

Discussion of
“Leverage Network and Market Contagion”
by Bian, Da, Lou, and Zhou

Wenxi (Griffin) Jiang
CUHK Business School
The Chinese University of Hong Kong
@ABFER2018

Summary of the paper

Summary of my discussion

- Why is this paper important?
- Comment on the network framework
- Comment on some empirical tests
- Thoughts on future empirical work on leverage

Anecdotal evidence on leverage-induced crashes

- 1929 stock market crash
 - Kindleberger (1978) and White (1990)
- 1987 black Monday
 - Brady (1988)
- 1998 LTCM
 - Rubin et al. (1999), Edwards (1999), and Lowenstein (2000)
- 2007 quant crisis
 - Khandani and Lo (2011)
- 2008-2009 financial crisis
 - Greenlaw et al. (2008) and Brunnermeier (2009)

Large-sample/systematic evidence

- Little!
 - Lack of leverage data
 - Linking leverage to the price of assets being held
- Indirect measures
 - Margin requirement changes
 - E.g., Schwert (1989), Hsieh and Miller (1990), and Hardouvelis (1990)
 - Proxy for deleveraging
 - E.g., Aragon and Strahan (2012), and Mitchell and Pulvino (2012)

New evidence using direct measure

- Amplification: one asset

- Jiang (2015)

- Leverage of hedge funds in the U.S., quarterly basis, 2001 to 2015
 - From SEC filings
 - But do not observe real-time margin
 - Stocks held by levered funds are prone to crashes

- Bian, He, Shue, and Zhou (2017)

- Retail leverage, daily basis
 - Crash period in China: May to July of 2015
 - Identified with the distance to margin call

- Contagion: multiple assets

- This paper!

- More relevant to market-wide breakdowns

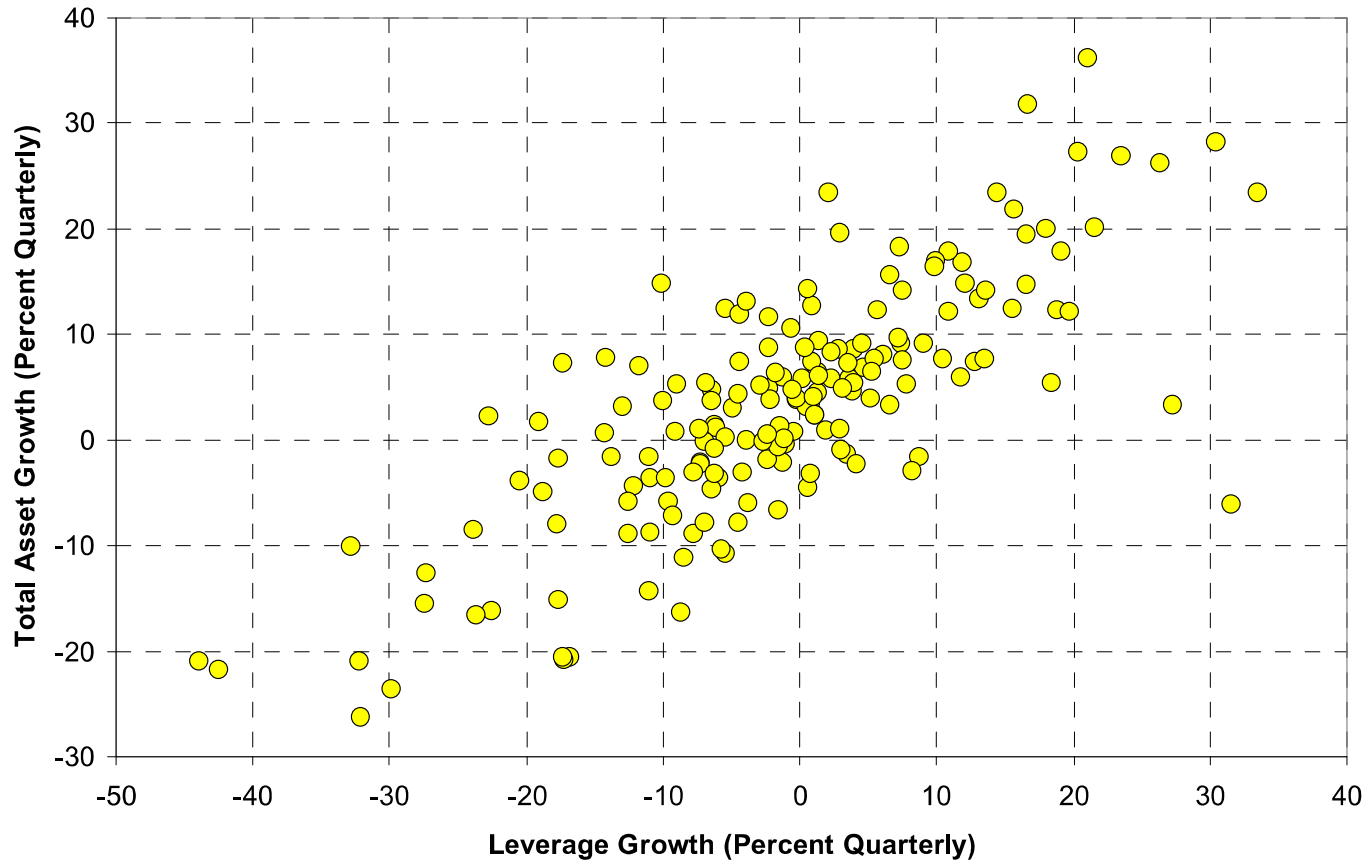
Comment 1: behavior of using leverage

- Amplification layer 1: leverage target
 - Leverage mechanically changes with asset values

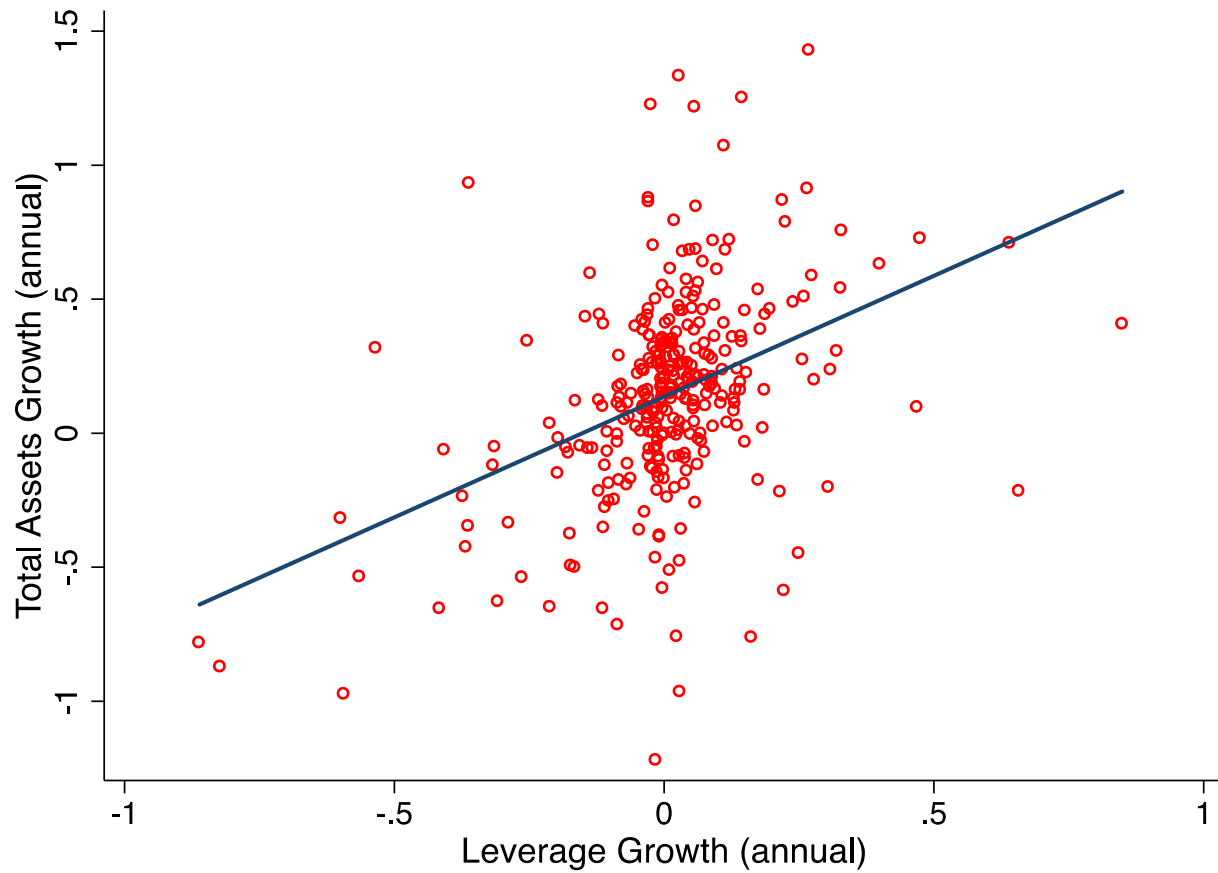
$$\frac{A_{0,j}(1 + r_{1,j}) + X_{1,j}}{A_{0,j}(1 + r_{1,j}) - D_{0,j}} = L_{0,j} \Rightarrow X_{1,j} = A_{0,j}(L_{0,j} - 1)r_{1,j}$$

- Amplification layer 2: pro-cyclical leverage
 - Increase leverage with growth in asset value
 - Particularly in the down side, due to margin calls or VaR
 - True for broker-dealers and hedge funds in the US

Broker-dealer leverage (Adrian and Shin 2010)

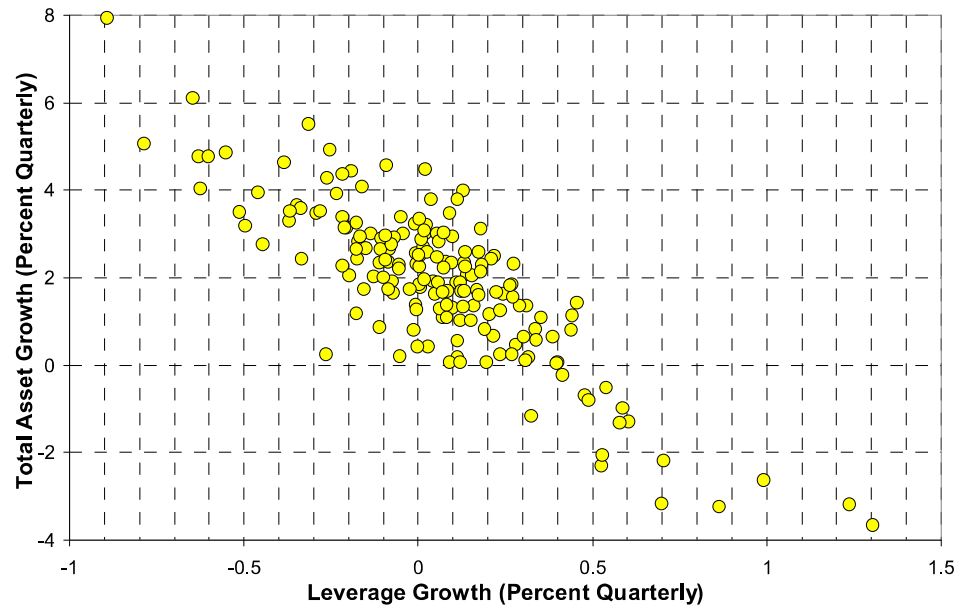


Hedge fund leverage (Jiang 2015)



Comment 1: behavior of using leverage

- Household leverage in US (Adrian and Shin 2010)



- Is retail leverage in China counter- or pro-cyclical?
 - Important to the dynamic during the boom-bust cycle

$$Leverage_{j,t+1} = c + \beta * PortfolioReturn_{j,t} + \gamma * Leverage_{j,t} + \epsilon_{j,t+1}$$

Comment 1: behavior of using leverage

$$Leverage_{j,t+1} = c + \beta * PortfolioReturn_{j,t} + \gamma * Leverage_{j,t} + \epsilon_{j,t+1}$$

- β and γ are economically meaningful estimators to better gauge the network effect

$$\frac{A_{0,j}(1 + r_{1,j}) + X_{1,j}}{A_{0,j}(1 + r_{1,j}) - D_{0,j}} = L_{0,j} \Rightarrow X_{1,j} = A_{0,j}(L_{0,j} - 1)r_{1,j}$$

- Can be rewritten as,

$$X_{1,j} = A_{0,j}(L_{1,j} - 1)r_{1,j}$$

$$L_{1,j} = \hat{c} + \hat{\beta}r_{1,j} + \hat{\gamma}L_{0,j}$$

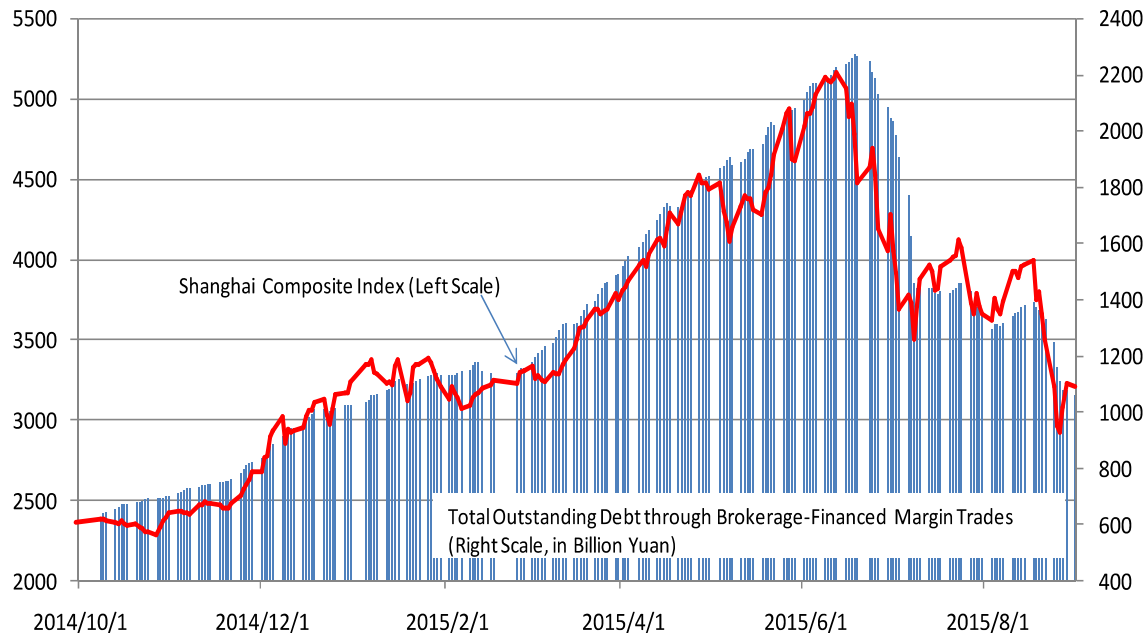
- Can even bring a bit non-linearity/asymmetry into the structure
 - i.e., more likely to deleverage when getting close to margin calls
- Presumably, can measure LIPP more accurately

Comment 2: identify the leverage effect

- Based on margin accounts' holding, this paper finds,
 1. MLPR predicts lower returns (not NMLPR)
 2. MARHOLD predicts more return comovement
 3. Centrality predicts lower returns in the busting period
- Finding 1 can be explained by investor characteristics rather than the use of leverage
 - Possibly because levered investors are more speculative or have shorter horizon
 - The **distance to margin-call** would help in identifying leverage effect
- Findings 2 and 3 might need to control for the counterparts based on non-margin accounts

Some thoughts on future research

- This paper shows that the effect is much stronger in down market than in up market
 - Aligned with the findings in Jiang (2015) and Bian et al (2017)
- How is leverage accumulated in the system during the booming period?



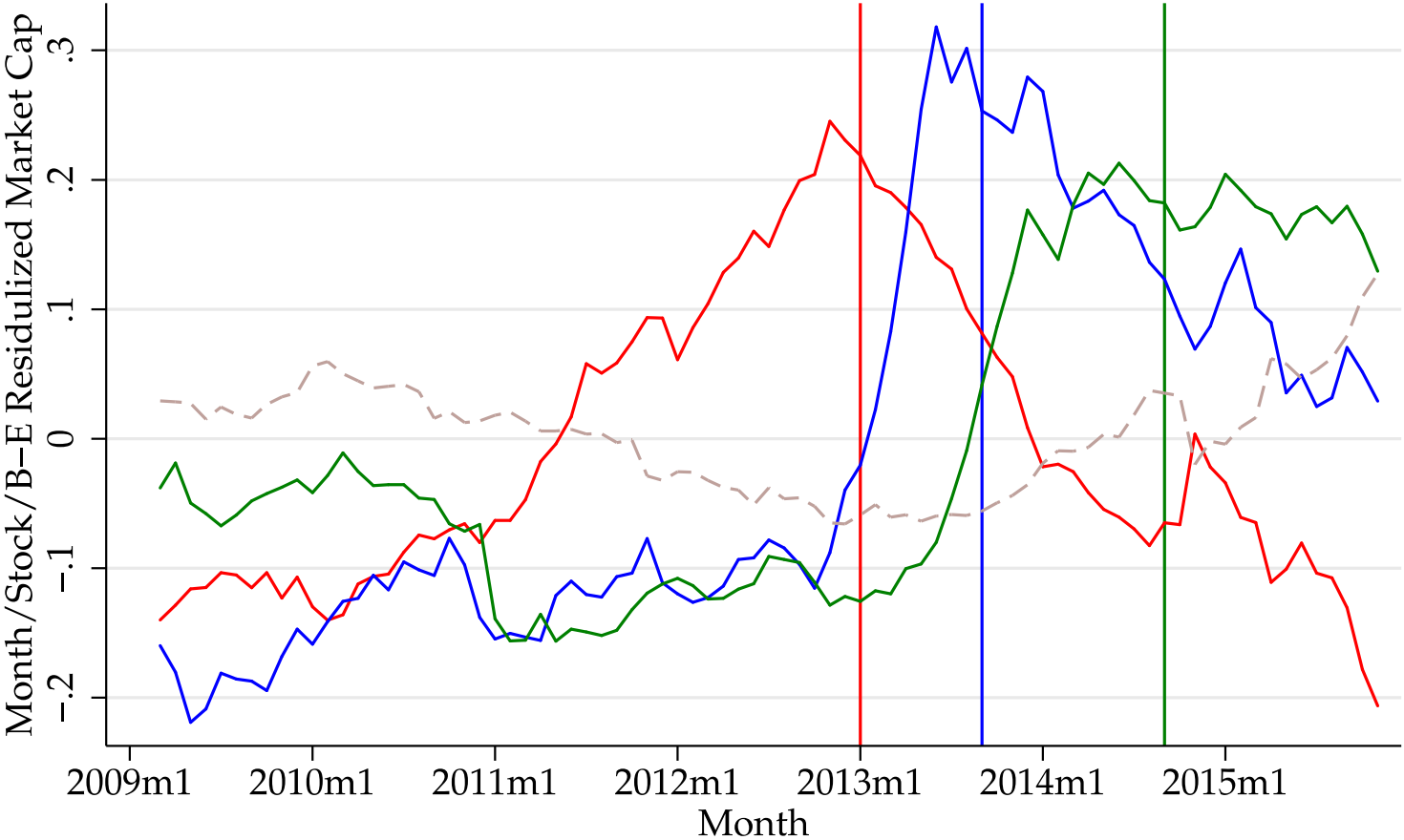
Leverage in booms

- How is leverage accumulated in the system during the booming period?
 - What drives the use of leverage by investors
 - Arbitrage? Speculative trading? Over extrapolation?
 - Interactions between different groups of investors
 - Dynamics between leverage and price appreciation
- Unique setting of the Chinese market
 - Brokerage-financed margin trades is public
 - Staggered deregulation on margin trading
 - Pilot program in 2010/02 with 90 stocks marginable
 - Official in 2011/11, extended to 280 stocks
 - Further extended for 3 times (based on a formula), 900 marginable stocks at the end

Riding the Credit Boom (2018)

- Jointly with Hansman, Hong, Liu and Meng
- Focus on the interaction between unconstrained and constrained investors
 - When margin becomes available, constrained investors might buy with leverage, pushing up price (*direct effect*)
 - Unconstrained investors might speculate on the direct effect and buy before the stock becomes marginable (*anticipatory effect*)
 - Constrained investors end up buying at higher prices
 - Quantifying the two effects based on the staggered reform (DiD and RD)

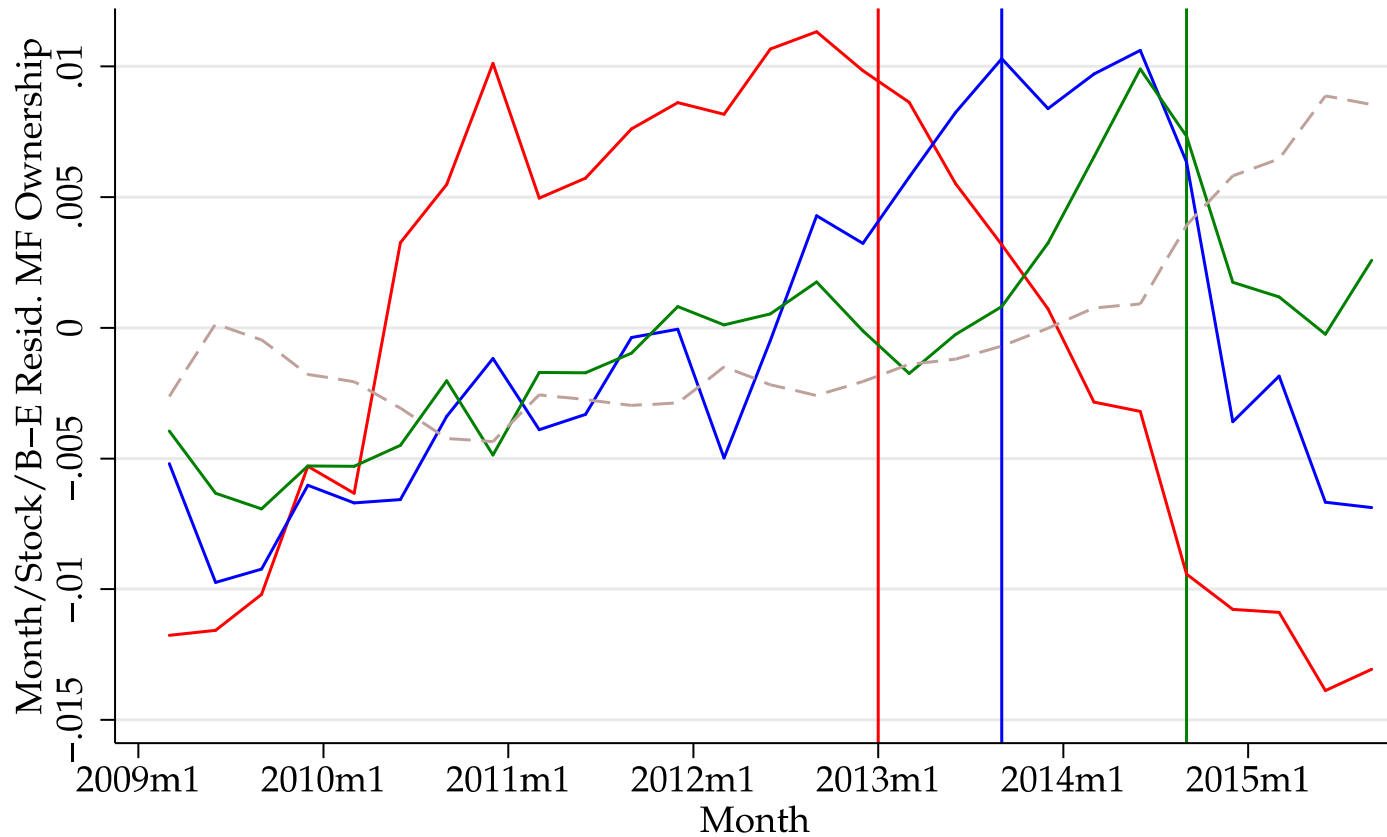
Stock prices before and after becoming marginable



— Vintage 2 — Vintage 3
— Vintage 4 - - - Never Marginable

Unconstrained investors front run

Panel A: Mutual Fund Ownership Share



— Vintage 2 — Vintage 3
— Vintage 4 - - - - Never Marginable

Conclusion

- Great paper!
- Important contribution to the literature
- The unique data can help us better understand the role of leverage in asset pricing