"Intermediary Leverage Cycles and Financial Stability"
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Prepared for the Swissquote Conference 2012 on Liquidity and Systemic Risk

Objectives of the paper

Develop a theoretical model of bank lending that allows to analyze:

- Impact of capital regulation on credit spreads and systemic risk.
- General equilibrium consequences of macro-prudential policies.
- Inter-temporal implications of capital regulation on social welfare.

Very timely, as regulators, especially in Switzerland, have started experimenting in "the dark" (countercyclical capital buffers, cocos,...).

Literature

Many contemporaneous papers are also trying to do the same:

- Angeloni-Faia (2011)
- Boissay-Collard-Smets (2012)
- Brunnermeier-Sannikov (2011), (2012)
- Gertler Kiyotaki (2012)
- Gersbach-Rochet (2011), (2012)
- He-Krishnamurthy (2012)
- Korinek-Kreamer (2012)
- Malherbe (2012)
- Miles- Yang-Marcheggiano (2011) .

What the paper does

1. Builds a continuous time DSGE model with financial frictions. Fundamental assumption:

leverage of financial intermediaries: inversely proportional to volatility of financial returns

2. Characterizes equilibrium of the model, which exhibits:

- Pro-cyclical leverage of banks
- Pro-cyclical share of bank credit
- "volatility paradox"

Fits the empirical findings of Adrian and Shin (2010).

3. Policy implications on impact of tighter capital requirements

Adrian Shin (2010)

For investment banks, leverage is strongly pro-cyclical

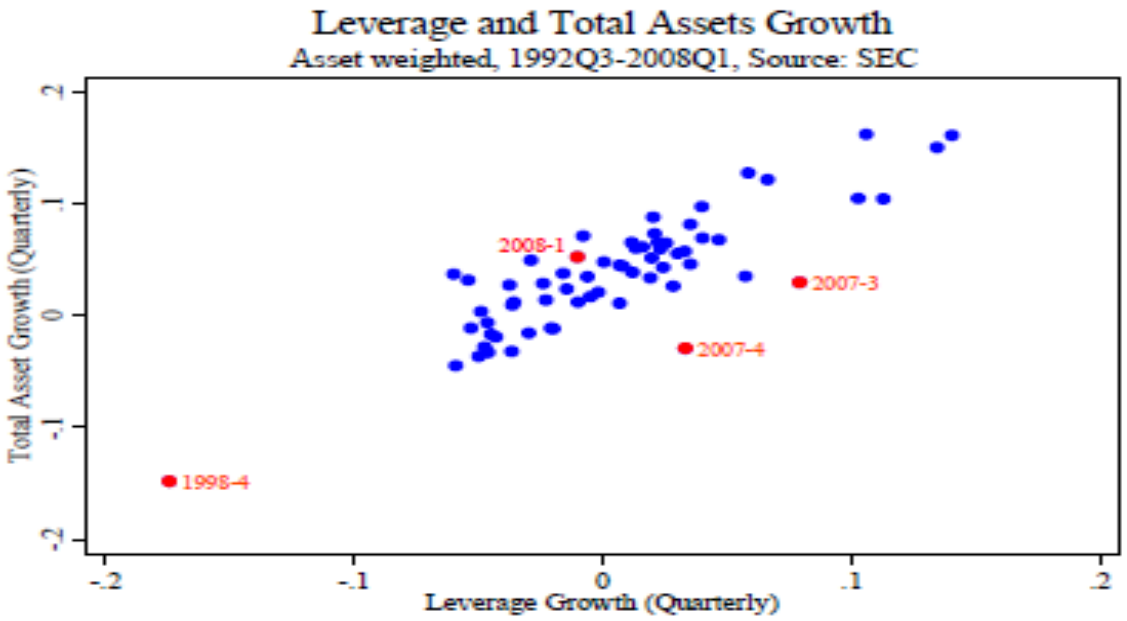


Figure 3.3: Aggregate Leverage and Total Asset Growth

Adrian Shin (2011) (continued)

However for commercial banks, leverage seems more or less independent of asset size.

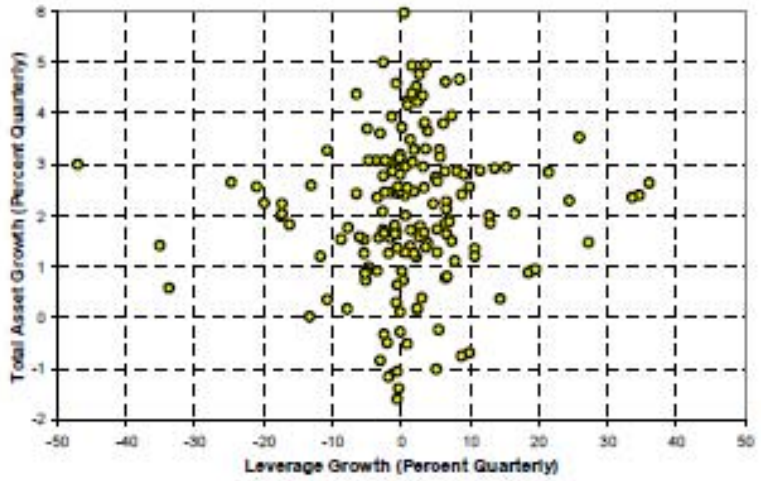


Figure 2.3: Total Assets and Leverage of Commercial Banks

MODEL

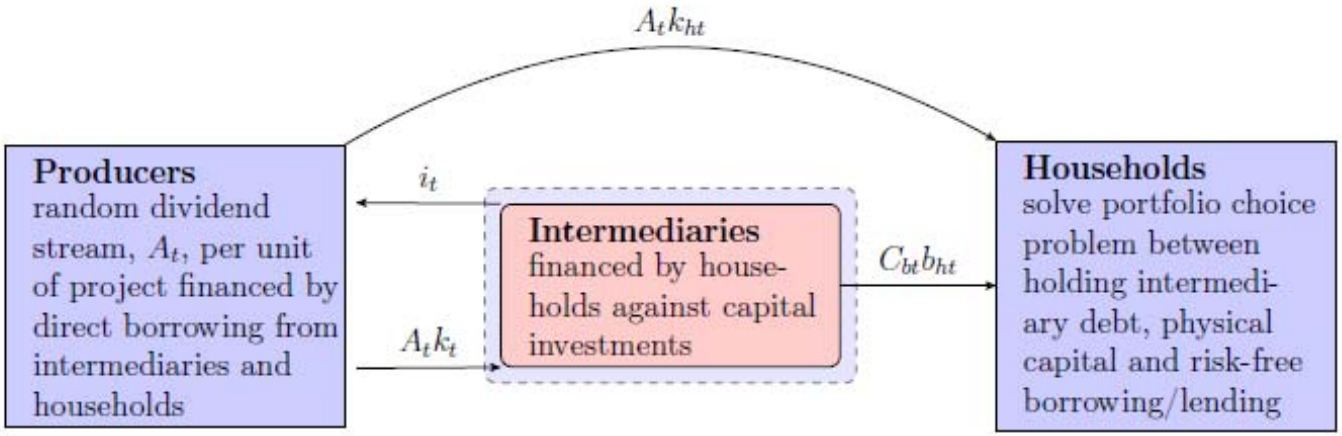


Figure 1: Economy structure

Continuous time.
Two types of shocks: productivity and consumer's discount rate.
Log utility: consumption= constant fraction of wealth.
Consumer invests in physical capital and bank debt (floating rate).
Portfolio choice: Inter-temporal CAPM where consumer hedges his preference shocks.
Coupon rate adjusts to equate supply and demand for bank debt.

MODEL(2)

•Only the bank can finance new investment (quadratic costs).

•Bank itself: financed by inside equity (wealth of banker) and risky debt (floating rate).

• **Assumption**: bank's leverage always inversely proportional to (instantaneous) volatility of capital prices (VaR constraint).

• Directly gives "volatility paradox":
when volatility is low, risk taking is high.

MODEL(3)

Systemic crises:

• occur when bank equity/**aggregate** (?)wealth falls below some threshold.

•In that case, bank defaults on its debt.

• Equity transferred to new banker.

Objective of the bank:

• maximizes discounted sum of its wealth(??!) under VaR constraint

•Not clear if objective function matters, given VaR constraint.

Equilibrium

Markovian with respect to two state variables:

Bank leverage θ_t

Bank equity/total wealth ω_t (systemic crisis indicator)

Equilibrium values of the variables of interest (total assets, bank equity , local volatility…) can be expressed as a function of these two state variables. In particular:

Share of intermediated credit= $\theta_t \omega_t$

Empirical implications(1)

By assumption bank leverage inversely proportional to local volatility (VIX)

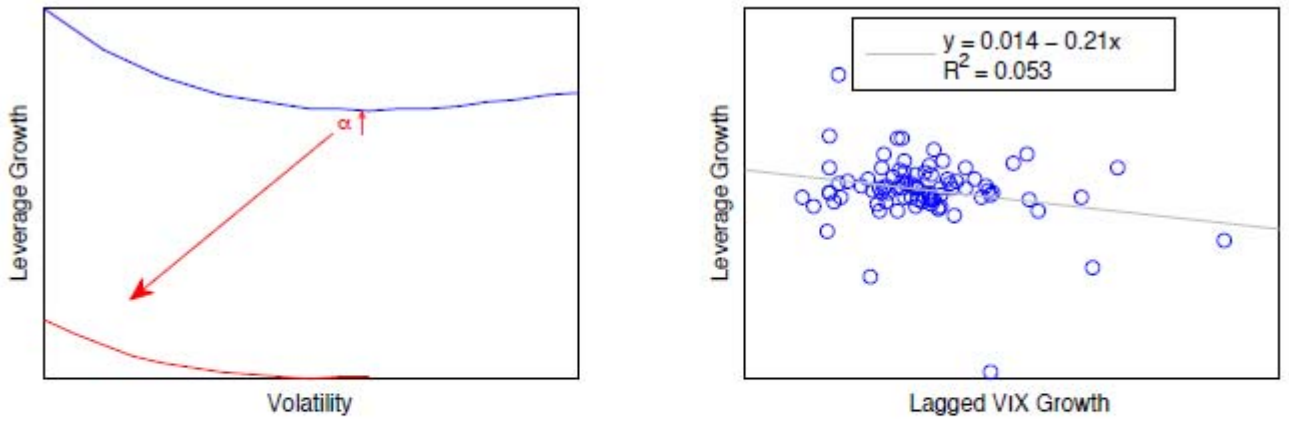
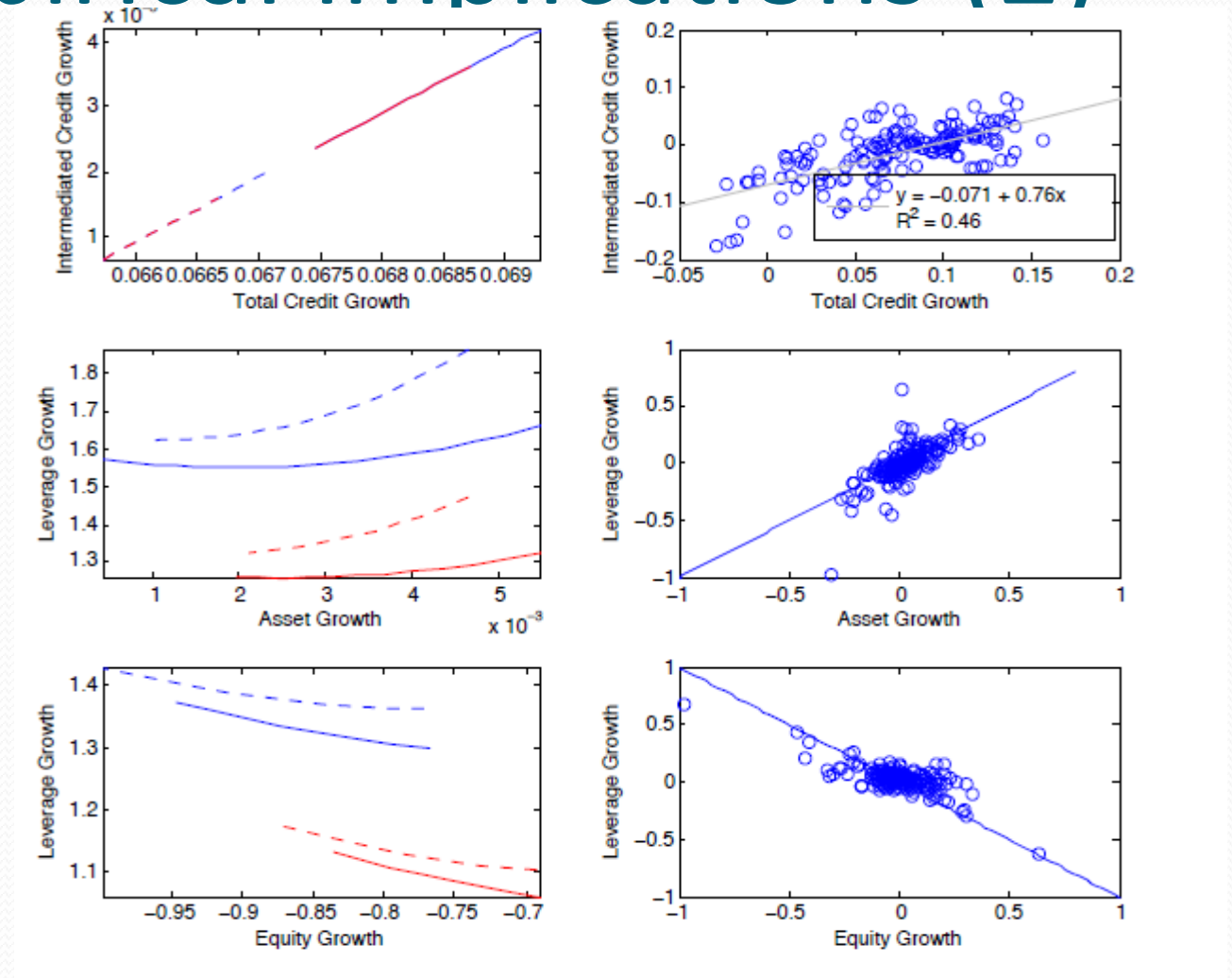


Figure 2: The trade-off between the growth rate of leverage of financial institutions and local volatility. The left panel investigates the shift in the trade-off as intermediary wealth share is decreased (going from the solid line to the dashed line) and the risk-based capital constraint is tightened, increasing α (going from the blue to the red lines). Data on broker-dealer leverage comes from Flow of Funds Table L.129.

Empirical implications (2)



COMMENTS(1)

Very ambitious paper, with a great potential.

However current version is very preliminary.

Many strange assumptions/ "typos" should be explained/corrected:

•Objective function of banks: not shareholder value. Moreover bankers never consume.

•Dynamics of household capital holdings: $dk_{ht} = -\lambda_k k_{ht} dt$
Thus converges to zero at exponential rate???

COMMENTS(2)

- Modeling of investment: only banks can invest. Does it mean that there are two classes of assets? Two sectors?

- Are direct holdings of physical capital by households a shortcut for equity markets?

- Modeling of systemic crises: all banks default at the same time when bank equity/ aggregate assets falls below some value???

COMMENTS(3): bank leverage

The model is motivated by Adrian and Shin (2010)'result that investment banks' leverage is highly pro-cyclical.

$$\frac{\Delta l}{l} = 0.83\frac{\Delta A}{A} + \ldots$$

This means that investment banks actively manage their equity:

$$\frac{\Delta E}{E} = \frac{\Delta A}{A} - \frac{\Delta l}{l} = 0.83\frac{\Delta A}{A} + \ldots$$

Banks distribute dividends (or buy back equity) in good times, issue new equity in bad times.

In the model, banks never distribute dividends nor issue equity!

I guess they manage their leverage through issues of debts but the mechanism is not clear to me

CONCLUSION

Very promising paper, on a very important and timely issue.

A great potential in terms of policy implications

However it is very preliminary: several modeling issues need to be clarified

To be usable by regulators probably needs to be simplified.
E.g., I like the constant leverage benchmark.