

What Do Large Datasets Reveal about Household Financial Decisions?

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Make an impact



HOUSEHOLD FINANCE

- Households are increasingly responsible for their finances.
- Do households use financial markets efficiently?
- How heterogeneous are their investment strategies?
- How do household financial decisions correlate with household characteristics?
- What are the implications for the asset management industry?



OUTLINE

1. The Measurement Challenge
2. Financial Wealth
3. Total Wealth



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1. THE MEASUREMENT CHALLENGE

Traditional data sets

- **Surveys** (US Survey of Consumer Finances)
Not detailed enough, low response rate, answers often implausible.
- **Account providers** (brokerage house, 401(k))
Detailed but multiple accounts, non-representative sample.
- **Tax records**
Capital income or information on assets at death (estate tax return).



THE SWEDISH DATASET

Administrative data on the wealth, demographics and income of every Swedish resident.

Demographics Age, gender, marital status, education, birthplace, residence.

Assets at security level Bank account balances and debt
Holdings at year-end of financial assets (stocks, mutual funds, bonds, derivatives, etc.) identified by the ISIN code.
Real estate properties
Private business holdings
Pension assets (defined contribution and defined benefits)

Income flows Labor income, welfare payments, capital income by asset, private pension savings

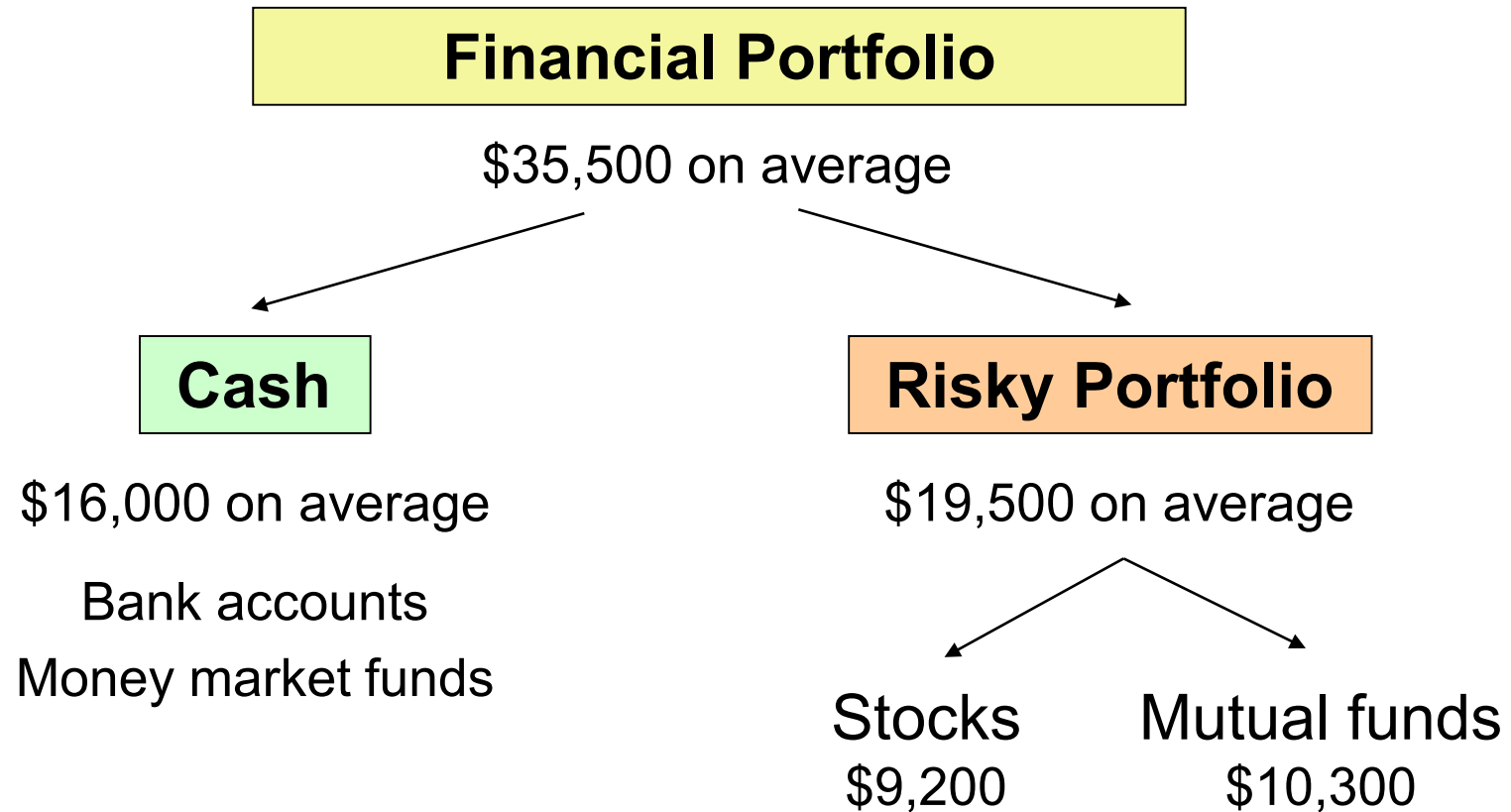


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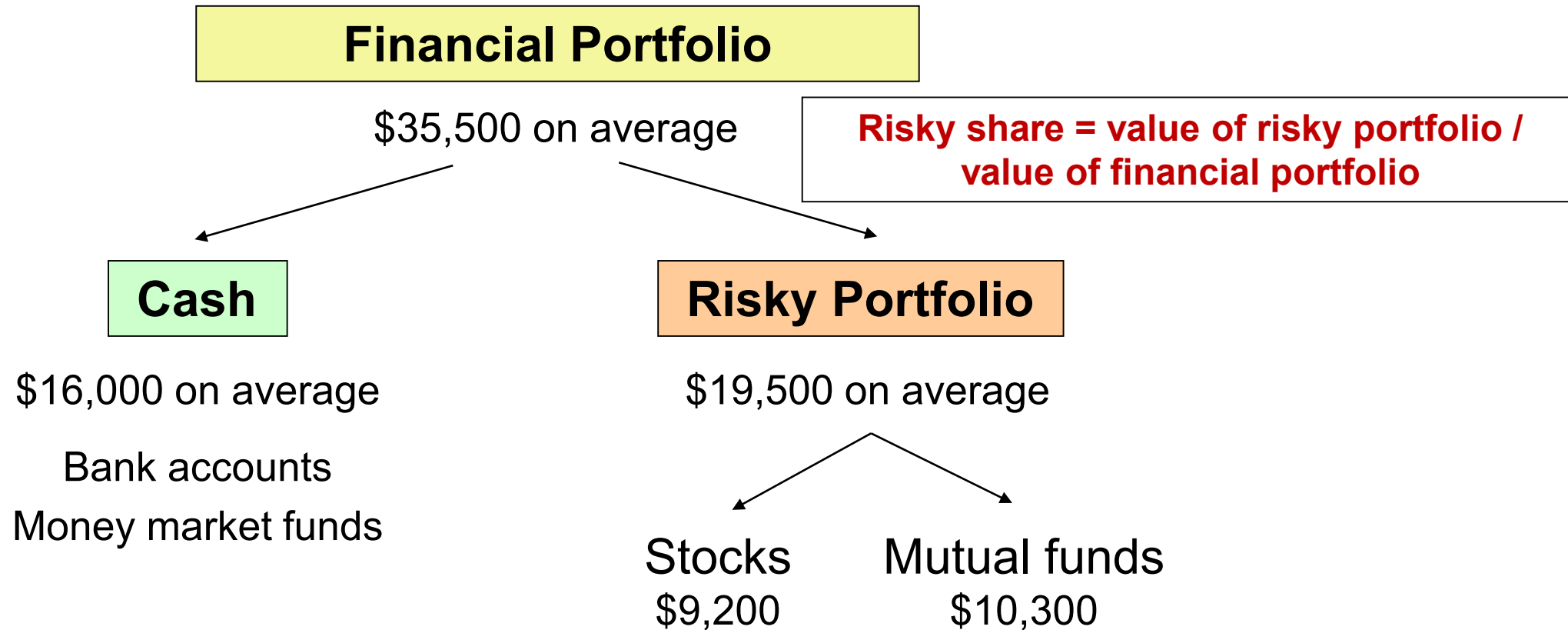
FINANCIAL WEALTH

62% of Swedish households hold risky assets over the period.



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How diversified is household financial wealth?

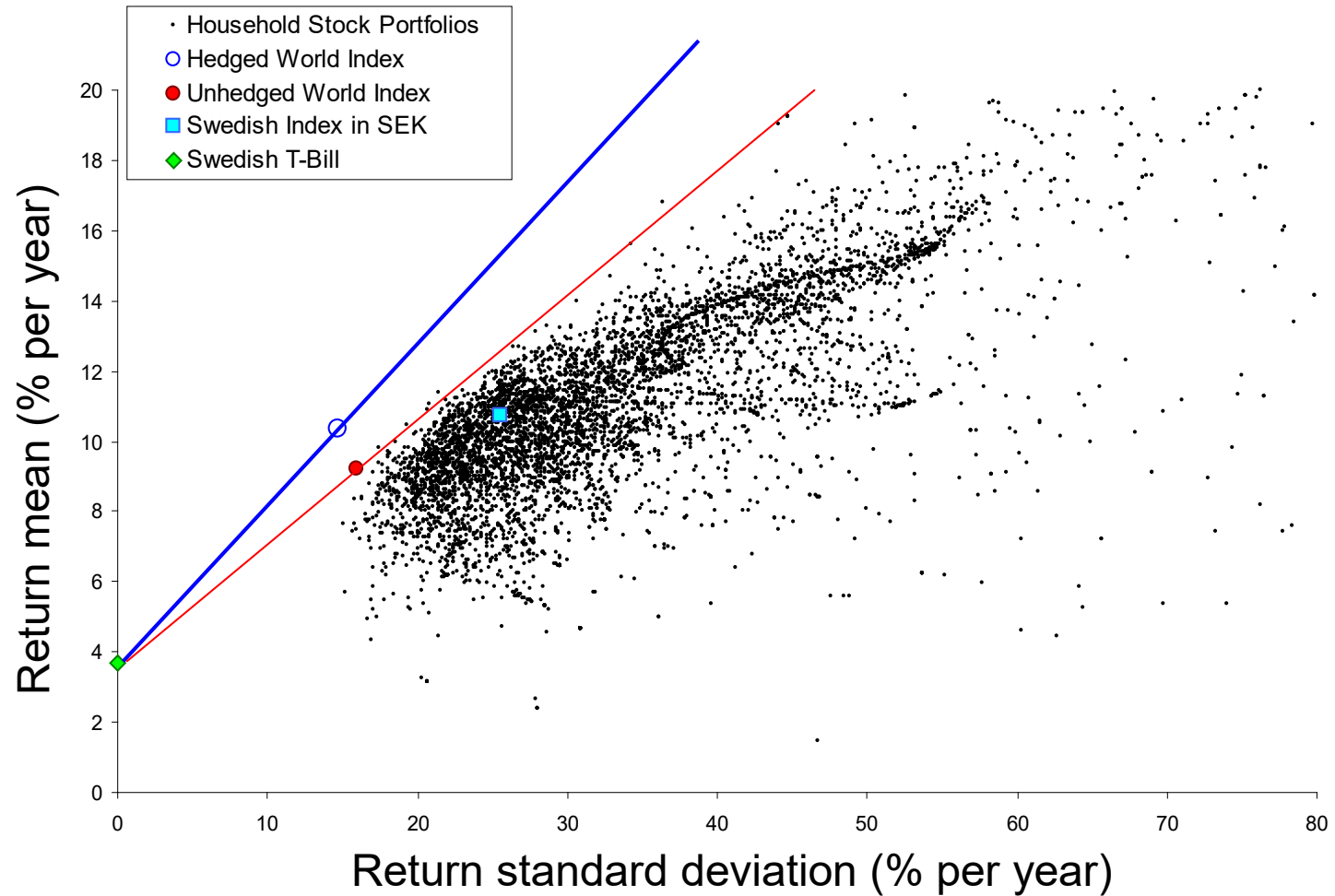
L.E. Calvet, J. Y. Campbell and P. Sodini (2007),
Down or out? Assessing the welfare costs of household investment mistakes,
Journal of Political Economy.



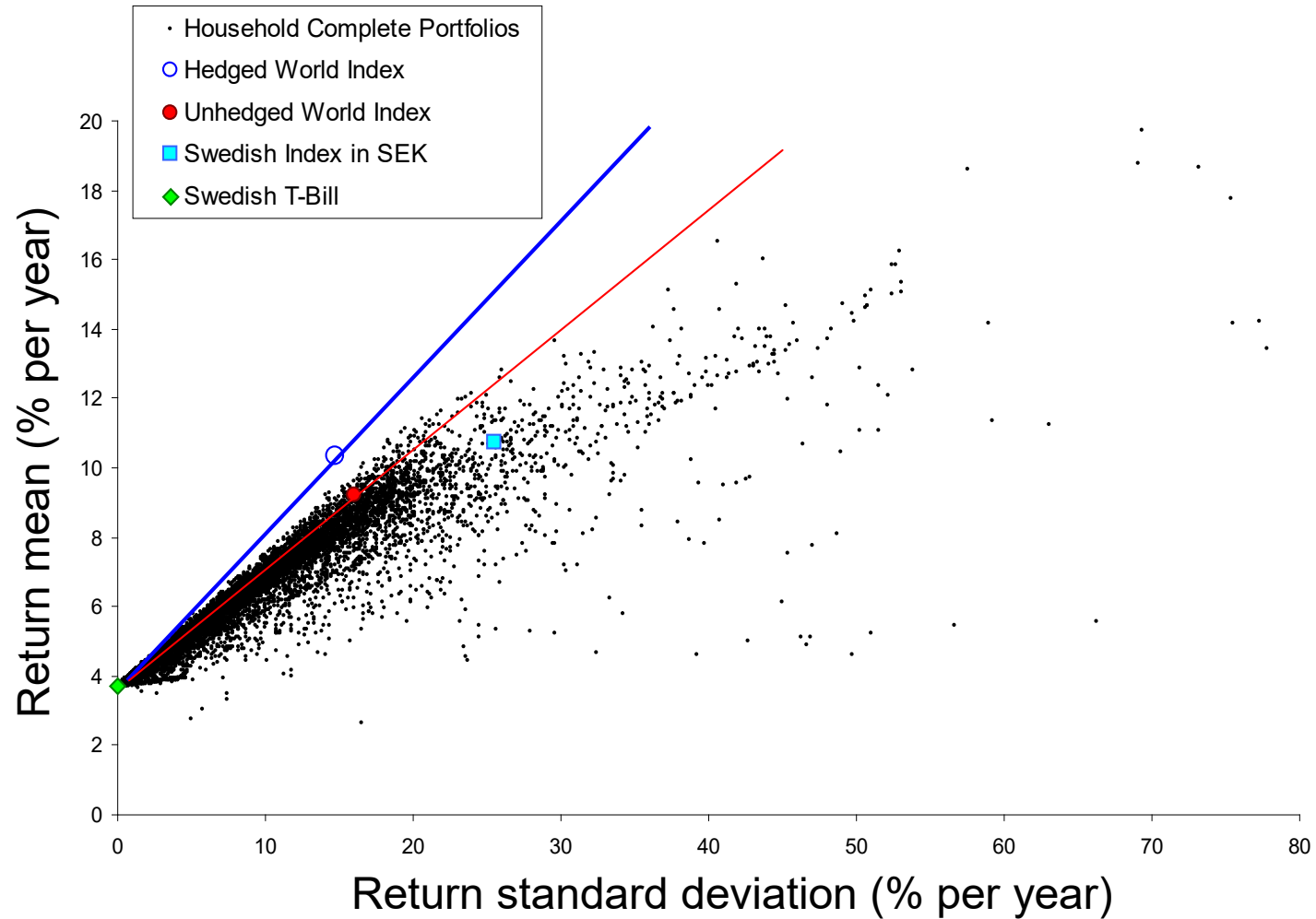
METHODOLOGY

- **Compute the mean and variance of household portfolios** under an asset-pricing model such as the CAPM (or a Fama-French 3 factor model)
- **Compare household portfolios with diversified indexes**
- **Benchmarks**
 - MSCI All Country World Index
 - hedged for currency risk
 - unhedged
 - Swedish Stock Index

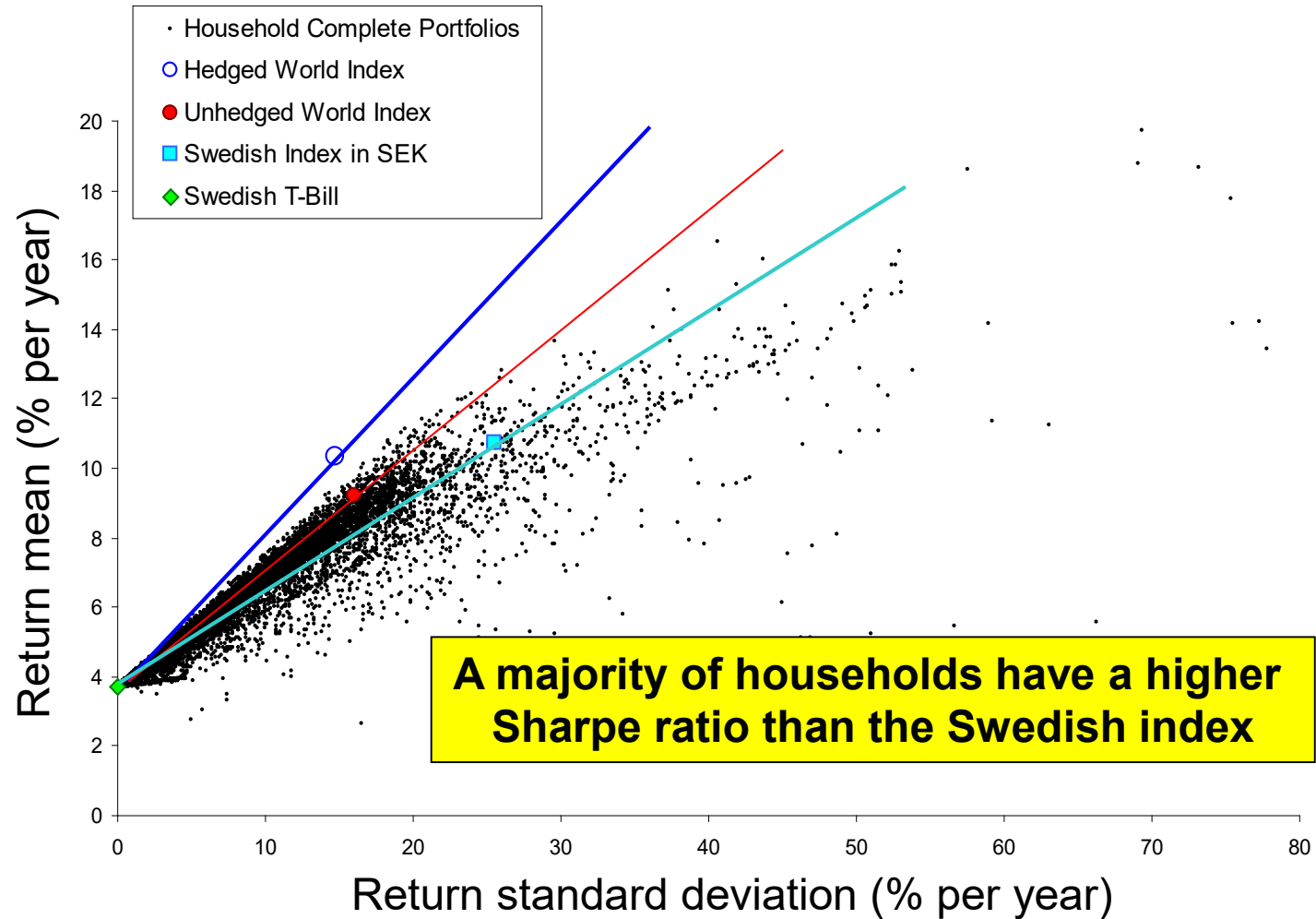
HOUSEHOLD STOCK PORTFOLIOS



HOUSEHOLD FINANCIAL PORTFOLIOS



HOUSEHOLD FINANCIAL PORTFOLIOS



MUTUAL FUNDS MOST WIDELY HELD

Fund Name	English Translation	Domestic Stocks (%)	Domestic Bonds (%)	International Stocks (%)	International Bonds (%)	Cash (%)	Futures (%)
FSB/Robur Kapitalinvest	Capital Invest	45.0	0.0	54.1	0.0	0.9	0.0
Nordea Futura	Futura	22.5	27.5	16.7	33.3	0.0	0.0
FSB/Robur Allemansfond III (ny)	Every man	60.0	0.0	38.6	0.0	1.4	0.0
FSB/Robur Mixfond	Mixed	22.9	22.1	29.1	17.1	8.8	0.0
FSB/Robur Allemansfond IV (ny)	Every man	60.0	0.0	38.9	0.0	1.1	0.0
SHB Sverige/Världen	Sweden/ World	72.7	0.0	25.4	0.0	1.9	0.0
Nordea Beta	Beta	75.0	0.0	25.0	0.0	0.0	0.0
SEB Sverige I	Sweden	93.9	0.2	0.0	0.0	5.9	0.0
FSB/Robur Allemansfond II	Every man	60.0	0.0	38.8	0.0	1.2	0.0
SEB Aktiesparfond	Equity saving	47.6	3.8	39.5	0.0	9.6	-0.5

Substantial share of international assets



TAKE-AWAY ON DIVERSIFICATION

- **Household financial wealth is well diversified.**
- Good diversification is achieved via mutual funds and cash holdings.
- Less sophisticated households (low education and wealth) have more concentrated risky portfolios, but tilt the portfolio allocation toward cash
 - ➔ their portfolios are close to the efficient frontier.



What drives risk-taking in household portfolios?

L.E. Calvet and P. Sodini (2014),
Twin picks: Disentangling the determinants of risk-taking in household portfolios,
Journal of Finance.

POTENTIAL DRIVERS OF RISK-TAKING

Insights from financial theory

➤ Financial wealth

- Constant relative risk aversion (CRRA): Risky share does not depend on wealth.
- Decreasing relative risk aversion (DRRA): Risky share increases with wealth.

➤ Other determinants

- Human capital, borrowing constraints, real estate holdings
- Family composition

Measurement challenge

Households have heterogeneous risk attitudes, backgrounds, etc.

- Higher wealth \implies Higher risky share

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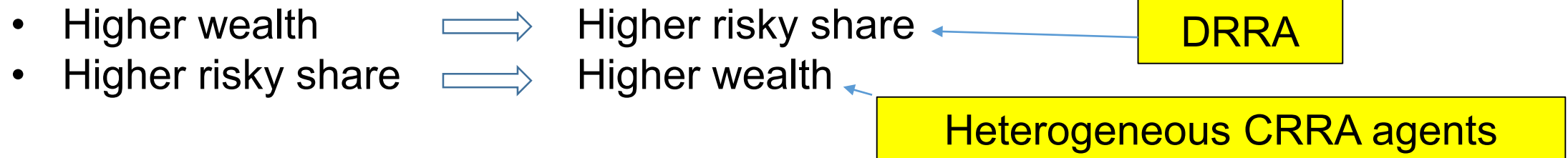
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IDENTIFICATION STRATEGY: TWINS



Controls for ability, upbringing, expected inheritance, or genes.

25% to 45% of individual variation in risk taking due to genes (Cesarini et al. QJE 08, JF 09)

True and tried method in labor economics

Taubman (AER 76), Bronars and Grogger (AER 94), Ashenfelter and Krueger (AER 94), Ashenfelter and Rouse (QJE 98), Behrman and Rosenzweig (AER 00)

Does the richer twin have a larger risky share?



SWEDISH TWIN REGISTRY

Largest twin survey in the world

- Response rate : 60%-70%
- Over 8,000 twin pairs of known zygosity (fraternal vs identical)
- Frequency of communication between twins

We merge it with the Swedish Wealth Registry.

TWIN REGRESSION

$$\ln(w_{i,j,t}) = \alpha_{i,t} + \eta f_{i,j,t} + \gamma' x_{i,j,t} + \varepsilon_{i,j,t}$$

year-twin pair fixed effect

$f_{i,j,t}$ log of financial wealth of twin j in pair i in year t

$x_{i,j,t}$ characteristics of twin j in pair i in year t



TAKE-AWAY ON DRIVERS OF RISK-TAKING

- The risky share increases with:
 - financial wealth (consistent with DRRA),
 - residential real estate,
 - expected human capital.
- The risky share decreases with:
 - commercial real estate,
 - leverage,
 - income risk, unemployment, entrepreneurship,
 - household size and expenditure commitments.
- Communication is also important: frequently communicating fraternal twins make more similar choices than infrequently communicating identical twins.



Portfolio rebalancing

L.E. Calvet, John Y. Campbell, and P. Sodini (2009),
Fight or flight? Portfolio rebalancing by individual investors,
Quarterly Journal of Economics.



HOW DO HOUSEHOLDS RESPOND TO ASSET RETURNS?

Asset returns induce passive variations in the risky share,
which an investor can

- **fight,**
- **ignore,**
- **amplify.**

ACTIVE AND PASSIVE CHANGES

- **Actual risky shares** at t and $t+1$: $w_{h,t}$ and $w_{h,t+1}$
- **Passive share** $w_{h,t+1}^p$: risky share at $t+1$ if household does not trade during year

$$w_{h,t+1} - w_{h,t} = (w_{h,t+1} - w_{h,t+1}^p) + (w_{h,t+1}^p - w_{h,t})$$

Active change $A_{h,t+1}$

Passive change $P_{h,t+1}$



TAKE-AWAY ON PORTFOLIO REBALANCING

- **Active rebalancing** offsets over 50% the passive variation in the risky share.
- Households offsets passive changes by
 - purchasing stocks and, to a lesser extent, mutual funds when unlucky,
 - fully selling stocks and purchasing less of the funds when lucky.
- **Sophisticated** households rebalance more actively.



Who holds value stocks and growth stocks? Do households have a hedging motive?

S. Betermier, L.E. Calvet, and P. Sodini (2017),
Who are the value and growth investors?
Journal of Finance.



VALUE PREMIUM

Value stocks (high book-to-market ratio) outperform growth stocks (low book-to-market ratio) on average.

Fama and French (1992, 1993, 2012), Asness Moskowitz Pedersen (2013).

A risk-based story?

- Compensation for higher systematic risk of value stocks.

Jagannathan and Wang (1996), Cochrane (1999), Campbell and Vuolteenaho (2004), Lettau Ludvigson (2001), Bansal Dittmar Lundblad (2005), Petkova Zhang (2005).

Or a sentiment-based story?

- Irrational exuberance / myopic extrapolation / overconfidence.

Lakonishok Shleifer Vishny (1994), Daniel Hirshleifer Subrahmanyam (1998).

ASSET PRICING FACTORS

➤ Data

- monthly data (1985-2009)
- universe: Nordic stocks (743 from SSE, HEX, CSE, OSE)
- market portfolio: SIX return index.

➤ Unconditional 4-factor pricing model

For each asset (stock and fund), we estimate

$$r_{i,t} = a_i + b_iMKT_t + v_iHML_t + s_iSMB_t + m_iMOM_t + u_{i,t}$$

VALUE LOADING OF HOUSEHOLD PORTFOLIO

- **Value loading of household h in year t is:**

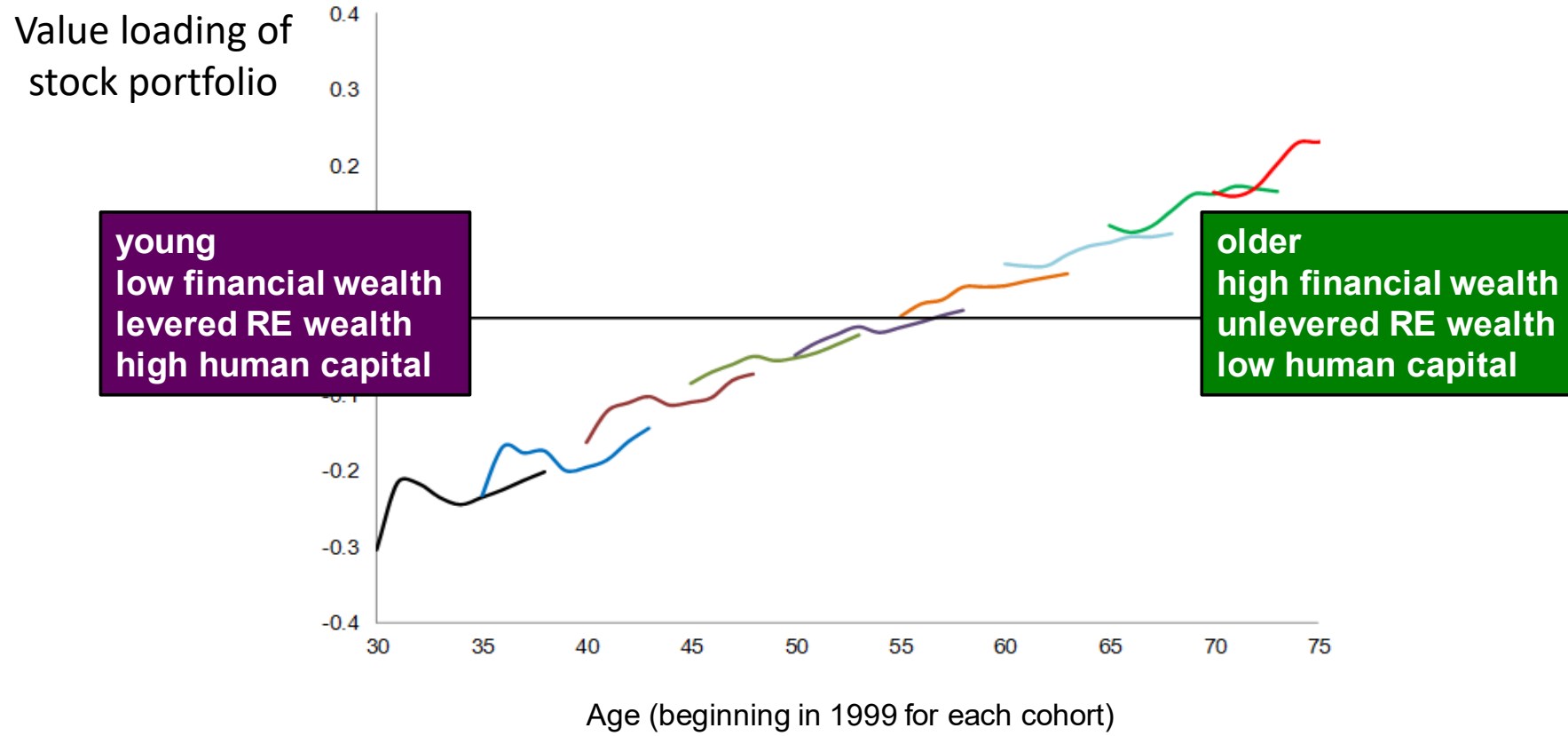
$$v_{h,t} = \sum_i w_{h,i,t} v_i$$

portfolio share of
asset i at date t

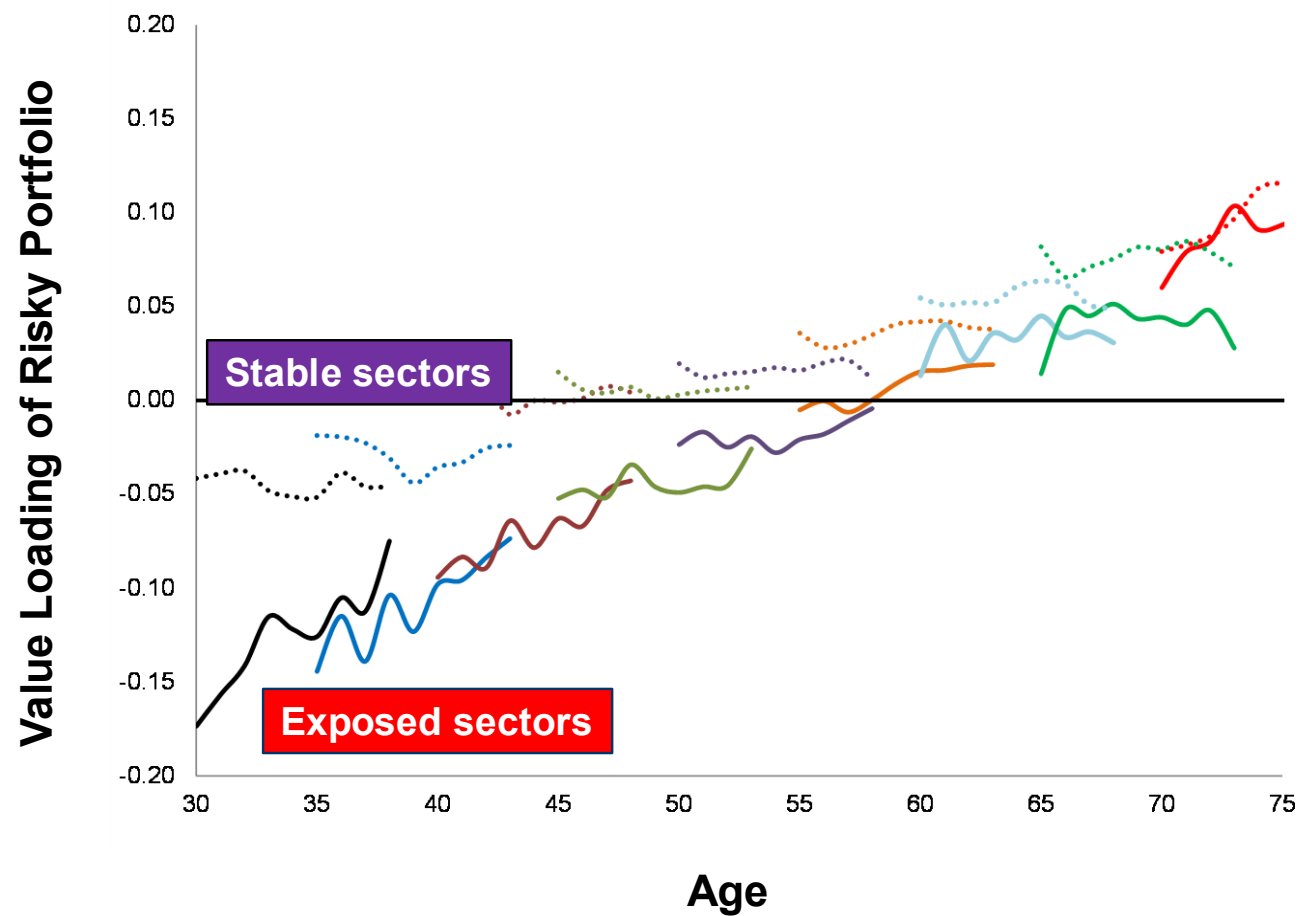
value loading
of asset i

- **Changes in portfolio loading are driven by changes in portfolio weights.**
 - Unconditional asset-pricing model shuts down firm migration over time.

THE VALUE LADDER



THE VALUE LADDER





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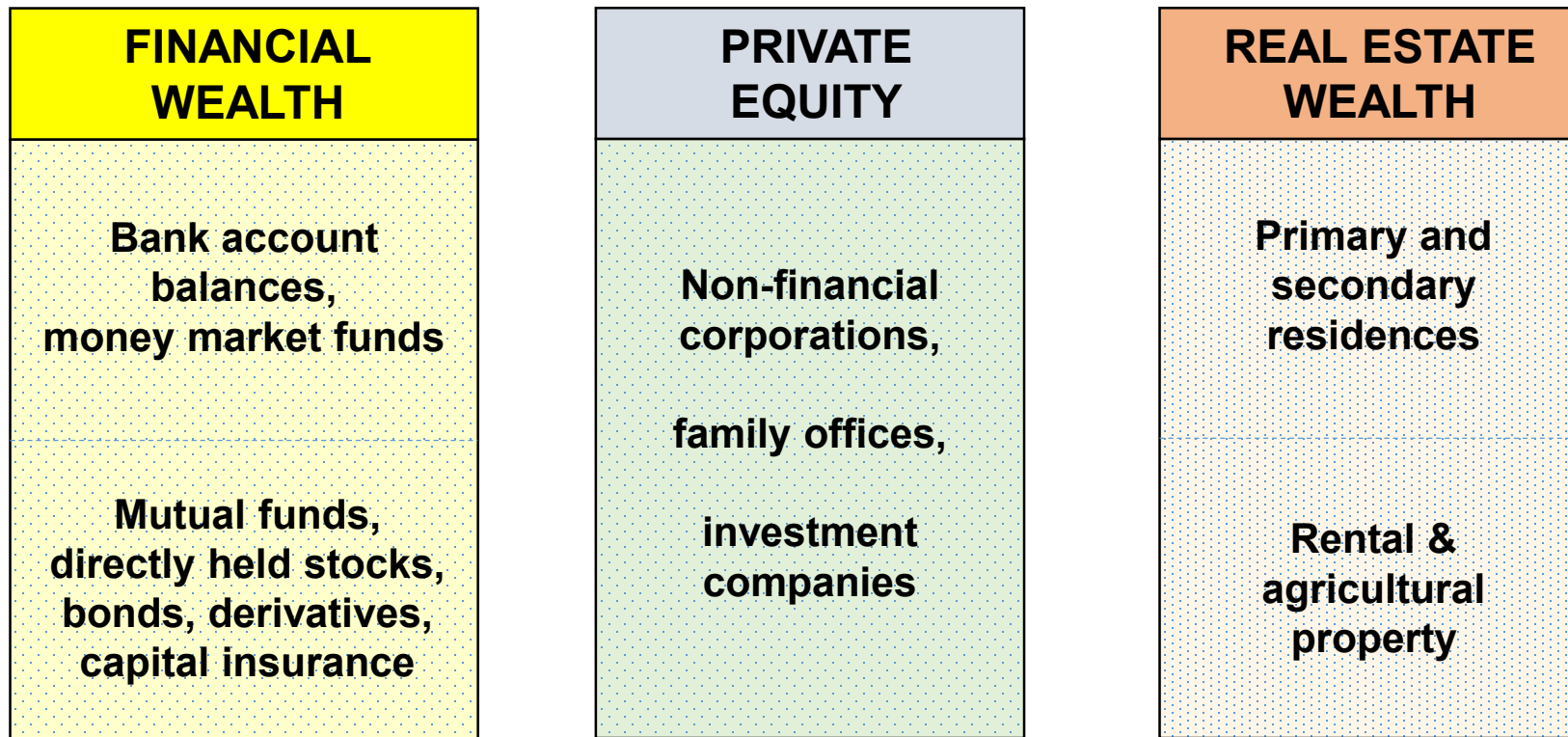
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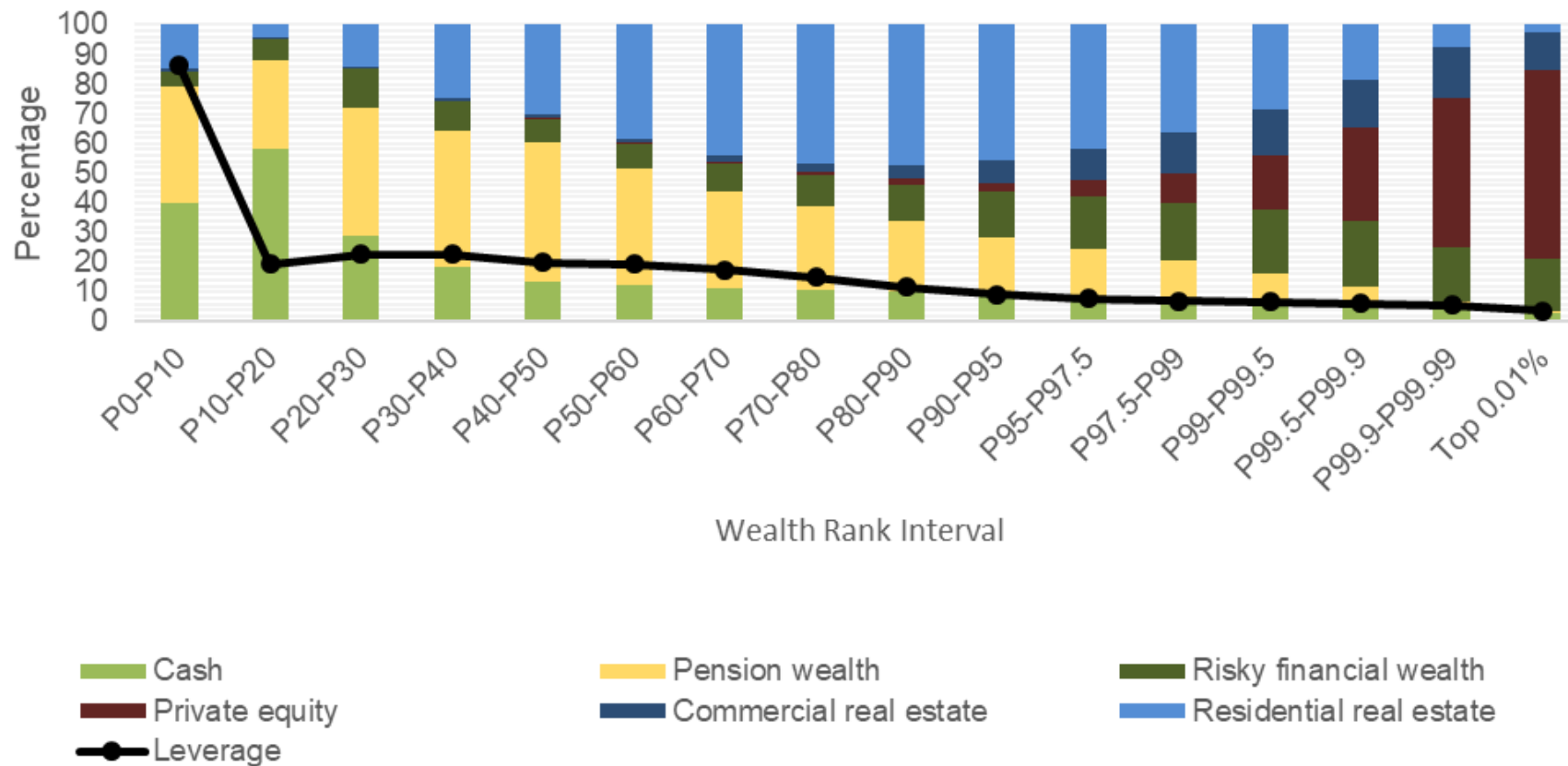
Allocation and return on total wealth

L. Bach, L.E. Calvet, and P. Sodini (2020),
Rich pickings? Risk, return, and skill in household wealth,
American Economic Review.

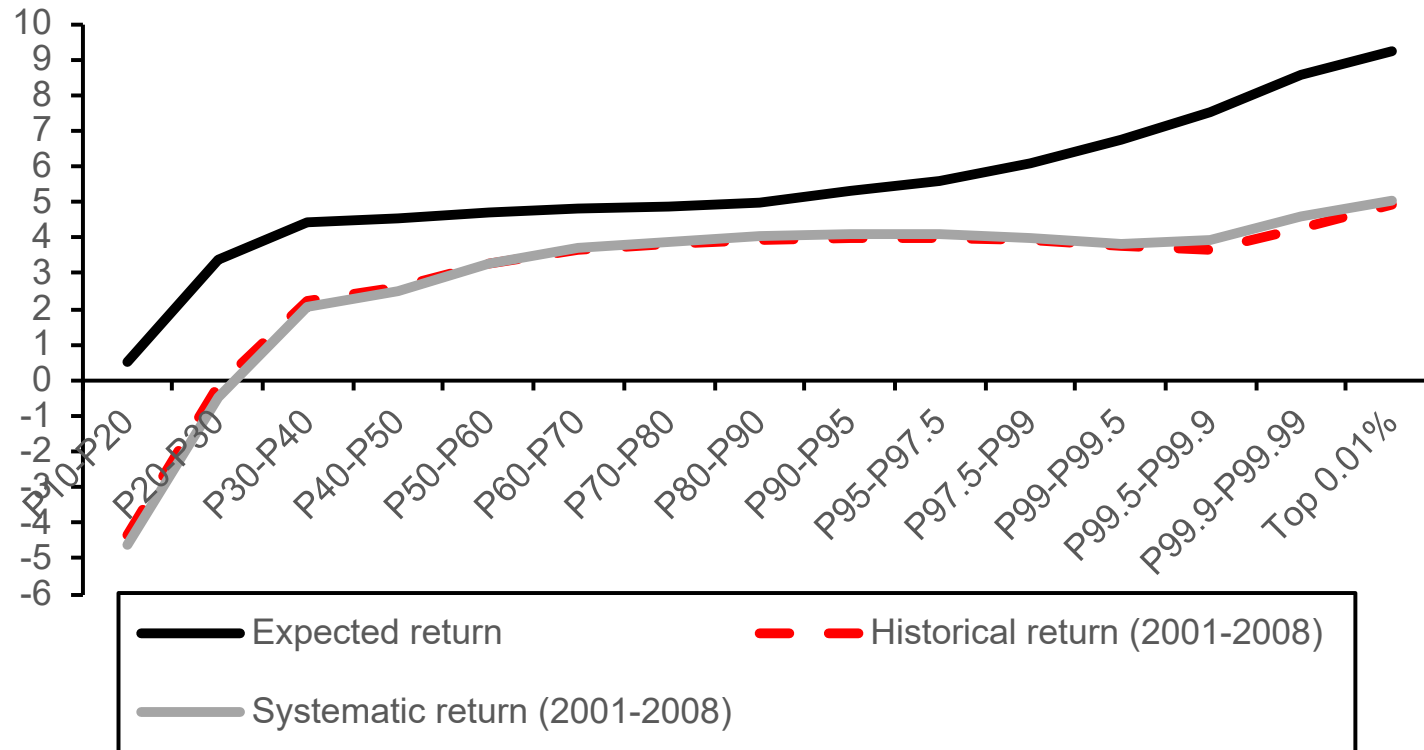
GROSS WEALTH



ALLOCATION OF GROSS WEALTH



RETURN ON NET WEALTH





CONCLUSION

- **The growing availability of large datasets is allowing us to expand our knowledge of household financial decisions.**
- **The predictions of financial theory are often confirmed.**
 - On average, households tend to make rather reasonable decisions. Sensible financial advice and intuitive knowledge of finance (Milton Friedman's pool player).
 - There is also considerable heterogeneity.
- **The asset management industry plays a key role.**
 - Helps retail investors achieve good diversification via mutual funds.
 - Can provide precious help to less competent investors, possibly via online platforms and robo-advisors..
 - Can encourage stockmarket participation by the least knowledgeable investors.



NEXT STEPS

Papers available at:

- <https://sites.google.com/view/laurent-e-calvet/home>
- SSRN, Research Gate

laurent.calvet@edhec.edu



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Thank you!



ADDITIONAL SLIDES

HOW DO HOUSEHOLDS REBALANCE?

- **Types of trades:**

Stocks vs. funds

Sales vs. purchases

Full trades vs. partial trades

- **Decomposition of the active change:**

$$w_{h,t+1} - w_{h,t+1}^p = \sum_{j \text{ stock}} (w_{h,j,t+1} - w_{h,j,t+1}^p) + \sum_{j \text{ fund}} (w_{h,j,t+1} - w_{h,j,t+1}^p)$$

- Distinguish between “lucky” and “unlucky” households with better or worse than average portfolio returns

Active Changes	-0.581 -29.6			Purchases	0.001 0.1	Partial Purchases	-0.045 -6.9	Lucky Households		
				Full Purchases	0.046 4.2	Partial Sales	-0.059 -10.2			
				STOCKS	-0.349 -27.5	Sales	-0.350 -32.2		Full Sales	-0.291 -31.3
				Purchases	-0.254 -16.7	Partial Purchases	-0.240 -18.7			
				FUNDS	-0.231 -13.1	Full Purchases	-0.014 -1.5			
				Sales	0.023 1.8	Partial Sales	-0.032 -3.7			
				Full Sales	0.055 5.3					

Active Changes	-0.504 -53.1			Purchases	-0.304 -49.2	Partial Purchases	-0.143 -45.3	Unlucky Households		
				Full Purchases	-0.160 -30.0	Partial Sales	0.009 3.2			
				STOCKS	-0.334 -54.4	Sales	-0.030 -5.8		Full Sales	-0.039 -8.7
				Purchases	-0.127 -17.2	Partial Purchases	-0.076 -12.3			
				FUNDS	-0.170 -19.9	Full Purchases	-0.051 -10.9			
				Sales	-0.043 -6.7	Partial Sales	-0.034 -7.9			
				Full Sales	-0.009 -1.9					