Discussion of

Measuring the Financial Soundness of U.S. Firms, 1926–2012

Augustin Landier, TSE

1. Volatility as proxy for financial distress probability

2. Descriptive facts

3. What can we conclude?
   – Critical remarks

Volatility and Financial Distress

- σ_E = volatility of daily equity returns :
  - measures likelihood of equity wipe-out

- Main critiques:
  - Second moment might not reflect negative tails of the distribution
    - Skewness
  - Past realized volatility vs. volatility of future returns
    - "peso problem"
  - Volatility might capture changes in liquidity or noise-trading

  - (Why not simply calling it volatility?)

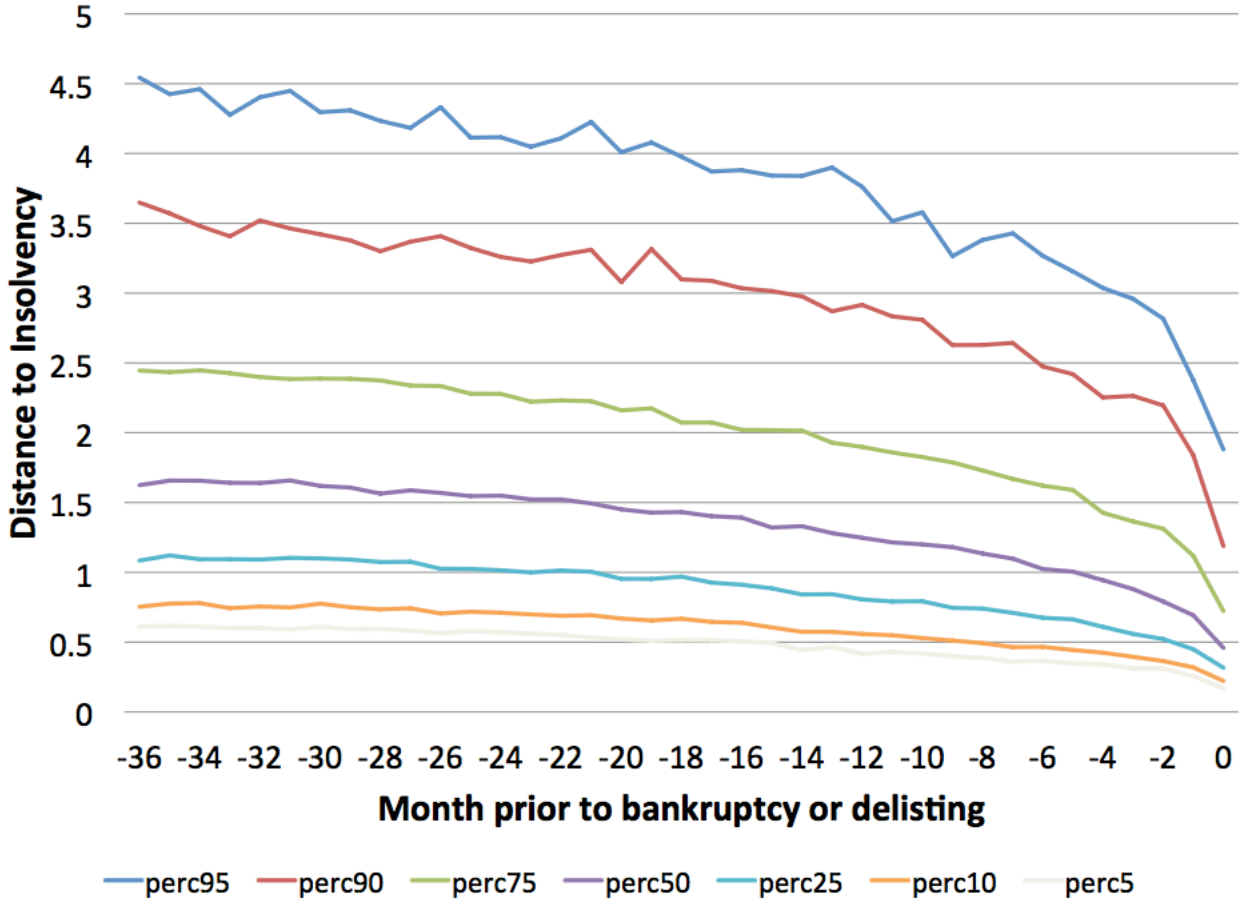
Volatility and Financial Distress

- In the data, strong correlation between default probability and σE
  - Bond ratings, bond spreads, credit default swaps etc.

- "vulnerable firm" if :

$$\sigma E > 1/252^{.5} = 6.3\% \text{ daily}$$

Volatility and Financial Distress



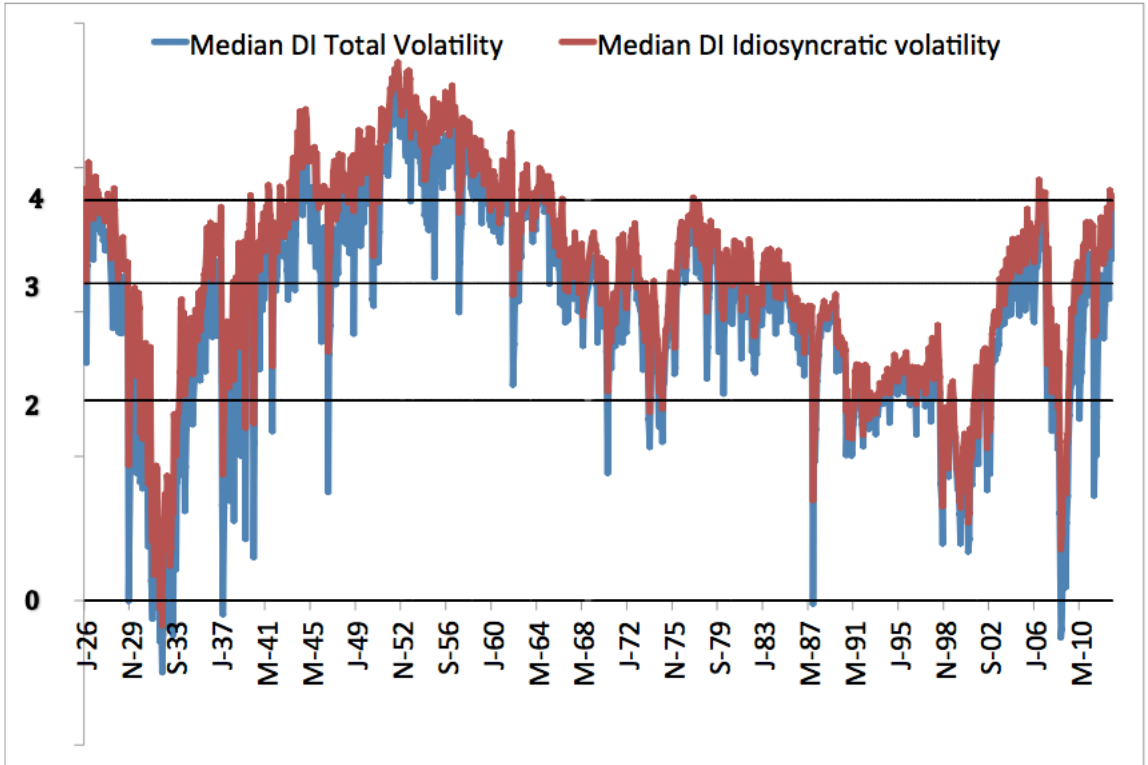
75% of companies are “vulnerable” 1 month prior to bankruptcy

The facts

The facts

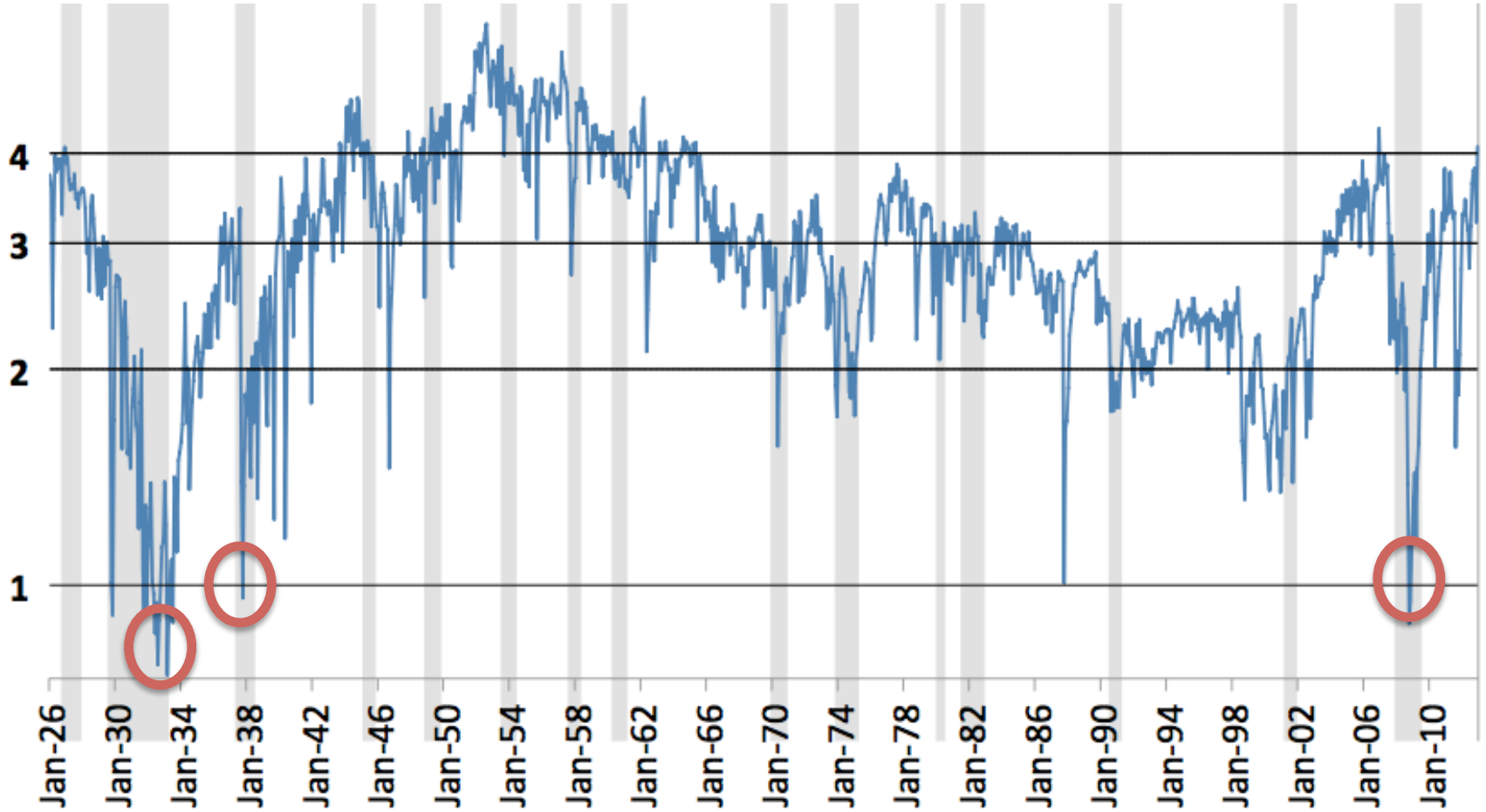
- Fact 0: idiosyncratic volatility = total volatility

(removing factor exposure leaves most cross-sectional vol intact)



Fact 1:

"Worst recessions coincide with high idiosyncratic vol times."



Cross-sectional Median 1/σE

Fact 2:
fluctuations in leverage do not drive variations in median volatility

$$\sigma A \approx (E/E+D)\ \sigma E$$

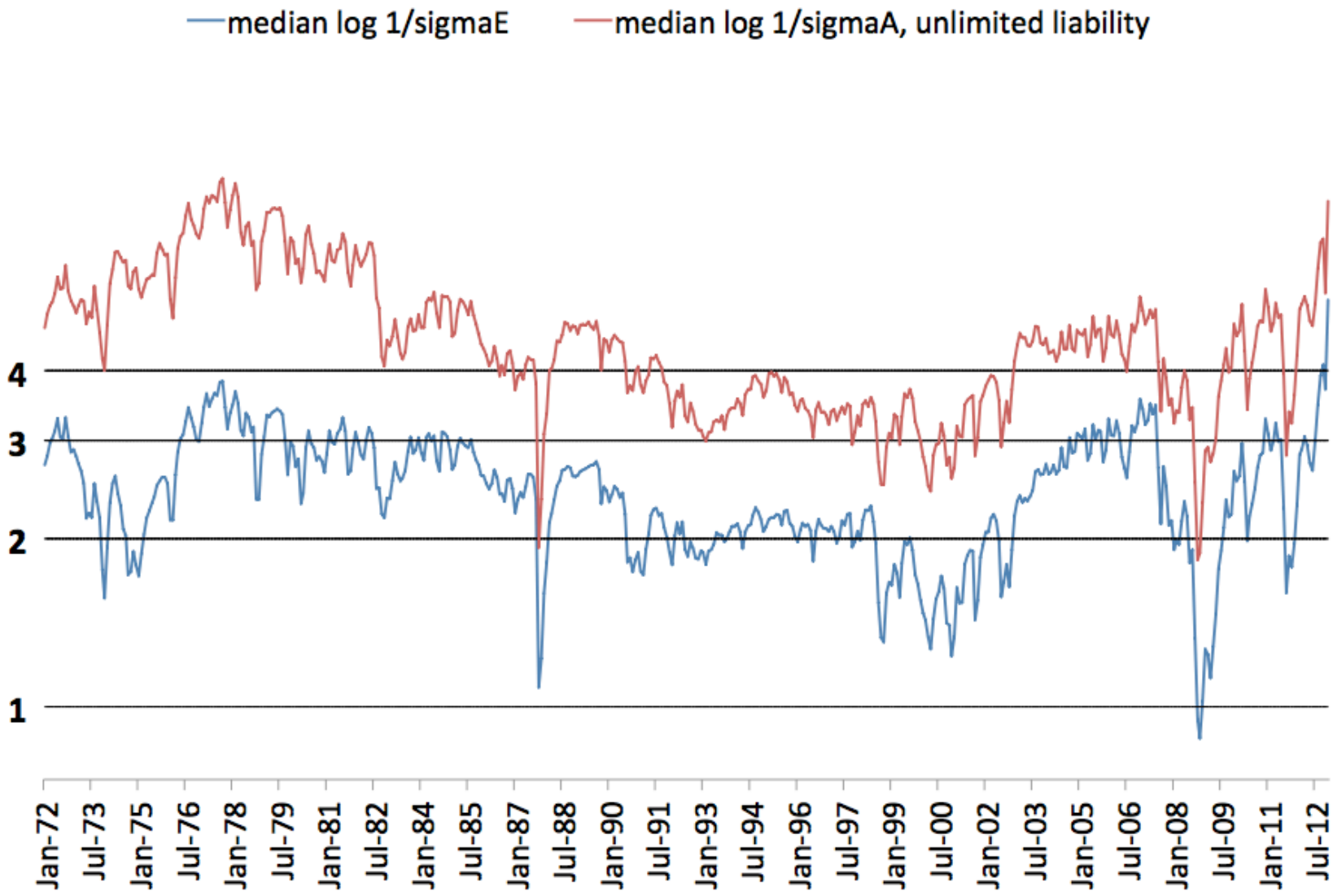
→ “fundamental volatility”

Delevering formula

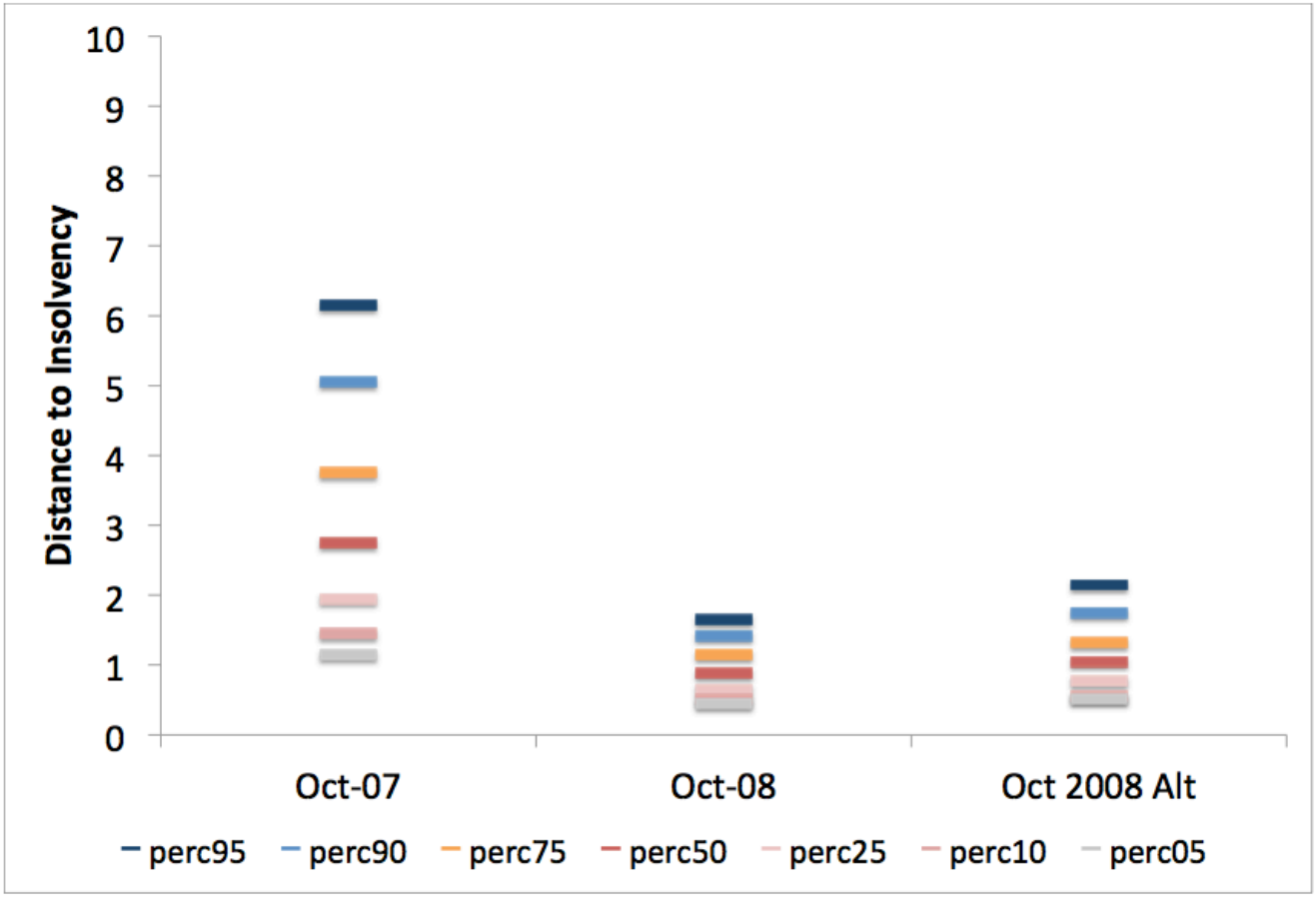
$$A_t = E_t + D_t$$

$$\frac{A_{t+1}}{A_t} = \frac{E_t}{A_t} \times \frac{E_{t+1}}{E_t} + \frac{D_t}{A_t} \times \frac{D_{t+1}}{D_t}$$

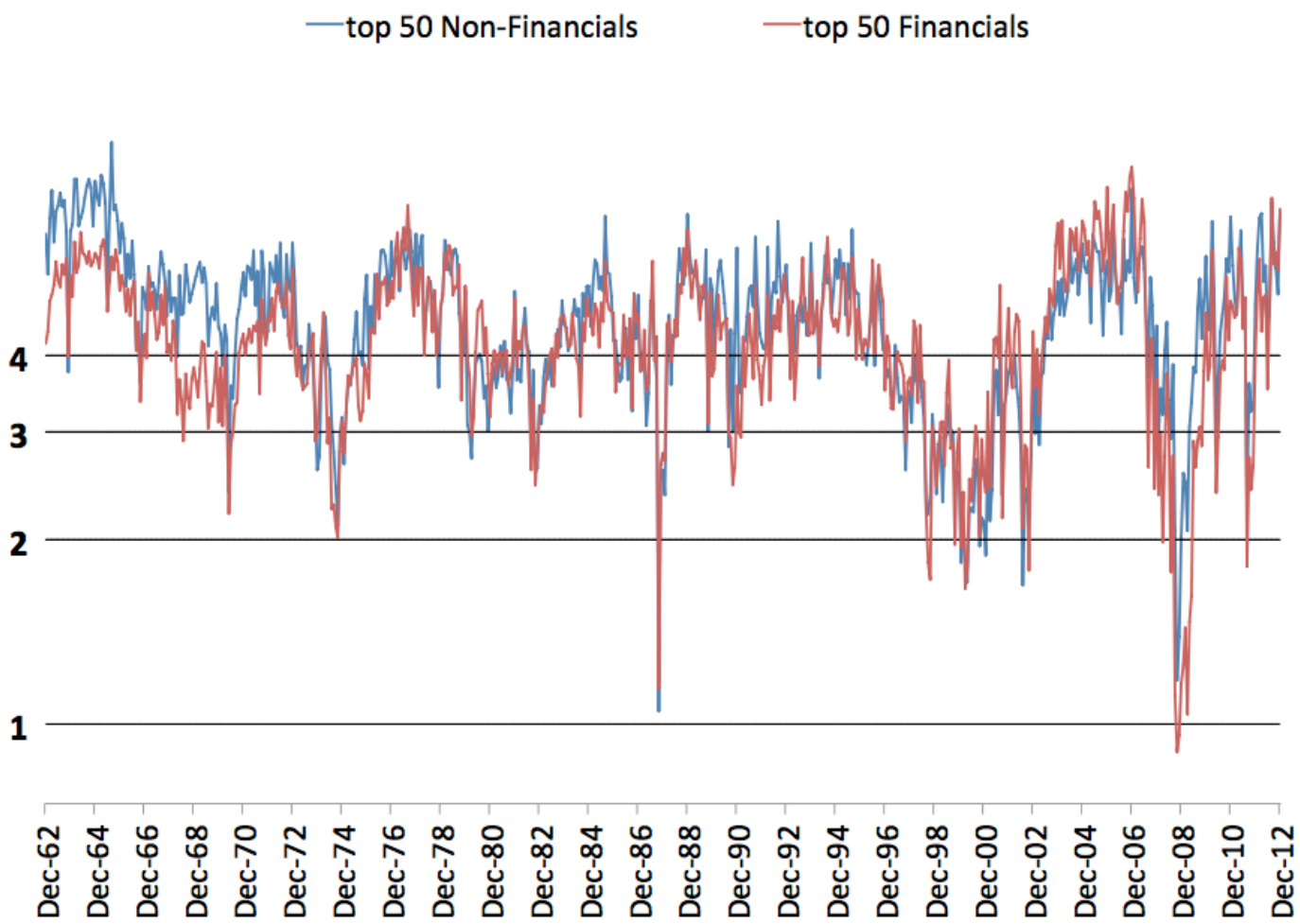
$$r_A = \frac{E_t}{A_t} \times r_E + \frac{D_t}{A_t} \times r_D$$


median log 1/sigmaE
median log 1/sigmaA, unlimited liability
4
3
2
1
Jan-72
Jul-73
Jan-75
Jul-76
Jan-78
Jul-79
Jan-81
Jul-82
Jan-84
Jul-85
Jan-87
Jul-88
Jan-90
Jul-91
Jan-93
Jul-94
Jan-96
Jul-97
Jan-99
Jul-00
Jan-02
Jul-03
Jan-05
Jul-06
Jan-08
Jul-09
Jan-11
Jul-12

“relevering” volatilities using past leverage does not change crisis volatility much



Fact 3: financials behave as the rest



What can one conclude?

- Paper avoids bold statements…
  - Shocks to uncertainty on fundamentals are key to understand recessions: well measured by idiosyncratic volatility
  - Also true for deep financial crises
  - No evidence of central role of financial system leverage nor overall leverage

Laplace to Napoleon: "God? I had no need of that hypothesis"

TRAITÉ

DE

MÉCANIQUE CÉLESTE,

PAR P. S. LAPLACE,

Membre de l'Institut national de France, et du Bureau des Longitudes.

TOME PREMIER.

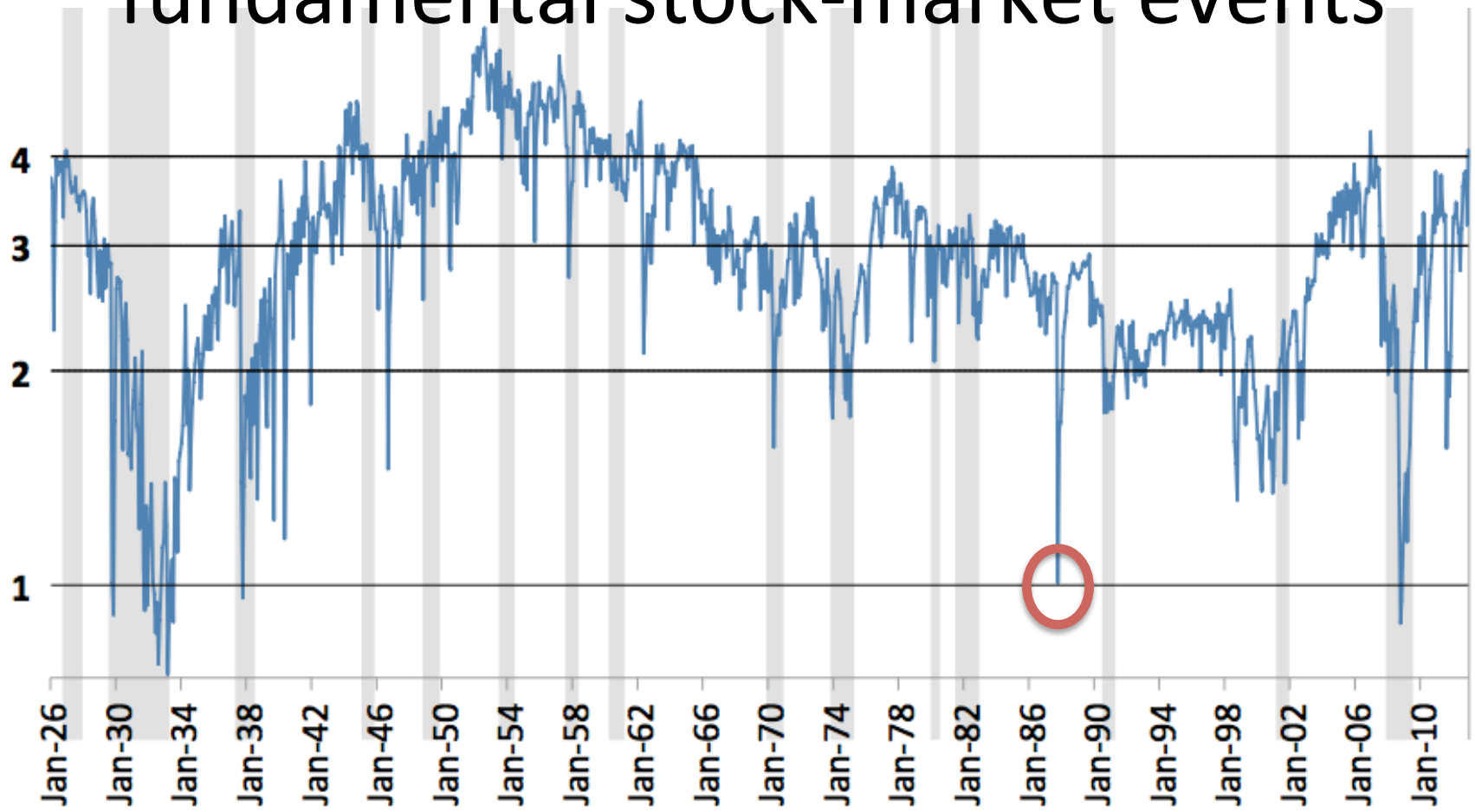
DE L'IMPRIMERIE DE CRAPELET.

A PARIS,

Chez J. B. M. DUPRAT, Libraire pour les Mathématiques, quai des Augustins.

AN VII.

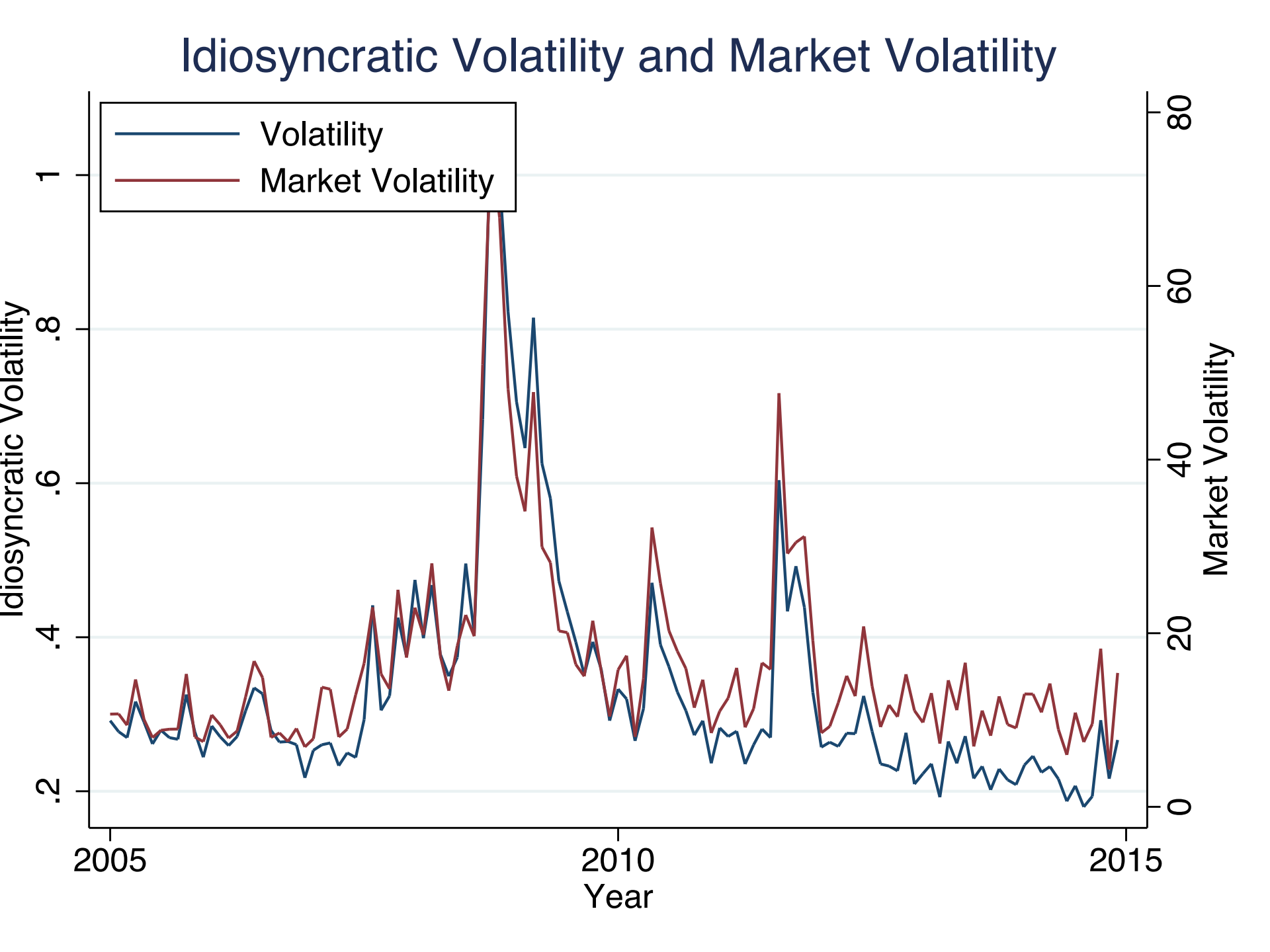
1/σE does not filter out non-fundamental stock-market events

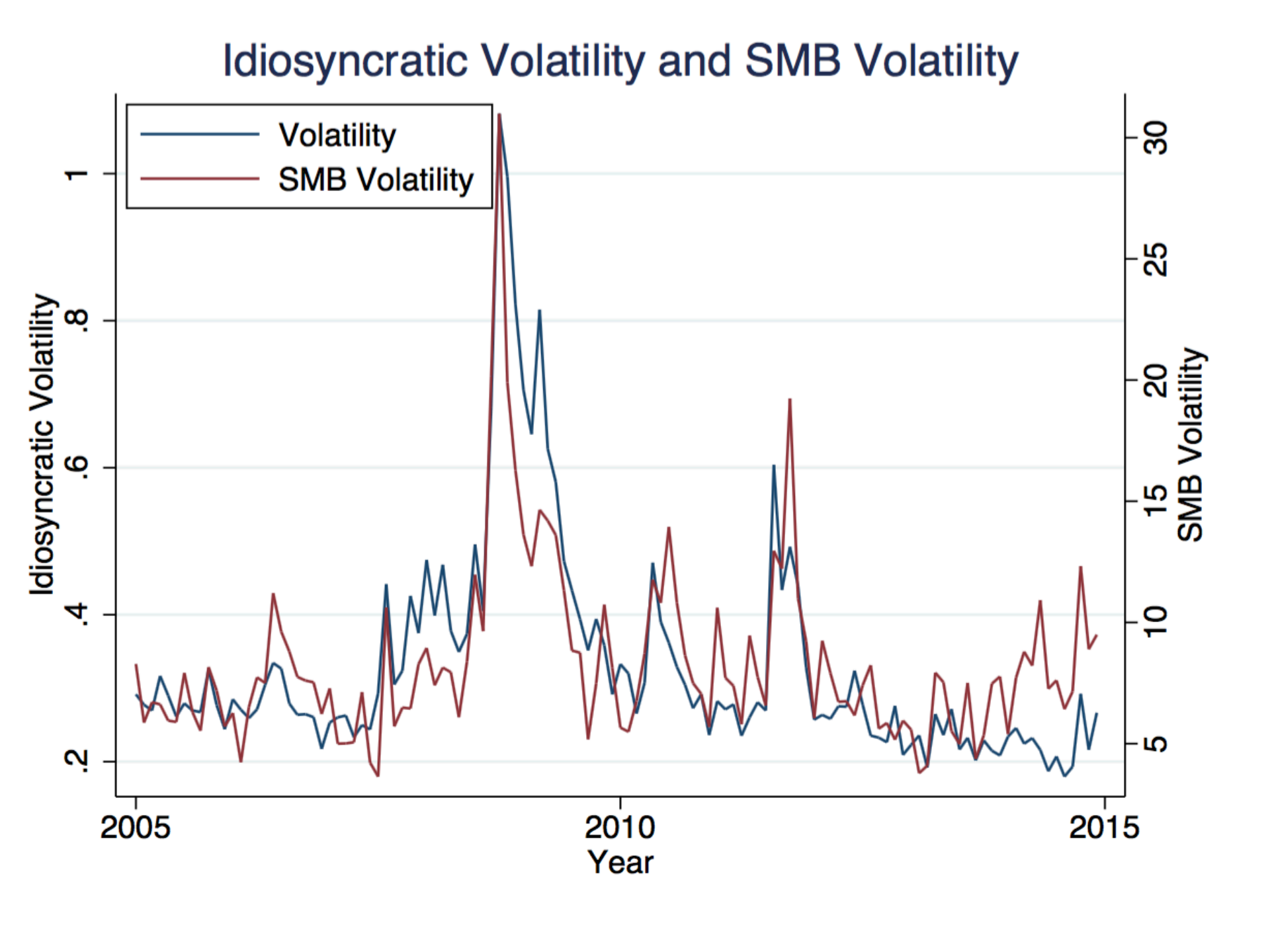


"market crashes interpreted as deep insolvency crises."

- In financial crisis, everyting spikes:
  - Idiosyncratic volatility
  - Aggregate risk (VIX)
  - Volatility of factors
  - Pairwise correlations
  - Autocorrelations

  →Not clear privileged informative role of idiosyncratic vol


Idiosyncratic Volatility and Market Volatility
Volatility
Market Volatility
Idiosyncratic Volatility
.2
.4
.6
.8
1
Market Volatility
0
20
40
60
80
2005
2010
2015
Year


Idiosyncratic Volatility and SMB Volatility
Volatility
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.2
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SMB Volatility
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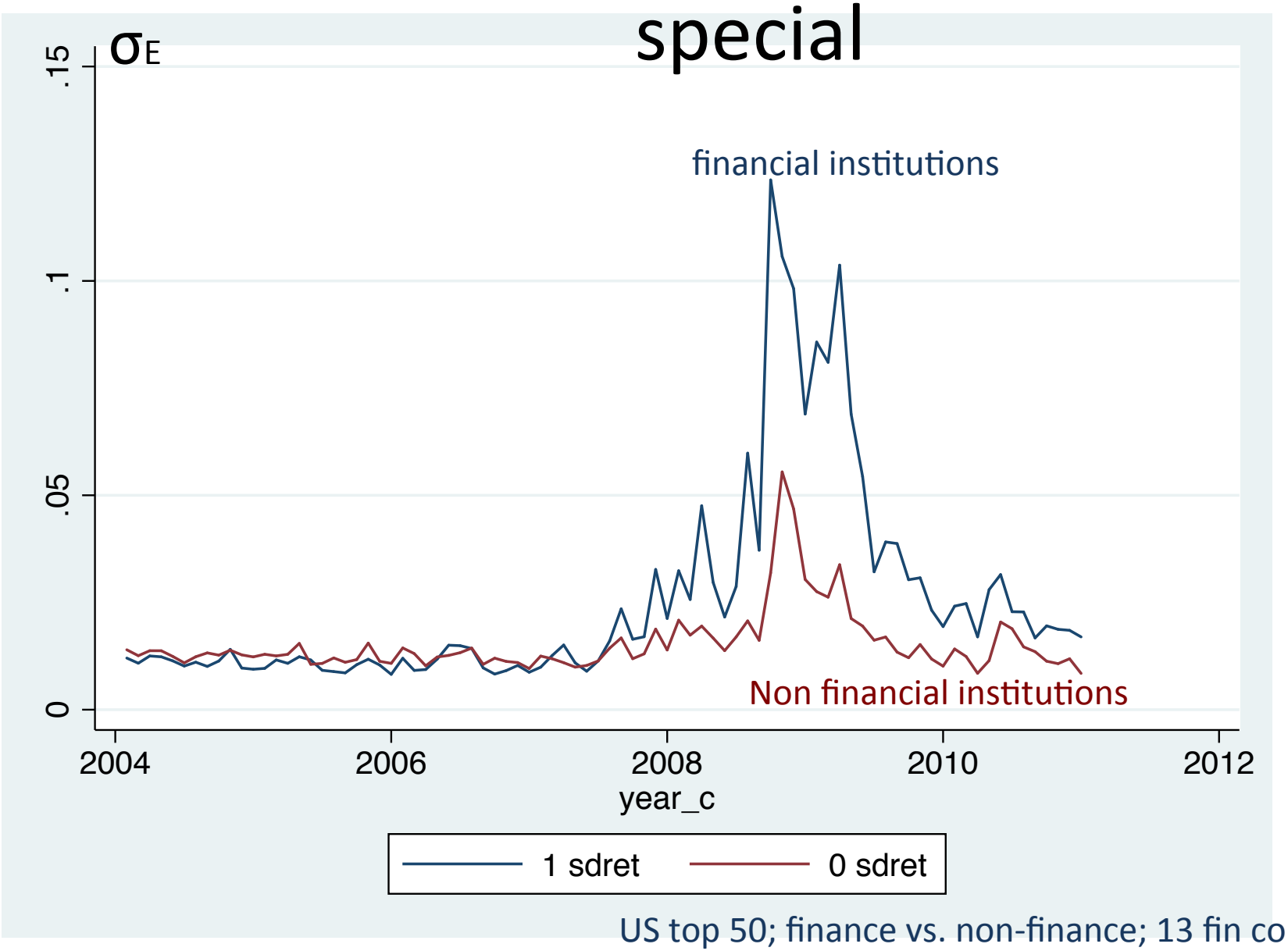
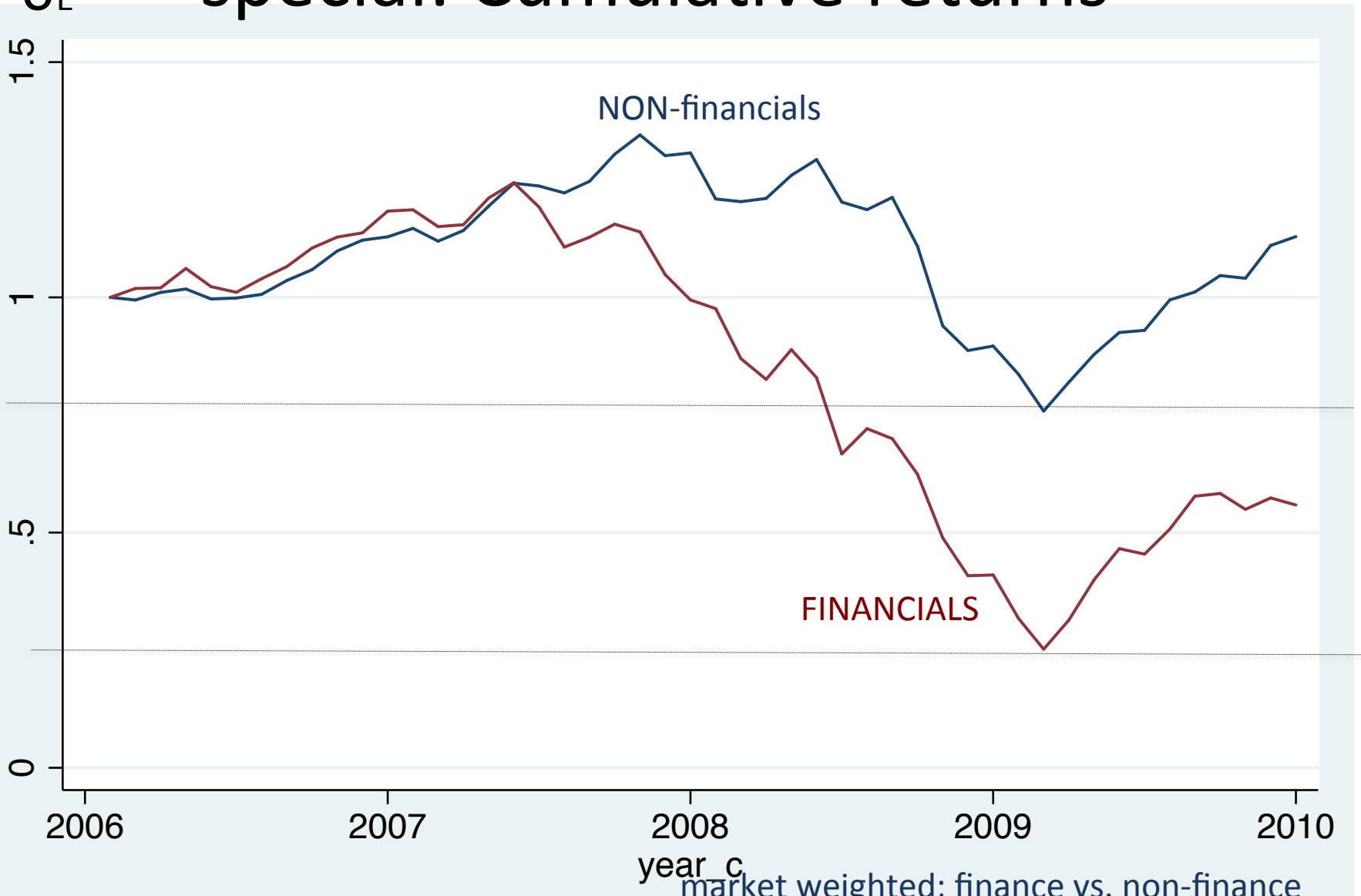
Large Financial institutions do not look that special ?

Large Financial institutions DO look special



US top 50; finance vs. non-finance; 13 fin companies

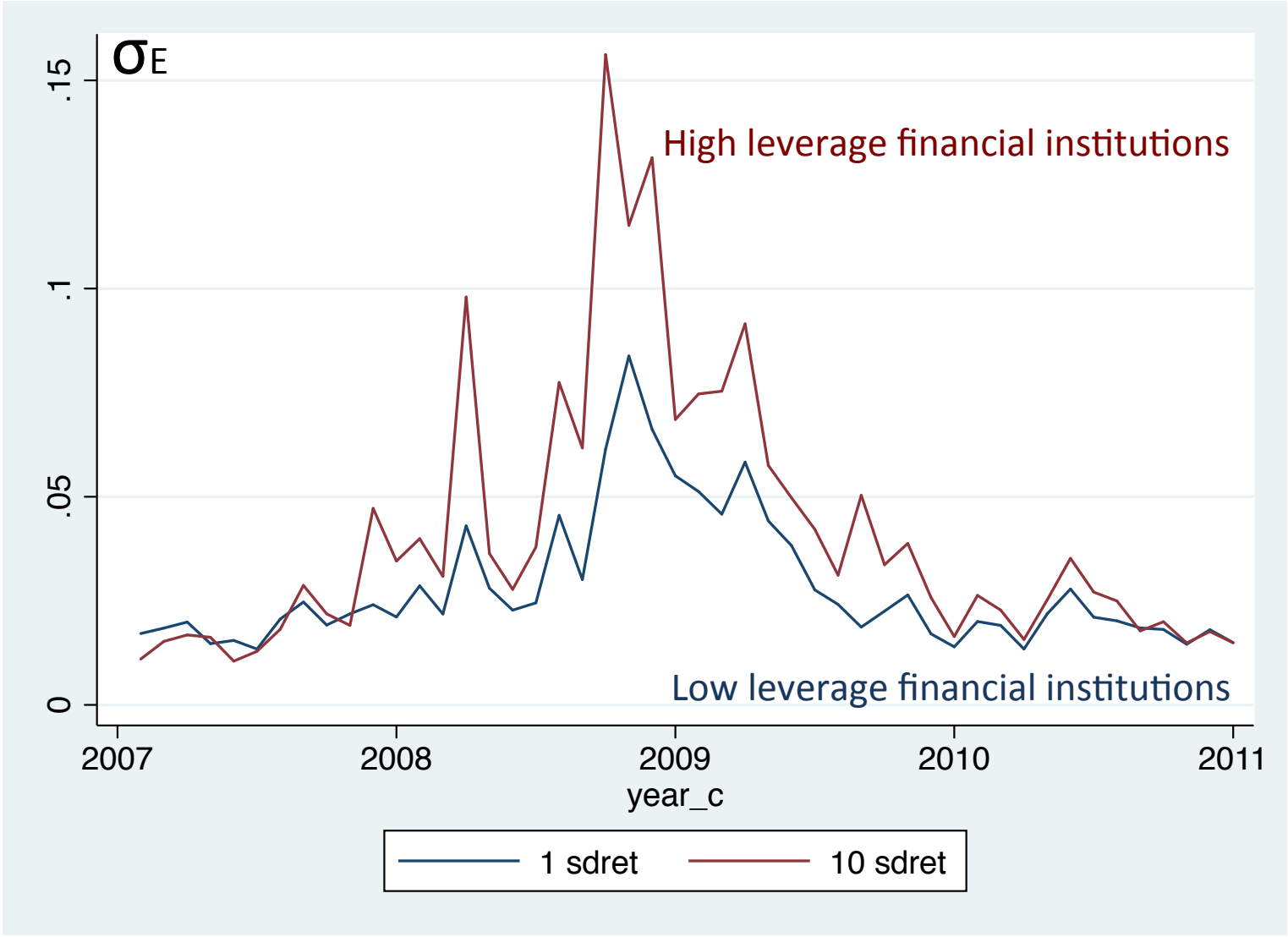
Large Financial institutions do look special: Cumulative returns



market weighted: finance vs. non-finance

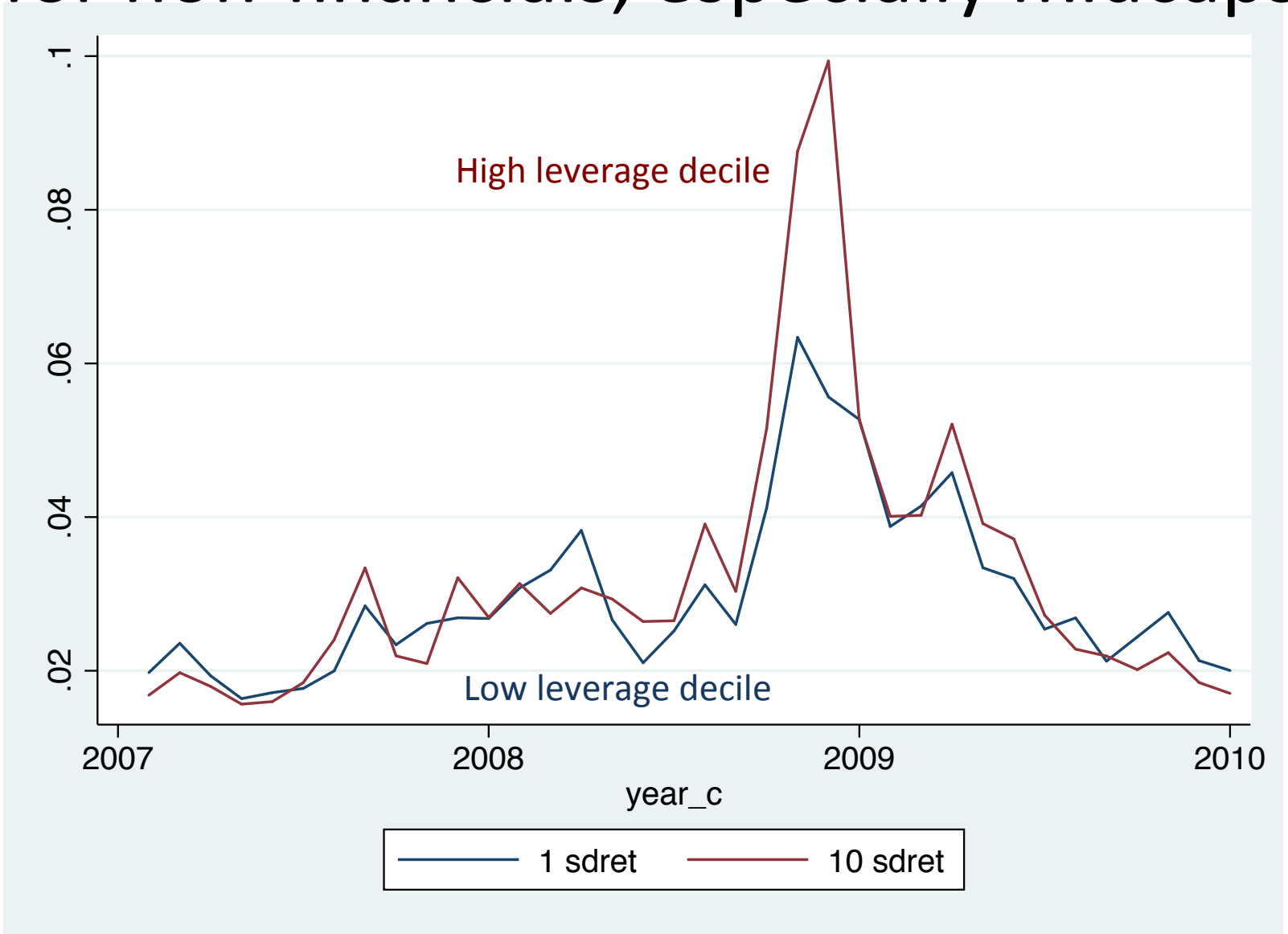
Leverage does not matter so much?

Leverage does matter



US top 500; leverage 2006, top vs. bottom decile

Leverage does matter: also for non-financials, especially midcaps



US top 1000-1500; leverage 2006, top vs. bottom decile

Conclusion

- Difficult to conclude about role or non-role of financial sector: is it central? Does it amplify fundamental shocks?
  - If markets are forward-looking, prices are already fixed-point to all expected inter-reactions
  - If markets are not forward-looking, looking at realized volatility is not informative about tail risk
- need for identification strategy
  - CF lit.
- We still know little about why aggregate vol and idiosyncratic vol are so similar