_{j=1}^{n} a^I_{1,j} + \sum_{j=n+1}^{n+m} a^S_{1,j}$
$\vdots$	$\vdots$	...	$\vdots$	$\vdots$	...	$\vdots$	$\vdots$
Group g	$a^I_{g,1}$	...	$a^I_{g,n}$	$a^S_{g,n+1}$	...	$a^S_{g,n+m}$	$\sum_{j=1}^{n} a^I_{g,j} + \sum_{j=n+1}^{n+m} a^S_{g,j}$
Aggregate	$\sum_{i=1}^{g} a^I_{i,1}$	...	$\sum_{i=1}^{g} a^I_{i,n}$	$\sum_{i=1}^{g} a^S_{i,n+1}$	...	$\sum_{i=1}^{g} a^S_{i,n+m}$	$\sum_{i=1}^{g} \left(\sum_{j=1}^{n} a^I_{i,j} + \sum_{j=n}^{n+m} a^S_{i,j} \right)$

Integrated Account: Linkable components
Supplemental Account: Remaining wealth components

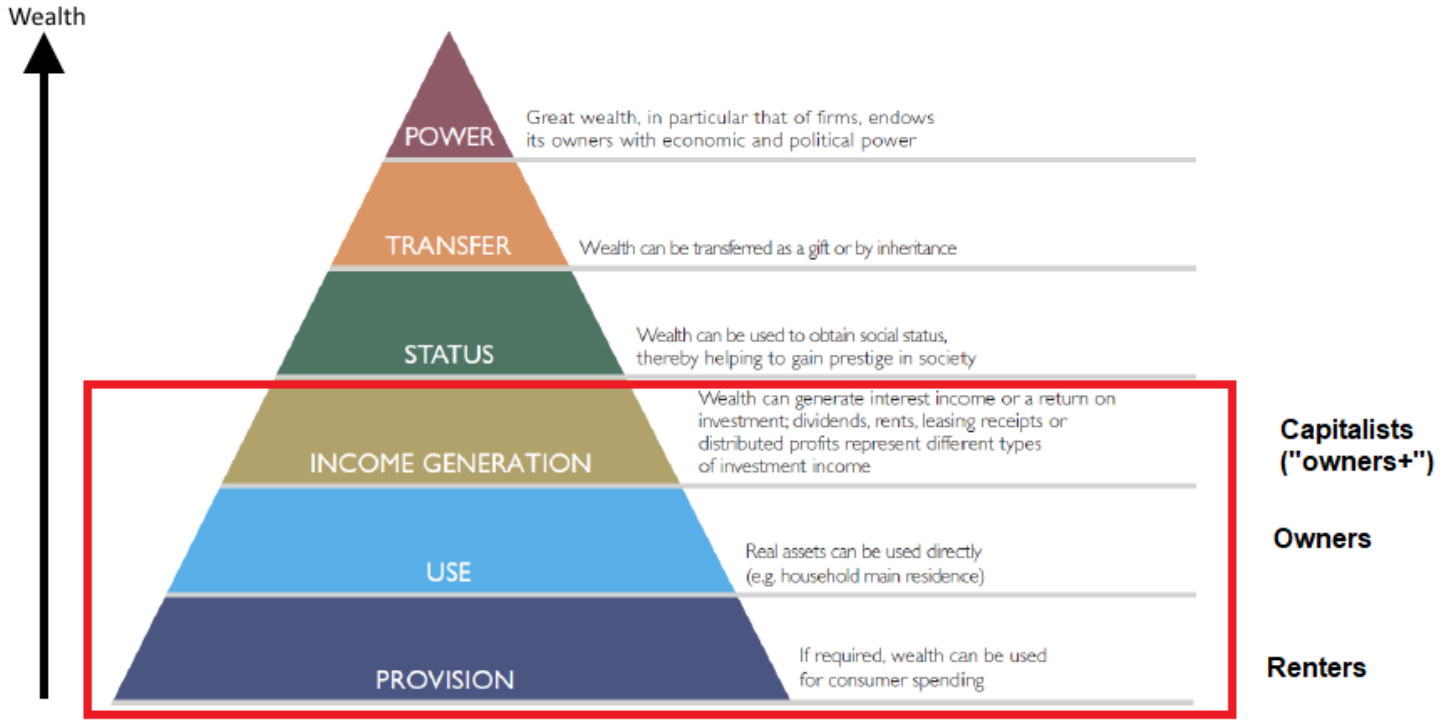
Integrated + Supplemental Account = Full wealth measures

What is in *vertically*?

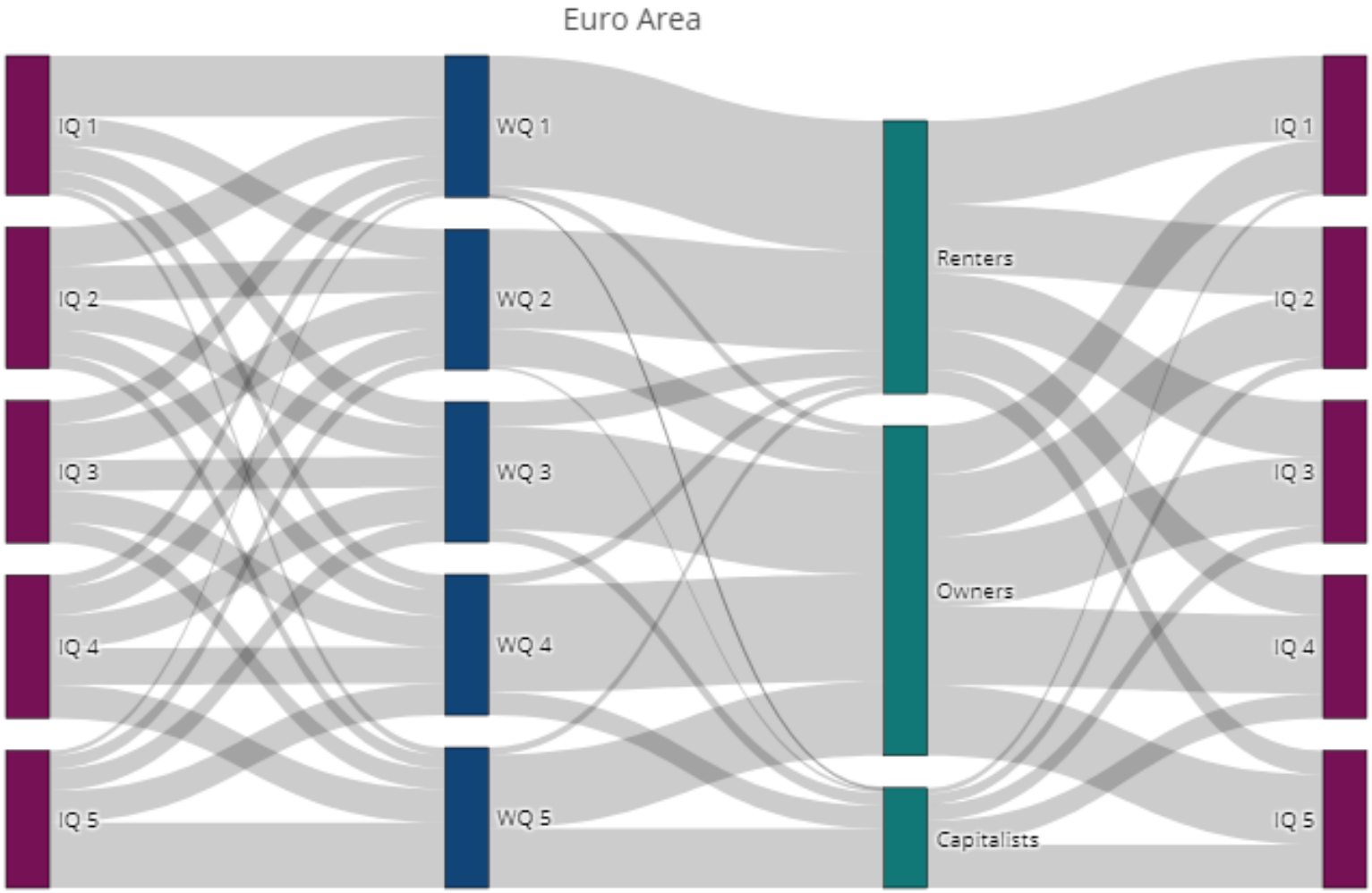
	Integrated Account			Supplement Account			Net worth
	Component 1	...	*Component n*	*Component n + 1*	...	*Component n + m*	
Group 1	$a^I_{1,1}$	...	$a^I_{1,i}$	$a^S_{1,n+1}$	...	$a^S_{1,n+m}$	$\sum_{j=1}^{n} a^I_{1,j} + \sum_{j=n+1}^{n+m} a^S_{1,j}$
⋮	⋮	...	⋮	⋮	...	⋮	⋮
Group g	$a^I_{g,1}$	...	$a^I_{g,n}$	$a^S_{g,n+1}$	...	$a^S_{g,n+m}$	$\sum_{j=1}^{n} a^I_{g,j} + \sum_{j=n+1}^{n+m} a^S_{g,j}$
Aggregate	$\sum_{i=1}^{g} a^I_{i,1}$	...	$\sum_{i=1}^{g} a^I_{i,n}$	$\sum_{i=1}^{g} a^S_{i,n+1}$	...	$\sum_{i=1}^{g} a^S_{i,n+m}$	$\sum_{i=1}^{g} \left(\sum_{j=1}^{n} a^I_{i,j} + \sum_{j=n}^{n+m} a^S_{i,j}\right)$

What is in *vertically*?

- Household net worth itself: quintiles
- Household gross income: quintiles
- Functions of wealth: renters, owners, capitalists



(Fessler & Schürz 2017)



$IQ5 \cap WQ5 \cap$ Capitalists : 4.5% of all households in the Euro Area

Two opinions on which micro data to use for DINA

- Administrative data only or survey data only
- Goal here: what works for as many countries as possible to create (sufficiently) harmonized MDINA?
- What is feasible for institutions for the production of official statistics?
- Focus on what is feasible with currently available data and at the same time try to identify the data needs for future improvements.

Administrative Data

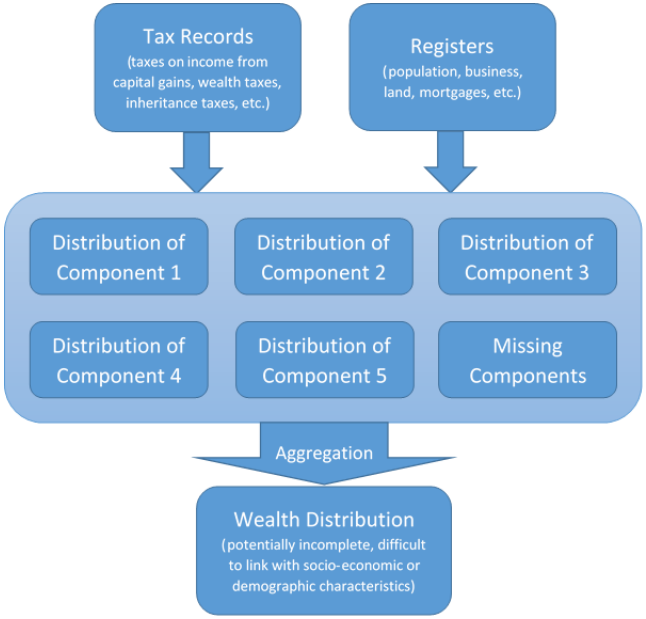
- Registers, tax data
- Major problems: indirect measurement, limited link with characteristics, harmonization across space-time?
- Works for some countries / some components of wealth

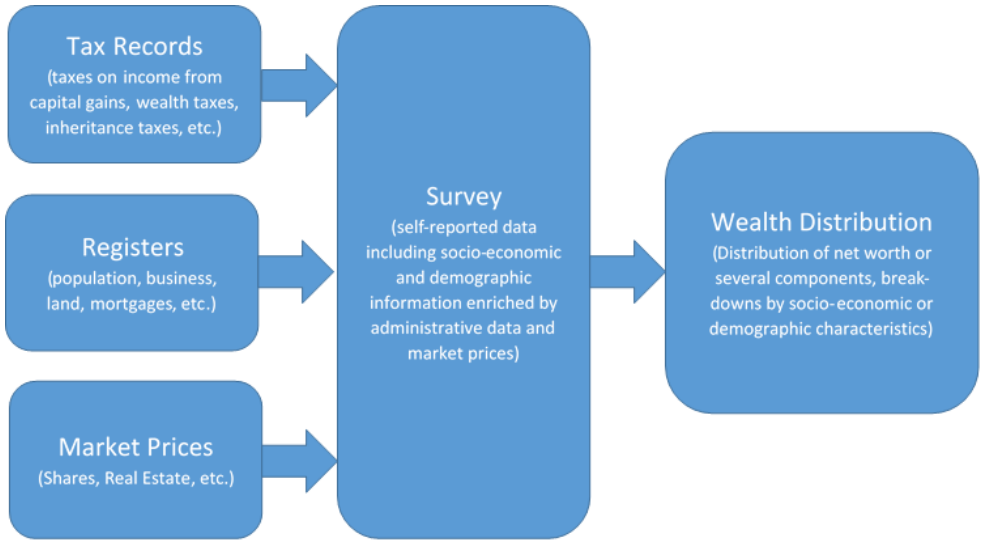
Survey Data

- Surveys based on and enriched with admin data
- Link to socio-demographic characteristics
- Harmonization across countries
- Probably the major source used by institutions in the future

Neither approach is perfect. Combination of the two preferable.
Both data sources lack the very top of the distribution.

A combination

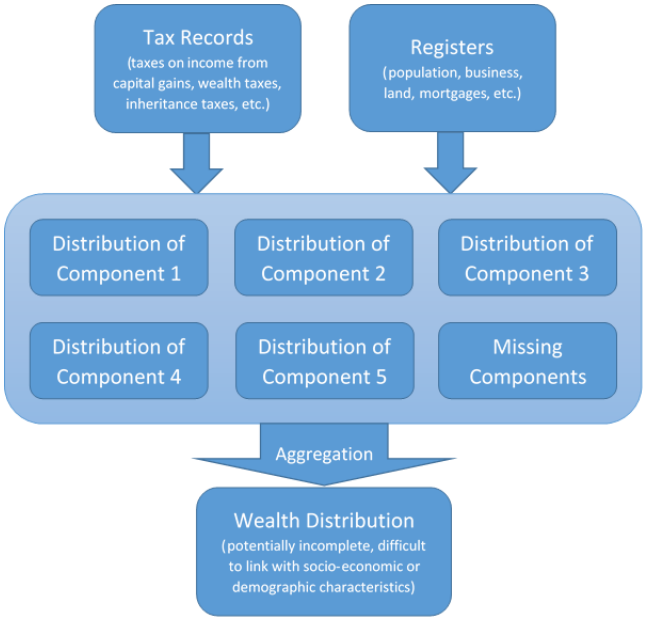


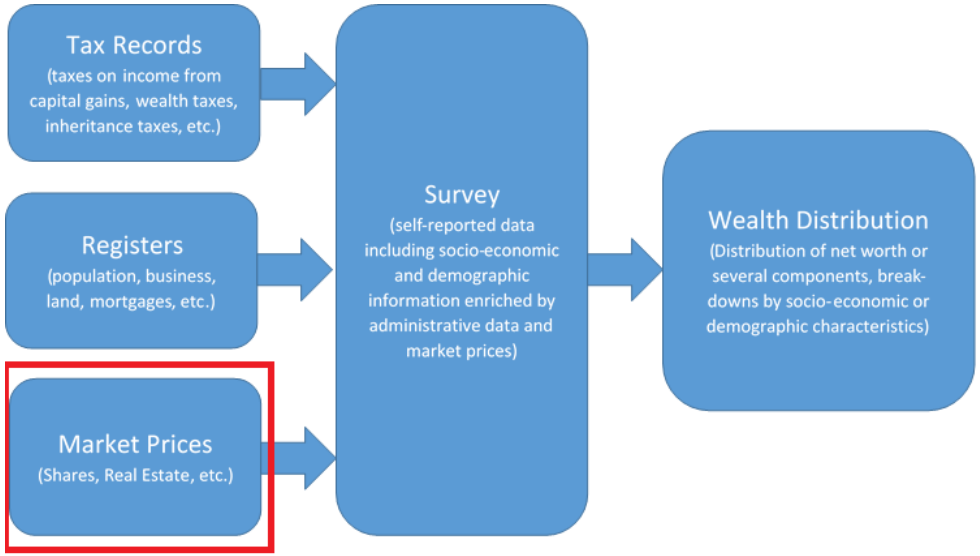


Admin data only

Survey enhanced by admin/market price data

Plus: Use any other piece of additional information existing to get the top tail right.





Note: For Luxembourg Naidin et al. (2021) currently work on incorporating observable market data for housing sales and rents into the HFCS for an objectified measure of housing wealth

The missing top in survey data

THE GAP: MAXIMUM NOMINAL WEALTH VERSUS MINIMUM AT FORBES (MILLION EURO)

	Maximum Wealth, SCF/WAS/HFCS	Minimum Wealth, Forbes
U.S.	806	737
France	153	810
U.K.	92	780
Spain	409	780
Finland	15	958
Germany	76	818
Belgium	8	1,920
Austria	22	1,560
Portugal	27	1,110
Italy	26	893
Netherlands	5	958

Source: Author's calculations based on Forbes World's Billionaires, the SCF, the WAS, and the HFCS.

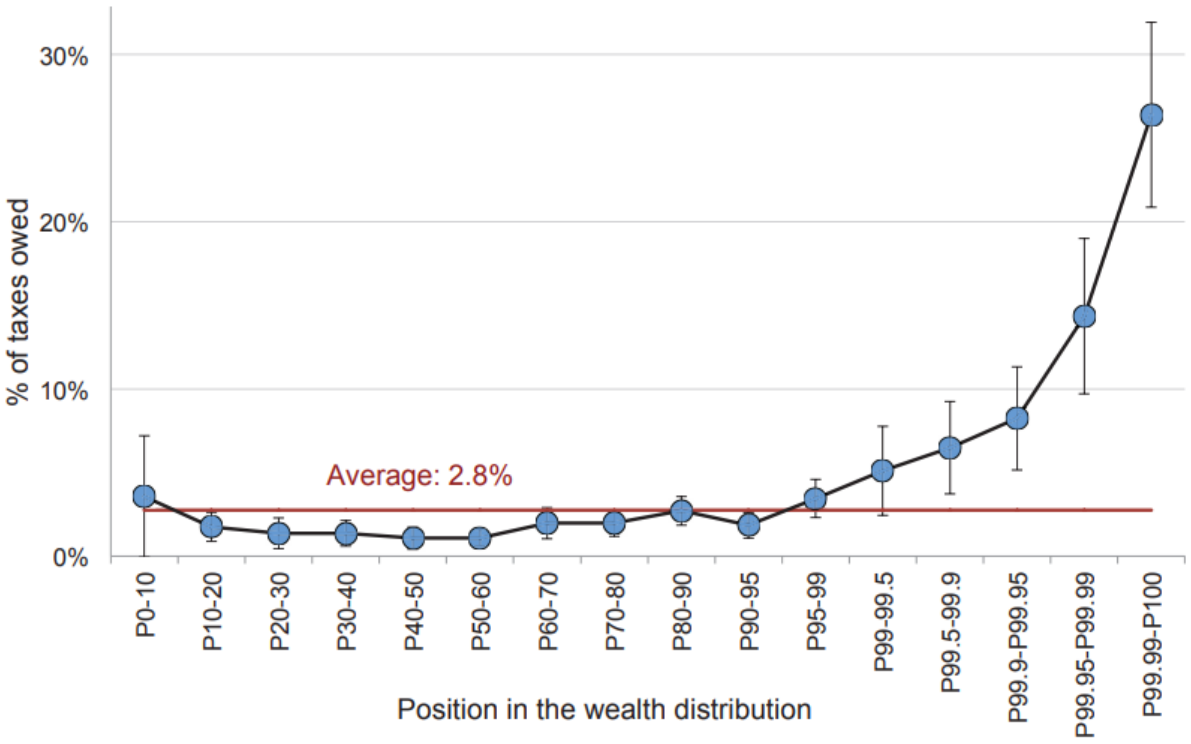
Note: The maximum is over all five replicates of the dataset (for the HFCS and the SCF).

See Vermeulen (2018).

→ Over-sampling (great but not a cure for all diseases)

The missing top in tax data

Figure 1: Taxes evaded as a % of taxes owed, by wealth group



See Alstadsæter, Johannesen & Zucman (2017).

Top Tail Adjustment

Strategy:

- Generally rely on surveys
- Replace top tail of wealth distribution by parametric model.
- Parametric models: Pareto or Generalized Pareto
- Pareto: regression approach by Vermeulen (2016, 2018) and extended by Waltl & Chakraborty (forthcoming) using top survey observations plus (adjusted) rich list observations (*Forbes* List of Billionaires or national rich lists).

Table 3: Rich Lists and Oversampling Strategies.

Country	HFCS field work (second wave)	Oversampling (second wave)	Year of rich list	Rich list compiler	No. of obs.
Austria	06/2014 – 02/2015	No	2014	Trend	100
Finland	01/2014 – 05/2014	Personal income data	2014	Arvopaperi	50
France	10/2014 – 02/2015	Personal wealth data	2014	Capital	100
Germany	04/2014 – 11/2014	Regional indicators, income	2014	Manager Magazin	500
Spain	10/2011 – 04/2012	Personal taxable wealth	2013	El Mundo	200

- Generalized Pareto: inspired by Blanchet, Fournier & Piketty (2017).
  Idea: Interpolate the entire distribution using Generalized Pareto Splines and extrapolate the top so that the quantile function and derivatives match at the last knot, and *an additional constraint* is fulfilled.
  The additional constraint: average wealth among the top, total wealth of the top, etc. – whatever external info is known
  Here: Top wealth share must match the top wealth share implied by (adjusted) tax data
  Major implicit assumption: the survey gets the distribution right for the bottom $100 - x\%$.
  Benefits: Less restrictive parametric assumption; results much less sensitive to choice of starting point of the tail

Table 4: Top wealth shares.

	France (2014)			**Spain** (2012)		
	HFCS data	Tax data	Tax & offshore data	HFCS data	Tax data	Tax & offshore data
Top 0.1%	7.55	8.20	10.84	6.38	7.07	8.72
Top 1%	18.64	23.38	26.01[a]	16.09	21.19	22.84[a]
Top 3%	29.59	35.49	38.13[a]	25.85	32.06[c]	33.71[a]
Top 1% to 0.1%	11.09	15.17		9.71	14.12	
Top 3% to 0.1%	22.04	27.29		19.46	24.99[b]	

Notes: The table reports top wealth shares in %.
[a] These numbers are imputed under the assumption that the bottom 99.9% do not possess any offshore wealth.
[b] The share of the top 3% to top 0.1% is not reported in Martínez-Toledano (2017), so it is interpolated from the share of the top 1% to 0.1% and the top 5% to top 0.1%. The exact value will become available after a revision of the article and results will subsequently be updated.
[c] The share uses the interpolated share of the top 3% to top 0.1%.
Sources: HFCS (2nd wave), Top shares excl. offshore wealth: WID.world database, Garbinti et al. (2016), Martínez-Toledano (2017). Top 0.1% shares adjusted for offshore wealth: Alstadsæter et al. (2018).

I can use rich lists, tax, and tax & offshore wealth for Spain and France.

For Austria, Germany and Finland, I use only rich lists and the Vermeulen approach.

This setting enables a comparison of approaches and validation of the survey data.

So, I adjust the wealth distribution...

... but how is this extra wealth distributed across components of wealth (incl. debts) AND across vertical groups other than wealth?

Crucial assumption: portfolio structures as well as the income (or other vertical groups) structure of wealthy households is captured by the survey
E.g., we know how much a wealthy household typically holds in housing wealth, business wealth, etc. AND: we know how many wealthy households are in each income quintile

This assumption is too much to hope for: hence, relax it a bit and split the tail into four quartiles and only assume that *within* the quartiles this assumption is more or less valid

Also here: we should believe that for countries better capturing the top, these assumptions are less problematic – another reason why investing in sophisticated over-sampling is a good idea

Under this assumption, the next steps are:

- Adjusted wealth at the top is broken down to identify contributions from each component of wealth
- Assume that portfolio structures are representative at the top (per quartile)
- Redistribute total wealth to contributions by each *vertical group* (e.g., how much of total wealth in the top quartile of the tail belongs to renters, how much to owners and how much to capitalists)
- Proportionally scale components that are part of the integrated account to match totals in the National Accounts – other components remain unchanged

		Austria		Finland		France		Germany		Spain	
		Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
1	Liabilities	66.60	67.18	113.97	116.04	961.57	1,011.85	1,020.92	1,063.36	607.55	628.72
2	Deposits	98.75	107.42	51.21	53.02	556.64	600.11	1,007.80	1,062.18	330.60	349.21
3	Bonds	5.27	5.45	1.24	1.87	17.83	28.27	71.92	79.87	14.01	18.50
4	Investment Funds	17.07	27.32	13.79	17.22	65.31	80.02	206.86	253.08	45.72	53.61
5	Listed Shares	5.13	5.87	26.09	29.98	141.19	207.37	146.80	203.11	74.06	85.06
6	Other Businesses	189.61	439.06	34.01	46.61	1,033.54	1,351.47	1,179.28	1,672.31	553.83	650.06
7	Real Estate (business)	20.58	15.43	13.69	14.11	44.95	49.65	169.28	185.87	93.61	107.08
8	Real Estate (non-business)	99.84	153.71	116.98	125.97	1,220.34	1,397.52	1,503.12	1,799.55	1,097.95	1,303.46
9	Household's Main Residence	531.39	632.77	332.79	337.86	3,661.84	3,794.60	4,071.01	4,687.75	2,674.60	2,772.76
10	Vehicles	32.14	37.61	25.99	26.74	222.16	234.73	283.14	289.59	128.77	131.37
11	Valuables	11.87	12.90	–	–	387.97	409.53	112.46	129.57	44.92	53.47
12	Other	42.05	38.76	6.48	6.64	289.71	399.29	409.97	515.48	210.36	299.59
	Total	1,120.29	1,543.49	736.23	776.08	8,603.04	9,564.40	10,182.54	11,941.73	5,875.97	6,452.89
	Change		+37.78%		+5.41%		+11.18%		+17.28%		+9.82%

Magnitude of adjustment negatively correlates with the quality of the survey data in terms of oversampling – measured differences in wealth inequality are thus not just only differences in realities but confounded by survey methodology differences

THIS result –

> *Magnitude of adjustment negatively correlates with the quality of the survey data in terms of oversampling – measured differences in wealth inequality are thus not just only differences in realities but confounded by survey methodology differences*

calls for oversampling wealthy households – even if there are no perfect admin data to base oversampling on, improvements are possible which lead to much more precisely measured measured wealth inequality.

Alternatives to admin data: The German Socio-Economic Panel (SOEP) now uses a novel sample frame targeted to very wealthy households by collecting names from the publicly available shareholding structures of companies (see Schröder et al. 2020)

		France			Spain		
		Top shares		Rich list	Top shares		Rich list
		tax data	tax & offshore		tax data	tax & offshore	
1	Liabilities	3.70	4.82	5.23	3.33	4.17	3.49
2	Deposits	6.11	7.16	7.81	5.40	7.14	5.63
3	Bonds	47.72	73.02	58.58	35.78	39.02	32.06
4	Investment Funds	16.72	26.47	22.52	15.61	21.70	17.25
5	Listed Shares	36.66	49.41	46.87	17.63	24.12	14.86
6	Other Businesses	21.70	36.19	30.76	17.51	26.44	17.38
7	Real Estate (business)	6.43	3.91	10.46	1.77	3.14	14.40
8	Real Estate (non-business)	9.96	14.40	14.52	12.35	14.41	18.72
9	Household's Main Residence	2.30	3.17	3.63	3.41	4.27	3.67
10	Vehicles	4.05	5.78	5.66	0.88	1.20	2.02
11	Valuables	3.24	6.56	5.56	20.31	26.46	19.02
12	Other	30.15	42.51	37.83	36.53	45.62	42.42
	Total	7.94	11.80	11.18	8.10	10.44	9.82
Implied top wealth shares in %:							
	Top 10%	50.1	52.1	51.7	46.1	47.3	47.0
	Top 5%	38.9	41.3	40.8	35.7	37.2	36.8

Tax + offshore adjustments are similar to rich list adjustments – thus we can expect for other countries that using rich lists is not too bad an idea

How do full results look like?

Austria (Wealth Groups), $n = 3,862,526$ households

							Housing Wealth						
					Business Wealth								
	Liabilities	Deposits	Bonds	Inv. Funds	Listed Shares	Other Businesses	Real estate (business)	Real estate (non-business)	HMR	Vehicles	Valuables	Other	Net Worth
I	-12.33	3.20	0.04	0.04	0.03	0.12	0.00	0.21	0.46	0.84	0.09	0.17	-7.13
II	-6.53	17.70	0.25	0.33	0.12	0.07	0.00	0.10	1.59	4.01	0.46	0.46	18.55
III	-44.01	39.53	3.85	2.52	2.07	1.40	0.03	5.90	48.98	6.42	0.92	0.88	68.49
IV	-49.87	45.56	3.29	5.03	2.45	4.28	0.42	14.08	159.55	8.52	1.35	1.77	196.43
V	-55.52	109.91	33.44	40.10	14.28	433.20	14.98	133.41	422.19	17.83	10.08	35.48	1209.38
Σ	-168.27	215.89	40.87	48.02	18.95	439.06	15.43	153.71	632.77	37.61	12.90	38.76	1485.70
$A(V)/A(I)$	4.50	34.40	933.25	900.76	544.07	3498.01	–	621.48	911.20	21.31	110.50	211.65	–
$A(V)/A(I \cup II)$	5.89	10.52	230.47	211.52	193.09	4529.20	–	861.50	412.09	7.36	36.67	113.26	211.89
$\lvert A(V) - A(I)\rvert$	2236	5526	1730	2074	738	22424	776	6897	21837	880	517	1829	62990
$\lvert A(V) - A(I \cup II)\rvert$	921	3528	1702	2037	724	22411	776	6876	21648	422	465	1772	61439
Top 10%	19.6	35.3	49.6	76.8	56.8	97.1	94.1	77.2	47.2	35.5	72.9	87.7	65.1
Top 5%	12.7	22.5	37.0	61.6	41.6	94.8	91.5	66.1	35.9	26.8	51.7	84.6	56.9
$T_{between}$	0.21	0.36	0.98	1.03	0.85	1.53	–	1.13	0.77	0.29	0.84	1.23	–

How do full results look like?

Germany (Income Groups), $n = 39,672,000$ households

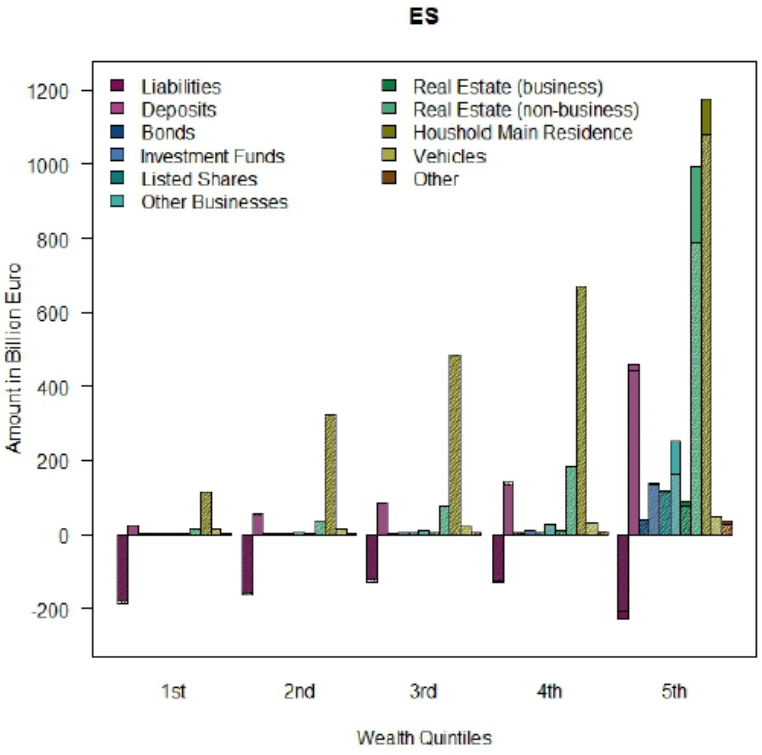
					Business Wealth		*Housing Wealth*						
	Liabilities	Deposits	Bonds	Inv. Funds	Listed Shares	Other Businesses	Real estate (business)	Real estate (non-business)	HMR	Vehicles	Valuables	Other	Net Worth
I	-38.41	129.65	4.83	35.03	4.63	8.79	0.00	48.22	228.32	12.40	5.56	11.15	450.17
II	-111.86	228.24	20.66	23.91	13.52	61.73	3.77	112.84	447.92	28.07	21.79	10.71	861.29
III	-180.23	283.94	21.66	30.42	11.31	60.85	3.18	174.77	595.74	55.30	24.25	37.41	1118.59
IV	-395.56	364.77	15.09	57.77	20.50	115.53	33.02	256.29	893.88	71.16	13.61	113.40	1559.47
V	-837.51	832.60	107.78	283.11	180.30	1425.41	145.91	1207.44	2521.43	122.65	64.36	342.82	6396.28
Σ	-1563.57	1839.20	170.02	430.23	230.26	1672.31	185.87	1799.55	4687.28	289.59	129.57	515.48	10385.80
$A(V)/A(I)$	21.80	6.42	22.32	8.08	38.98	162.07	–	25.04	11.04	9.89	11.57	30.74	14.21
$A(V)/A(I \cup II)$	11.15	4.65	8.46	9.61	19.87	40.42	77.46	14.99	7.46	6.06	4.71	31.37	9.75
$\lvert A(V) - A(I)\rvert$	100712	88596	12975	31266	22140	178541	18390	146100	289009	13895	7410	41801	749409
$\lvert A(V) - A(I \cup II)\rvert$	96084	82383	11978	31967	21580	175205	18152	142028	275170	12907	6388	41829	723502
$T_{between}$	0.40	0.20	0.49	0.51	0.81	1.02	–	0.57	0.33	0.22	0.28	0.65	0.44

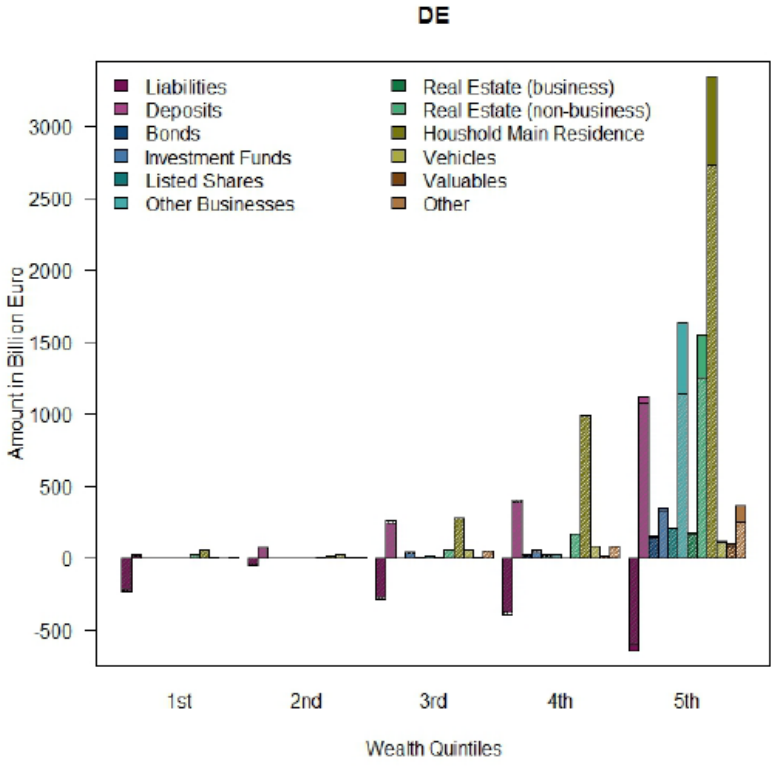
How do full results look like?

France (Functions of Wealth), $n = 29,017,678$ households

							Housing Wealth						
					Business Wealth								
	Liabilities	Deposits	Bonds	Inv. Funds	Listed Shares	Other Businesses	Real estate (business)	Real estate (non-business)	HMR	Vehicles	Valuables	Other	Net Worth
R	-110.62	254.13	5.00	20.52	14.62	136.77	2.99	212.96	0.00	47.76	75.44	37.19	696.76
	-9238	*21224*	*417*	*1714*	*1221*	*11423*	*250*	*17786*	*0*	*3988*	*6300*	*3106*	*58191*
O	-608.56	553.39	24.42	89.13	46.49	27.34	2.95	334.96	2576.35	118.54	197.95	101.36	3464.32
	-47484	*43179*	*1906*	*6954*	*3627*	*2133*	*230*	*26136*	*201024*	*9249*	*15446*	*7908*	*270310*
C	-423.83	373.64	53.63	157.81	95.01	1187.36	43.71	849.59	1218.24	68.44	136.14	260.74	4020.48
	-100247	*88375*	*12684*	*37326*	*22472*	*280838*	*10339*	*200949*	*288144*	*16187*	*32200*	*61672*	*950939*
Σ	-1143.01	1181.16	83.05	267.46	156.11	1351.47	49.65	1397.52	3794.60	234.73	409.53	399.29	8181.56
	-39390	*40705*	*2862*	*9217*	*5380*	*46574*	*1711*	*48161*	*130768*	*8089*	*14113*	*13760*	*281951*
$T_{between}$	0.31	0.13	0.73	0.60	0.61	1.37	1.35	0.57	–	0.13	0.17	0.70	0.45

Renters (R): 41.26%, Owners (O): 44.17%, Capitalists (C): 14.57%


ES
Liabilities
Deposits
Bonds
Investment Funds
Listed Shares
Other Businesses
Real Estate (business)
Real Estate (non-business)
Houshold Main Residence
Vehicles
Other
Amount in Billion Euro
1200
1000
800
600
400
200
0
-200
1st
2nd
3rd
4th
5th
Wealth Quintiles


DE
Liabilities
Deposits
Bonds
Investment Funds
Listed Shares
Other Businesses
Real Estate (business)
Real Estate (non-business)
Houshold Main Residence
Vehicles
Valuables
Other
Amount in Billion Euro
3000
2500
2000
1500
1000
500
0
-500
1st
2nd
3rd
4th
5th
Wealth Quintiles

Some Highlights

- Wealth is heavily concentrated at the top: Largest concentration in AT and DE ($\approx$ 80% of total wealth held by top 20%)
- Average wealth in the top quintile is roughly 200 times higher than among the bottom 40% in AT (70 in FI, 50 in FR, 25 in ES)
- Wealth concentration is lower when measured against the income distribution (i.e., no perfect correlation between wealth and income)
- Top 20% in terms of income own between 48% and 62% of total wealth

- Between 9% (AT) and 16% (ES) of all households are capitalists.
- The small group of capitalists collectively hold more wealth than the large groups of renters or owners (except as in FI)
- Up to 10% of households are income-poor, wealth-poor and renters.
- 4.5% are income-rich, wealth-rich and capitalists.
- Business wealth is heavily concentrated at the top: more than 90% of all business wealth is held by the wealthiest 20%
- Housing wealth much less unequally distributed, but large differences across countries (narrative in German-speaking Europe that all types of people rent, does not hold)
- Per definition, owners and capitalists own their homes. But the value of the homes of capitalists is substantially larger
- Capitalist households outperform other types of households *in every single asset category*

Summary and Next Steps

- Although surveys have (many) problems, they're probably still the best starting point for (wealth-centered) MDINA – particularly when enriched with objective data wherever possible
- Keeping in mind the double function of MDINA (distributional breakdown AND complete wealth measures) is important to avoid confused users and misinterpretation of the data – thus: hybrid approach
- Searching for the missing wealth is not only interesting but essential as results fundamentally change when ignoring them
- Differences found across countries may very often be driven by differences in the survey – hence a top tail adjustment is essential to improve comparability

Summary and Next Steps

- The magnitude of top adjustments correlates with the quality of the survey – the better the survey captures the wealthy, the less adjustments are needed
- Moving from rich lists to something else – rich lists may just be the last resort when nothing else exists
- But some external information is always needed, and comparisons relying on tax data is reassuring
- Connecting wealth and income via surveys is promising. Having net and disposable income in the HFCS would be really important. (EURMOD simulated income is a second-best alternative.)
- Missing top is just one of many problems, but important enough not to be ignored

Final published article

Waltl (2021). Wealth inequality: A hybrid approach toward multidimensional distributional national accounts in Europe, Review of Income and Wealth, https://doi.org/10.1111/roiw.12519.

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