Discussion of “Margin Regulation and Volatility”
by Brumm, Grill, Kubler and Schmedders

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Summary

Analyze the quantitative effects of margin regulation on asset return volatility using a calibrated GE model with two agents and two risky collateralized assets
Main Results

- Changes in the margin regulation of a class of assets (stocks) may have only small effects on the asset’s return volatility, but reduces volatility of another unregulated class of assets (housing), if investors have access to that class to take up leverage.

- Countercyclical margin regulation of all asset classes has a very strong dampening effect on asset return volatility.
Intuition

• Margin requirements for stocks ↑
  • Stocks become less attractive as collateral ➞ Less risk averse agents sell stocks following a bad shock ➞ volatility ↑
  • Ability to leverage decreases ➞ deleveraging less severe ➞ volatility ↓
  • But housing value is larger and held longer ➞ volatility ↓

• Uniform countercyclical margin regulation
  • Countercyclical leverage ➞ volatility ↓
  • Less risk averse agents reduce leverage in good times ➞ sell assets and dampen price increase
  • They increases leverage in bad times ➞ buy assets and dampen price decrease
Background of Margin Requirements

- Margin deposit: The amount that an investor must deposit in a margin account before buying on margin or selling short, as required by the Federal Reserve Board’s Regulation T.
- Initial margin requirement: Capital (deposit)/value ratio exceeds a minimum (50%).
- Maintenance margin: Investors must have at least 25% of the total market value of the securities they own in their margin account.
- Margin call
Modeling Margin Requirements

- Budget constraints

\[ c_t + p_t b_t + q_t \cdot \theta_t = \theta_{t-1} \cdot (q_t + d_t) + b_{t-1} + e_t \]

- One risky asset

\[ \theta_{t-1} (q_t + d_t) + b_{t-1} + e_t - c_t \geq m_t q_t |\theta_t| \]

- Multiple risky assets, \( j = 1, \ldots, J \),

\[ \theta_{t-1} \cdot (q_t + d_t) + b_{t-1} + e_t - c_t \geq \sum_{j=1}^{J} m_{jt} q_{jt} |\theta_{jt}| \]
Modeling Margin Requirements

- Define total wealth

\[ w_t = \theta_{t-1} \cdot (q_t + d_t) + b_{t-1} + e_t - c_t \]

- Define portfolio weight

\[ \pi_{jt} = \frac{q_{jt}\theta_{jt}}{w_t} \]

- One risky asset

\[ 1 \geq m_t |\pi_j| \]

- Multiple risky assets

\[ 1 \geq \sum_{j=1}^{J} m_{jt} |\pi_{jt}| \]
The paper’s Approach

• Each bond corresponds to a (no short-sales) risky asset

\[ m_{jt} \leq \frac{q_{jt}\theta_{jt} + p_{jt}b_{jt}}{q_{jt}\theta_{jt}} \]

• Endogenous margin requirement (maintenance??) to ensure no default in next period

\[ -b_{jt} \leq \theta_{jt} \min_{s_{t+1}} \{ q_{jt+1} + d_{jt+1} \} \]

• Market-determined margin requirement

\[ m_{jt} = 1 - \frac{p_{jt} \min_{s_{t+1}} \{ q_{jt+1} + d_{jt+1} \}}{q_{jt}} \]

• Regulated margin requirement

\[ \max \{ m_{jt}, \bar{m}_{jt} \} \]
Specific Comments: Modeling

- Two bonds but one interest rate??
- The literature often considers one bond which represents a bank account
- Discuss the relation to the literature
- No short sales or maintenance margin requirement
- Implementing countercyclical margin requirement: state is unobservable $m_{jt}(s_t)$
Specific Comments: Calibration

- Aggregate consumption = aggregate endowment + total dividends
- What is aggregate endowment in the data?
- Why is aggregate endowment growth IID with mean 2% and volatility 2%?
- Why stock dividends and housing payoffs are (colinear) proportional to aggregate endowment?
- Stock dividends are much more volatile (leveraged)!
Specific Comments: Exposition

- Formulation of recursive equilibrium
- Describe equilibrium system and numerical methods in more details
- Derive some analytical results? (using two period example)
Conclusion

• Interesting, important, and computationally challenging
• How to model short selling margin and maintenance margin requirement?
• Calibration can be improved
• Exposition can be improved