Discussion of "Cross-Sectional Financial Conditions, Business Cycles and The Lending Channel," by Thiago Ferreira

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Kellogg
Overview

Skewness is cyclical

- The distribution of realized sales growth is more left-skewed in recessions
  Salgado, Guvenen, Bloom (2019)
Distribution of sales growth among public non-financial firms

- 90th percentile
- Median
- 10th percentile
Kelley skewness of sales growth

Distribution of sales growth among public non-financial firms
Overview

Skewness is cyclical

- The distribution of realized sales growth is more left-skewed in recessions
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- The options-implied distribution of equity returns is more left-skewed in recessions
  Dew-Becker (2022)
Overview

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This paper:

New measure of skewness, focused on financial intermediaries

Skewness of Realized equity returns of Financial intermediaries — “SRF”
Overview

Main findings

- SRF leads the cycle by 3-4 quarters
- SRF is positively correlated with banks’ ROA and primary dealers’ equity capital ratio
- SRF predicts growth in aggregate outstanding loans to corporations
- SRF predicts capex by public firms
Overview

Main findings

- SRF leads the cycle by 3-4 quarters
- SRF is positively correlated with banks’ ROA and primary dealers’ equity capital ratio
- SRF predicts growth in aggregate outstanding loans to corporations
- SRF predicts capex by public firms

Comments

1. Empirics
2. Banks vs. non-bank financial intermediaries
3. Interpreting the evidence
In-Sample GDP Forecast Regressions, 4 Quarters Ahead

### (a) Stock Returns: One Cross-Sectional Moment per Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Financial Firms</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Dispersion</td>
<td>Skewness</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncertainty</td>
<td>-0.07</td>
<td>-0.28</td>
<td>-0.07</td>
</tr>
<tr>
<td>Real Fed Funds</td>
<td>0.34</td>
<td>0.28</td>
<td>0.35</td>
</tr>
<tr>
<td>Term Spread</td>
<td>0.89***</td>
<td>0.86***</td>
<td>0.94***</td>
</tr>
<tr>
<td>EBP</td>
<td>-0.44*</td>
<td>-0.71**</td>
<td>-0.32</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.37</td>
<td>0.34</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Note: Table 1 reports the results from regression (\( \hat{h} = 4 \)) on average GDP growth 4 quarters ahead, with \( p \) equals 4 because of the relatively low AIC of this specification. Uncertainty (Ludvigson et al., 2015) measures aggregate uncertainty in financial markets. Excess bond premium or EBP (Gilchrist and Zakrajšek, 2012) measures investor sentiment in the corporate bond market. Real fed funds is measured by the fed funds rate minus the 4-quarter change of core inflation from the personal consumption expenditures. Term spread is the 10-year Treasury constant maturity rate minus the three-month Treasury bill rate. Regressors are standardized, allowing comparison between coefficients. Coefficients of lagged GDP growth are omitted. Standard errors are calculated according to Hodrick (1992). Statistical significance tests the null hypothesis that the coefficient associated to a regressor equals to zero, where \( \ast \), \( \ast\ast \), and \( \ast\ast\ast \) denote significance levels of 0.1, 0.05 and 0.01, respectively. The sample is 1973–2020.

SRF predicts 4-quarter ahead GDP growth.
Comment 1(a): third and first-moment shocks

SRF predicts 4-quarter ahead GDP growth

But SRF is highly correlated with first moment of equity returns of Financial Intermediaries
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SRF predicts 4-quarter ahead GDP growth

But SRF is highly correlated with first moment of equity returns of Financial Intermediaries

Suggestion: in predictive regressions, control for first moments throughout
Comment 1(b): cross-sectional vs. within-firm skewness

\[ r_{i,t} = r_{m,t} + \varepsilon_{i,t} \]

Dew-Becker (2022):
- S&P 500 options \( \rightarrow \) "aggregate" skewness
- single-name options \( \rightarrow \) "firm-level" skewness
- idiosyncratic skewness = residual
- only "idiosyncratic skewness" is procyclical

This paper:
- cross-sectional skewness = combination of aggregate and idiosyncratic

**Suggestion:** use panel dimension to construct within-firm measures?
Comment 1(c): credit spreads

Papers emphasizes the fact that skewness of credit spreads is countercyclical.
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$s_{i,t} \sim \text{Lognormal}(\mu_t, \sigma^2), \quad \log(\mu_t) \sim \text{AR}(1)$
Papers emphasizes the fact that skewness of credit spreads is countercyclical.

Is this surprising? Credit spreads are positive.

**Suggestion**: construct *within-rating* skewness measures.
Comment 2: which financial intermediaries?

SRF predicts

- Corporate loan growth (aggregate)
- Capex (firm-level)

SRF does not predict

- Bond or commercial paper growth (aggregate)

∴ “SRF is a barometer of the credit channel”
Comment 2: which financial intermediaries?

Traditional (bank) credit channel

Loans account for a shrinking share of corporate debt. Within loans: institutional investors (CLOs, loan funds) are replacing banks. Emerging (non-bank) credit channel. Bonds; pension funds/insurance companies ∼ 40%; Mutual funds ∼ 20%.

Different liability structure. Suggestion: How bank-centric is SRF? Separate banks from other intermediaries. Are the effects of SRF concentrated on firms that use loan markets actively?
Comment 2: which financial intermediaries?

Traditional (bank) credit channel [Crouzet, 2021; Schwert, 2021; Berg et al., 2021]

Loans account for a shrinking share of corporate debt
The loan share in corporate debt has been declining since 1990

[Crouzet, 2021]
Comment 2: which financial intermediaries?

Traditional (bank) credit channel [Crouzet, 2021; Schwert, 2021; Berg et al., 2021]

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 Loans account for a shrinking share of corporate debt

 Within loans: institutional investors (CLOs, loan funds) are replacing banks

Emerging (non-bank) credit channel [Li and Yu, 2021; Crouzet and Darmouni, 2022]
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**Emerging (non-bank) credit channel**

Bonds; pension funds/insurance companies \(\sim 40\%\); Mutual funds \(\sim 20\%\)
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Different liability structure

Suggestion: How bank-centric is SRF?

Separate banks from other intermediaries

Are the effects of SRF concentrated on firms that use loan markets actively?
Comment 3: Interpreting the evidence

"The cross-sectional state of financial firms’ balance sheets is an important component of business cycles"

Model

Cross-sectional moments of banker net worth are not state variables

Skewness comes from assuming that shocks to returns on bankers’ investments are skewed

Broader question: where does skewness come from?

Are “fundamentals” skewed?

Or is skewness a manifestation of underlying frictions?
A simple model (1/2)  

Non-financial corporation (NFC)  

AK w/ capital quality shocks:  
$$K_{t+1} = \xi_t (I_t + (1 - \delta)K_t), \quad \xi_t \sim F(.) \quad \text{i.i.d.}$$  
all-equity financed  

Household  

can buy NFC shares (utility cost $\chi$)  

can buy bank liabilities  

Bank  

issues equity and deposits s.t. leverage constraint $\bar{\chi}$  

buys NFC shares  

limited liability + exit if liquidated; replaced only in the following period
Equilibrium

\[ \zeta_t = 1 \{ \text{intermediary default} \} = 1 \{ \xi_t \leq \xi_L \} \]

when \( \zeta_t = 0 \): household holds all NFC shares; no active intermediary
when \( \zeta_t = 1 \): intermediary holds all NFC shares; intermediary leverage is \( \bar{x} \)

\[ \therefore \text{balanced growth with shocks:} \]

\[ K_{t+1} = \xi_{t+1}(1 + g_t)K_t, \]

\[ g_t = \zeta_t g_L + (1 - \zeta_t)g_H, \quad g_L < g_H. \]

Question: Are returns skewed? Does skewness depend on \( \zeta_t \)?
Realized returns

Equity returns of NFC:

\[ R_t^{(e)} = (A + 1 - \delta) \xi_t \]

\[ \text{skew}(R_t^{(e)}) = \text{skew}(\xi_t) \]

Equity returns of intermediary:

\[ R_t^{(i)} = \frac{(A + 1 - \delta)}{1 - \bar{x}} (\xi_t - \xi_L) \zeta_t \]

\[ \text{skew}(R_t^{(i)}) > \text{skew}(\xi_t) \]

Intermediary shares are a call option on NFC shares
Interpreting the results

**Interpretation 1 (this paper):** Skewness of fundamentals is pro-cyclical

i.e. $\xi_t$, the shock to non-financial firms, has pro-cyclical skewness

but then why focus on SRF, instead of non-financial firms?

**Interpretation 2:** Intermediation induces pro-cyclical skewness

if only levered (bank) intermediaries: call option intuition hard to escape

if other types of intermediaries (e.g. mutual funds)

limited intermediary leverage $\therefore$ equity returns of intermediaries are more left-skewed

amplification of negative shocks if investor outflows lead to fire-sales

[Ma et al., 2021]
Conclusion

Summary: SRF correlates with

4q-ahead GDP growth
Intermediary balance sheet strength
Loan growth

Suggestions:

Document realized skewness within intermediaries
Disaggregate SRF across types of financial intermediaries
Are "fundamental" shocks skewed, or do financial frictions induce skewness?