

# Learning from the outcomes of others: Evidence from the stock market

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## Outcome-based social learning is difficult

- ◆ Even if peer outcomes are directly observable
    - Unobservable individual characteristics of peers - what works for your peer does not necessarily work for you
    - Outcomes contain a stochastic component
  
  - ◆ Further complications if peer outcomes are not directly observable
    - Communication is required
    - Communication may not take place, or may be biased
- people may overweight information on peer outcomes in situations in which learning from outcomes is not a good learning strategy

## Extrapolative expectations and financial epidemics

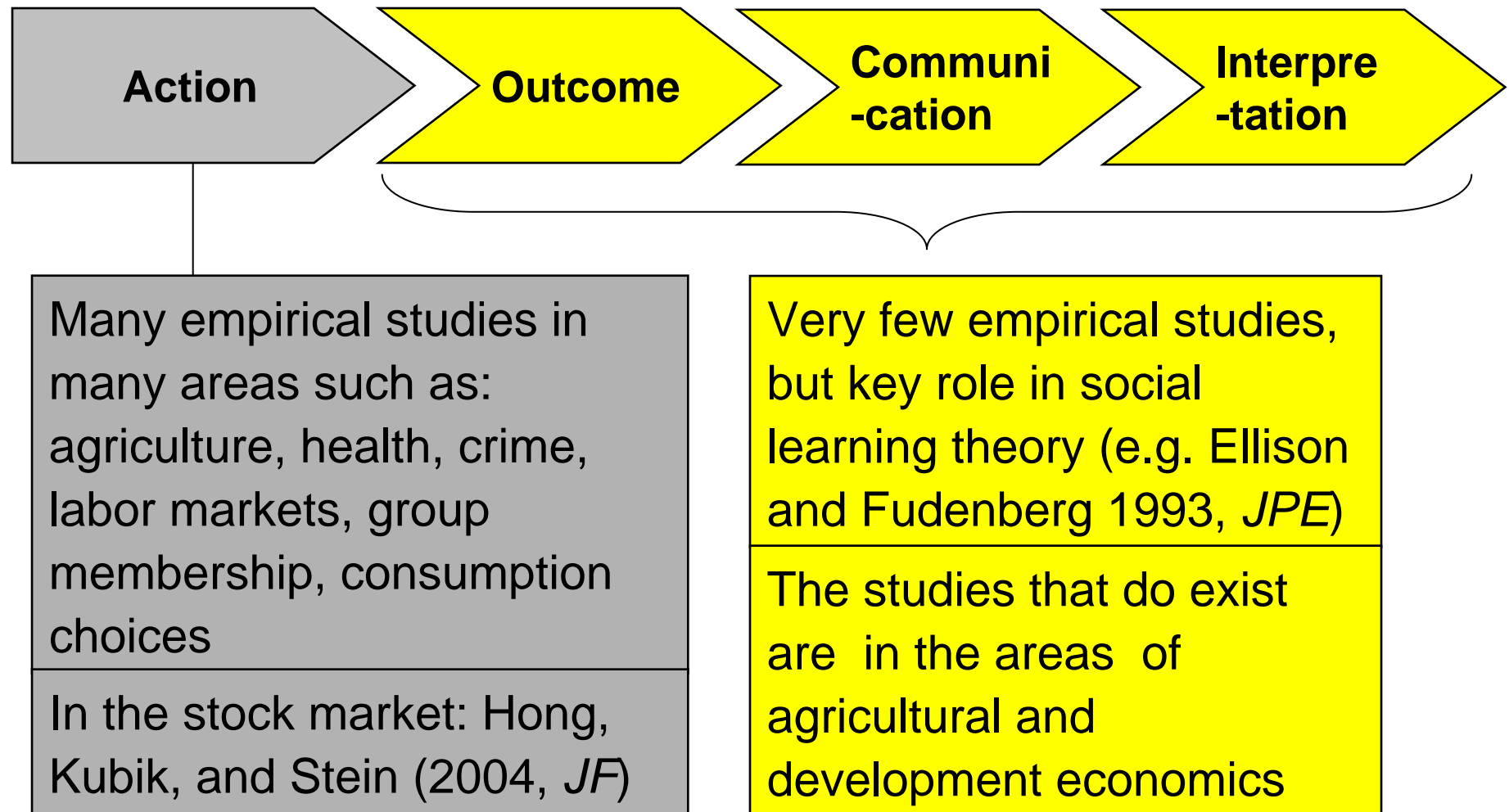
*“That others have made a lot of money appears to many people as the most persuasive evidence that outweighs even the most carefully reasoned argument...”*

*Robert Shiller,  
Irrational Exuberance, 2005*

## This paper

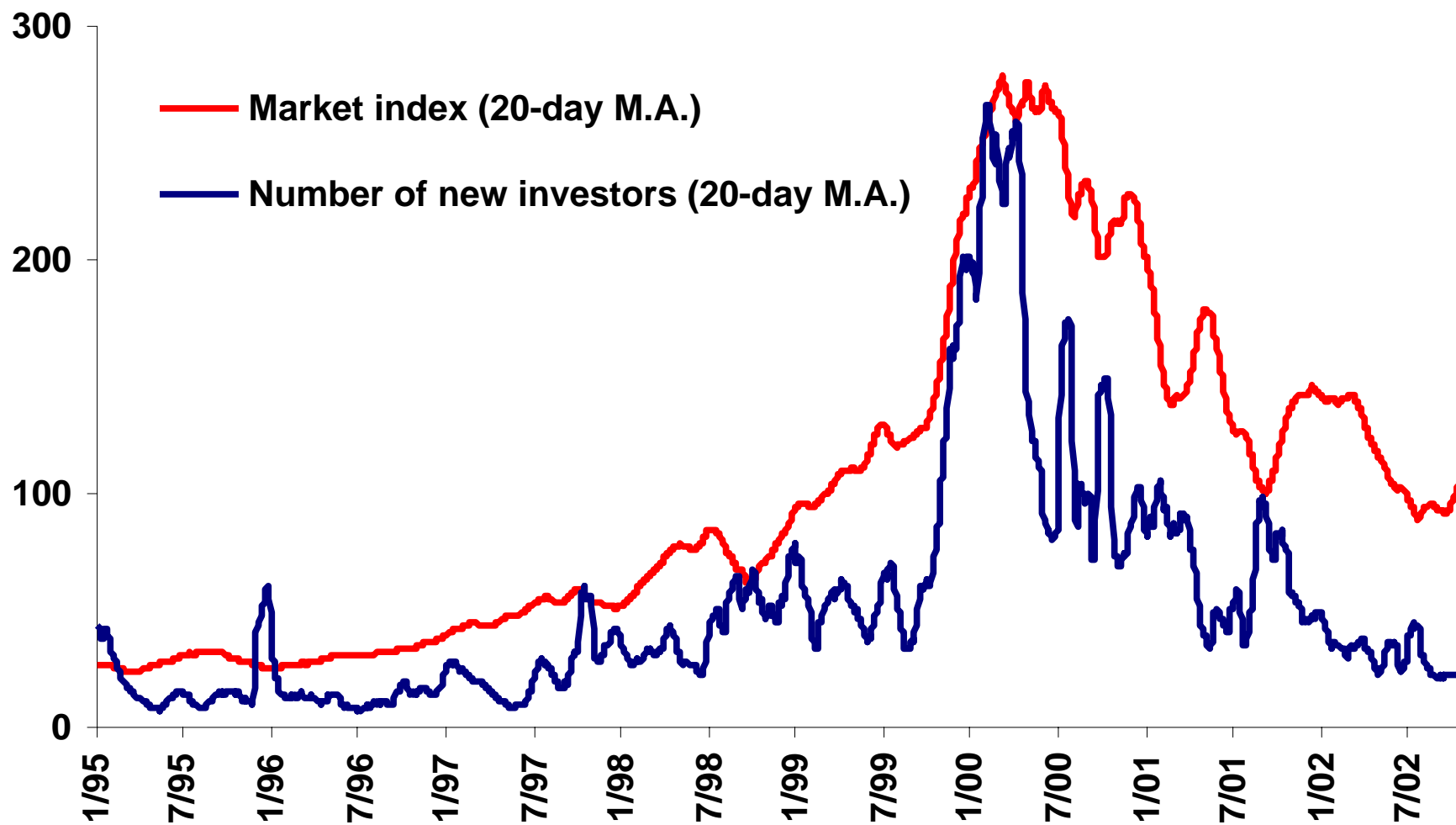
- ◆ Large-scale empirical test of outcome-based social learning
- ◆ Setting is the stock market
- ◆ Do the returns experienced by the existing investors in a given neighborhood affect the new investors’ stock market entry decisions?
- ◆ Outcomes and actions are accurately defined and measured

## Social learning involves a chain of events



## Data

- ◆ Transactions of all Finnish investors from 1995 to 2002
- ◆ Entry dates
  - First day when investor purchases a stock
- ◆ Neighborhood returns
  - About 2,700 zip codes
  - Value-weighted average return on the portfolio held by existing investors



## Identification 1: Natural experiment

- ◆ Mutual customer owned telecommunications company transformed into a corporation
  - Customers received new shares valued at \$3,000 at listing
- ◆ Difference-in-difference estimation
  - Treated areas: zip codes where the telecom company operated
  - Stock market participation rate before and after the treatment in treated and non-treated areas
- ◆ Result: Treatment effect corresponds to a 60% increase in the monthly entry rate

## Identification 2: Dynamic regression

- ◆ Key components
  - Shareholders and non-shareholders in the same area
  - Temporal and cross-sectional variation in returns
  - Month and zip code fixed effects
  
- ◆ Common objections
  - Reverse causality? No, lagged returns
  - Common unobservables? No, zip code and time fixed effects
  - Local bias or local time-varying shocks? No (we have checked this...)

## Dynamic regression: Results

Dependent variable	Ln (1 + Number of new investors)			
	1 (OLS)	2 (LDV)	3 (LDV)	4 (LDV)
Neighborhood return	9.00 (7.15)	8.10 (6.77)	8.51 (7.01)	6.09 (8.42)
Lagged dependent variable		22.05 (39.11)	21.91 (38.63)	31.57 (52.55)
Participation rate			24.63 (4.01)	103.21 (22.44)
Market return				4.72 (7.23)
Month fixed effects	Yes	Yes	Yes	No
Zip code fixed effects	Yes	Yes	Yes	Yes
Number of zip codes	2 649	2 649	2 649	2 649
Number of observations	251 823	251 823	251 823	251 823

### Economic significance

- Base rate is 0.5 new investors per month per zip code
- For one-sd of return →3.6 new investors

## Other evidence on outcome-based social learning

- ◆ Munshi (2004), “Social Learning in a Heterogenous Population: Technology Diffusion in the Indian Green Revolution”, *Journal of Development Economics*
- ◆ Conley and Udry (2009), “Learning About a New Technology: Pineapple in Ghana”, forthcoming in *American Economic Review*
- ◆ Kremer and Miguel (2007), “The Illusion of Sustainability”, *Quarterly Journal of Economics*

## Dynamic regression: Positive and negative returns

Dependent variable	Ln (1 + Number of new investors)
Specification	3 (LDV)
Max (Neighborhood return, 0)	13.14 (6.71)
Min (Neighborhood return, 0)	0.18 (0.07)

- ◆ ‘Extrapolative expectations’ hypothesis
- ◆ ‘Selective communication’ hypothesis
- ◆ Not mutually exclusive

## Performance

Dependent variable	New investor return				
	Holding period in trading days				
	20	60	125	250	500
Neighborhood return	-0.168 (-18.00)	-0.222 (-13.26)	-0.247 (-13.85)	-0.195 (-7.51)	-0.391 (-8.03)
Month fixed effects	Yes	Yes	Yes	Yes	Yes
Stock fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	93 860	93 066	91 285	86 692	69 801
Overall R2	0.29	0.49	0.57	0.55	0.53

## Summary and contribution

- ◆ The first large scale empirical study of outcome-based social learning
  - We find strong evidence in a setting where it can be expected to be weak, or even nonexistent
- ◆ Selective communication hypothesis: people only talk about their good stock market experiences
- ◆ Neighbor-inspired new investors suffer a performance drag
- ◆ All in all, the results are consistent with naïve extrapolation and the idea of financial speculation as a social epidemic

## Microfoundations of investor sentiment and asset pricing bubbles

- ◆ Reinforcement learning
  - People extrapolate from past personal experiences (Kaustia and Knüpfer, 2008, “Do Investors Overweight Personal Experience? Evidence from IPO Subscriptions”, *Journal of Finance*)
  
- ◆ Social learning
  - People extrapolate from their neighbors’ past experiences (this paper)