Stock Market Cross-Section Skewness and Business Cycle Fluctuations*

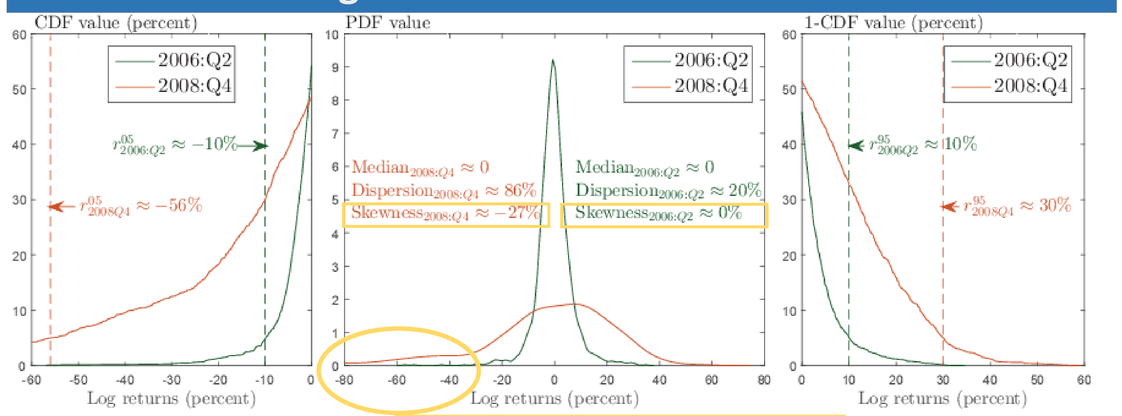
Thiago R.T. Ferreira, PhD[1]
[1]Federal Reserve Board

*The views expressed in this paper are solely my responsibility and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.

Abstract/Introduction

- The cross-section skewness of the distribution of stock market returns of financial firms, i.e., **financial skewness**
  - Closely tracks business cycle fluctuations in the 1926-2015 period,
  - Predicts economic activity better than well-known bond spreads and other cross-section moments in in-sample and out-of-sample regressions,
  - Signals credit market fundamentals, such as financial firms' asset quality.
- I identify financial skewness and dispersion shocks using vector autoregressions and a dynamic stochastic general equilibrium model.
  - Both models estimate that skewness shocks are relevant drivers of business cycles and have sizable economic effects through a financial channel.
  - Dispersion shocks become unimportant.

Distribution of stock market log-returns of financial firms



Dispersion is calculated by $(r_t^{95} - r_t^5)$, while skewness is calculated by $\left[(r_t^{95} - r_t^{50}) - (r_t^{50} - r_t^5)\right]$, where r_t^p is the p^{th} percentile of the distribution of log returns at time t. Left figure shows the cumulative distribution function (CDF). Center figure shows the probability density function (PDF). Right figure shows the complementary cumulative function (1-CDF).

Financial Skewness Tracks Business Cycles

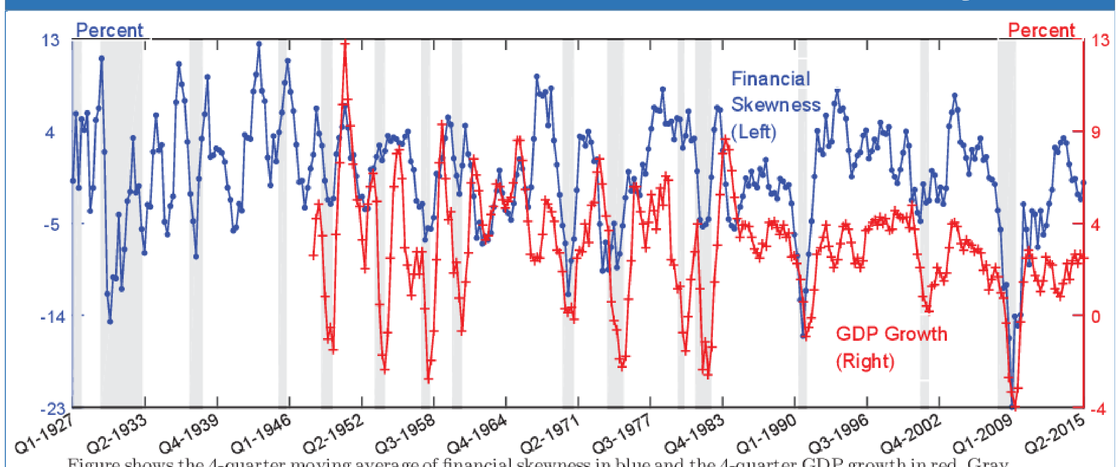


Figure shows the 4-quarter moving average of financial skewness in blue and the 4-quarter GDP growth in red. Gray areas represent periods classified as recessions by the NBER.

Partial correlations (logit) are higher than the ones associated with most other variables.

Financial Skewness Predicts Business Cycles

Out-of-Sample Forecasts of Average h-Quarter Ahead GDP Growth, R-RMSFEs

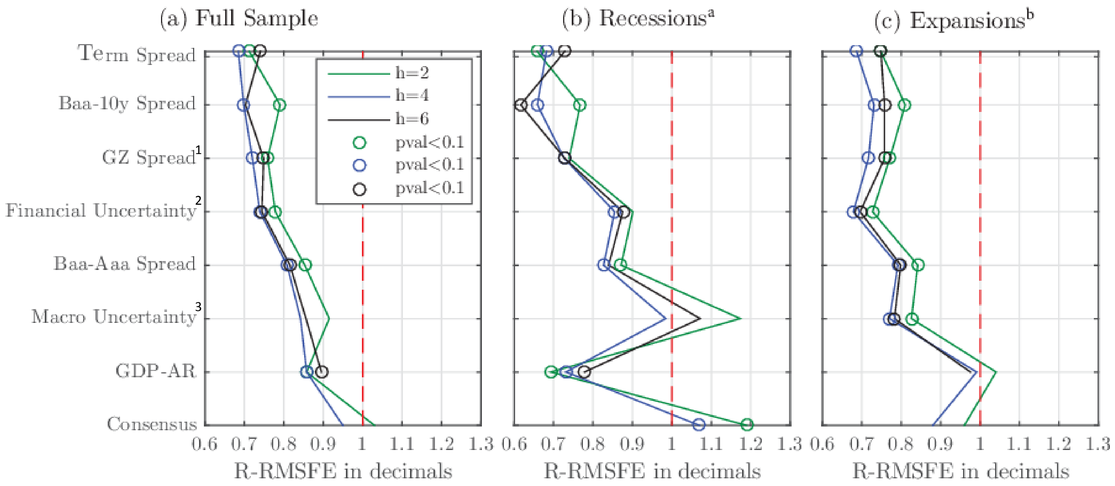


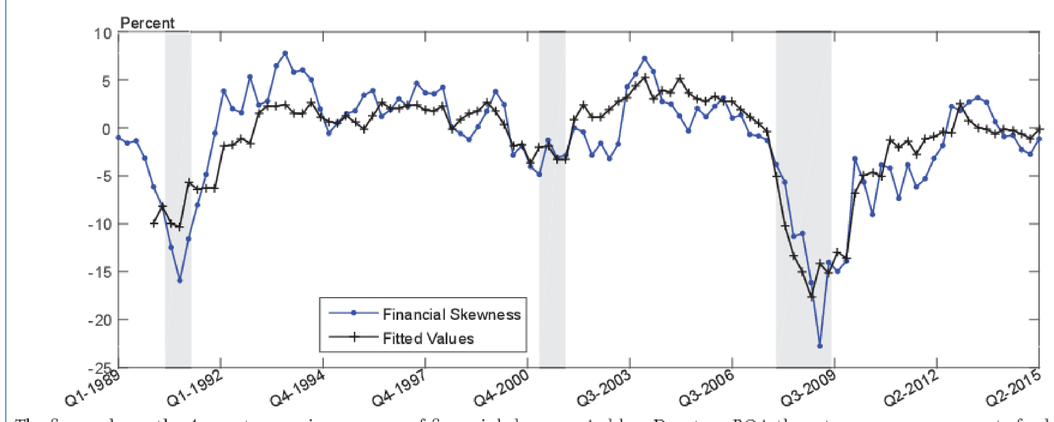
Figure reports the ratio between the root mean squared forecast error (RMSFE) of simple regressions using financial skewness relative to the RMSFE of regressions using competing variables. I denote this ratio as relative root mean squared forecast error (R-RMSFE) of competing variable and report it in decimals. Values below 1 indicate that financial skewness performs better than the competing variable. Statistical significance is relative to the null hypothesis that the competing variable and financial skewness have equal predictive power. Circles represent significance levels of at least 10 percent. [a]Recession R-RMSFEs are computed using forecast errors coming from forecasts estimated during a quarter classified by the NBER as a recession. [b]Expansion R-RMSFEs are analogous to recession R-RMSFEs. Sample is 1973Q1 to 2015Q2.

Contact

Email: thiago.r.teixeiraferreira@frb.gov
Website: https://sites.google.com/site/thiagortferreira/

Financial Skewness and Credit Market Fundamentals

Fitted Values from Banks' Return on Assets and Change in Lending Standards for Small Firms



The figure shows the 4-quarter moving average of financial skewness in blue. Denote as ROA the return on average assets for banks and LSSF the changes in banks' lending standards to small firms.The figure plots in black the fitted values of a regression using only the contemporaneous values of ROA and LSSF on the 4-quarter average of financial skewness.

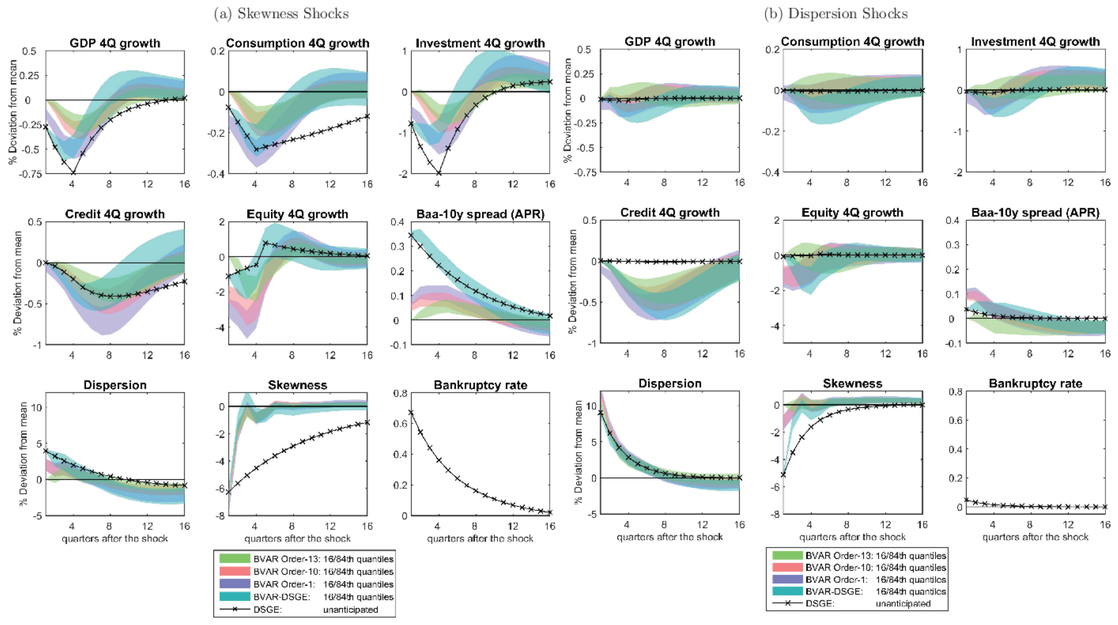
- Financial firms diversifies away uninformative cross-section risks (see paper).
- Financial skewness signals financial firm's asset quality (graph above).
- Financial skewness anticipates credit market conditions (see paper).

Identifying Financial Skewness Shocks

I use two frameworks: a Dynamic Stochastic General Equilibrium (DSGE) model and Bayesian Vector Autoregressions (BVARs). The DSGE model rationalizes the idea that the relationship between financial firms and their borrowers achieve some diversification of cross-section risks, while not totally eliminating them. The model has new Keynesian features and a financial accelerator channel, and allows cross-section risks to be subject to dispersion[4] and skewness shocks.

Figure 9: Impulse Response Functions from BVARs and DSGE model

(a) Skewness Shocks (b) Dispersion Shocks



Financial Skewness vs Dispersion Shocks

Both DSGE model and BVARs show that financial skewness shocks
- Are relevant drivers of the business cycle (variance decomposition (see paper)).
- Have sizable economic effects (IRFs in Figure (a)) through a financial channel: larger IRFs of Baa-10y spread ➡ larger IRFs of GDP, consumption and investment

Both DSGE model and BVARs show that dispersion shocks:
- Are unimportant drivers of cycles (see paper)
- Have small economic effects (IRFs in Figure (b)) .

Paper contributions:

Financial indicators with predictive ability on the business cycle
- The focus has been in bond markets[5]. I propose focusing on stock markets.

Cross-section/idiosyncratic risk shocks are important business cycle drivers
- Skewness displaces dispersion[4,6,7,8] shocks

To the best of my knowledge, financial skewness is the first measure of cross-section risk performing well in predicting economic fluctuations.

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