Procyclicality in Advanced and Emerging Economies

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Stylized Financial System

**ultimate borrowers**
- Households
- Non-financial firms
- govt

**Banking (intermediary) sector**
- intermediated credit
  - mortgages
  - corporate credit...
- direct credit
  - Treasury & municipal bonds
  - corporate bonds
- debt claims
  - deposits
  - financial paper
  - MBS, ABS...
- equity

**ultimate claim holders**
- Households
- Pension funds
- Insurance companies
- Rest of world
Banking (Intermediary) Sector

• Not just a passive player
  – Instead, is the *engine* that drives the financial cycle
  – Balance sheet management drives the financial cycle

• Stage of the financial cycle shows up in the composition of liabilities…
Aggregate Accounting Identity

Total Credit  =  Total equity of banking sector
               + Liabilities to non-bank domestic creditors
               + Liabilities to foreign creditors
Core versus Non-Core Liabilities

- Core liabilities: claim of domestic ultimate creditors on the intermediary sector

- Non-Core liabilities: claim on an intermediary by
  - Another intermediary
  - Foreign creditors
Scenario:
Expansion in Credit Needs to be Funded

Banking (intermediary) sector

ultimate borrowers
Households
Non-financial firms
govt

ultimate claim holders
Households
Pension funds
Insurance companies
Rest of world
Consequence 1: Reliance on External Funding
Case of United States
Holders of US GSE debt
Case of Korea
Ratio of Non-Core Liabilities to M2 in Korea
FX Liabilities (Korean Commercial Banks)

$ Billion

1997 crisis

2008 crisis

Short-term FX liabilities

Long-term FX liabilities
FX Liabilities (Foreign Bank Branches in Korea)

$ Billion

1997 Crisis

2008 Crisis

Short-term FX liabilities

Long-term FX liabilities
Hedging Long-dated Receivables with Short-term Liabilities

Export firm

Long-dated $ receivables

Forward Long $

Banking sector

A

₩ Bonds

L

$ Short debt
Leveraging and Deleveraging

Adjust leverage

Stronger balance sheets
Increase B/S size
Asset price boom

Adjust leverage

Weaker balance sheets
Reduce B/S size
Asset price decline
Equity Inflows/Outflows (Korea)

$ Billion

Subprime crisis starts
Lehman bankruptcy

2008/10

Inflow

Outflow

Foreign investors
Domestic investors

Equity Inflows/Outflows (Korea)
Net Equity Inflows/Outflows (Korea)
Equity and FX Bank Liability Flows (Korea)

- Lehman bankruptcy
- Inflows
- Outflows
- Bank FX liabilities
- Equity

$ Billion

Capital Flows and USD/KRW Rate

$10억

inflow

outflow

Exchange rate

USD/KRW rate

Bank FX liabilities
Equity
USD/KRW exchange rate
Consequence 2: Increased Complexity
Expanding Balance Sheets Imply Greater Cross Holding
Short Intermediation Chain

- Households
- Mortgage Bank
- Households

- Mortgage
- Deposits
Long Intermediation Chain

- Households
  - Mortgage
    - Mortgage Pool
      - MBS
        - ABS Issuer
          - ABS
            - Securities Firm
              - Repo
                - Commercial Bank
                  - Short-term paper
                    - Money Market Fund
                      - MMF Shares
Repos and Financial CP as Fraction of M2 (weekly)

Source: Adrian and Shin (2009)
Overnight repos, Financial CP and M2
(weekly, July 6 1994 as base date)
Booms

• Higher leverage of financial intermediaries

• Larger balance sheets of intermediaries

• Greater intertwining of intermediaries
  – Longer chains
  – Maturity mismatch to sustain longer chains
Architectural Analogy

• Adding extra capacity (more rooms) to a house when constrained by limited footprint
  – The only way is to build up (like a Manhattan skyscraper)
  – Except that Manhattan skyscraper is planned ahead, as a coherent whole
  – Better analogy is adding extra floors to a building without anticipating future floors on top
Sutyagin House in Archangel
Busts

• Deleveraging

• Shrinking balance sheets

• Unraveling of interbank lending
  – Runs
  – Retrenchment
Northern Rock
Policy Response
G20 Reform Agenda for Bank Capital Regulation

• Quality, quantity of bank capital
• Procyclical capital buffer
• SIFI surcharge (for systemically important financial institutions, or “too-big-to-fail”)
• Leverage ratio cap
Global Financial Safety Net

• Bilateral swaps
  – Lessons from 2008

• Global Financial Safety Net
  – Pre-emptive provision of liquidity
  – FCL, PCL and the GSM
  – Complementary to
    • Bilateral swaps
    • Regional arrangements
Other Tools (1)

• June 2010 leverage cap on FX derivative positions (Korea)
  – Indirect limit on short-term foreign currency liabilities by capping forward and swap positions
Other Tools (2)

• Bank Levy as a Prudential Tool
  – IMF’s Financial Stability Contribution is a levy on non-deposit liabilities
    • Leans against non-core liabilities directly
    • Automatic adjustment of burden (burden is high in bubble build-up stage)

• Macroprudential rationale, not just revenue motive
Other Tools (3)

• Non-core liabilities as monetary aggregate
• Role for monetary policy
  – Tracking growth of monetary aggregates
  – … but with financial stability motive rather than as second anti-inflation pillar
Longer-Term Structural Reform
Long Intermediation Chain

- Households
  - Mortgage
  - Mortgage Pool
    - MBS
    - ABS Issuer
      - ABS
      - Securities Firm
        - Repo
        - Commercial Bank
          - Short-term Paper
            - MMF Shares
households → mortgage bank → covered bonds → households

households

mortgage bank

mortgage pool

ABS issuer

mortgage

money market fund

ABS

securities firm

ABS

commercial bank

MMF shares

Short-term paper

Repo

covered bonds

mortgage

MBS
Investors in Covered Bonds

Source: SIFMA (2009)
Directions for Future Financial System

• Shorter intermediation chains
  – Less volatile
  – Less maturity transformation

• With better regulatory safeguards
  – Lower market-required ROE
  – Less expensive bank capital
  – Greater weight on core liabilities