
**Monetary Policy Workshop on Strengthening
Macprudential Framework**
held by IMF Regional Office for Asia and Pacific
(March 22~23, 2012, Tokyo)

Macprudential Policy Framework: The Case of Korea

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Outline

I. Potential Systemic Risks Unique to Korea

II. Macroprudential Measures Deployed

1) Main reasons we advanced these measures

2) Impacts of these measures

III. Possible Obstacles to Implementation

- Asymmetric impacts in addressing procyclicality

I. Potential Systemic Risks Unique to Korea

1

Capital Flow Volatility

2

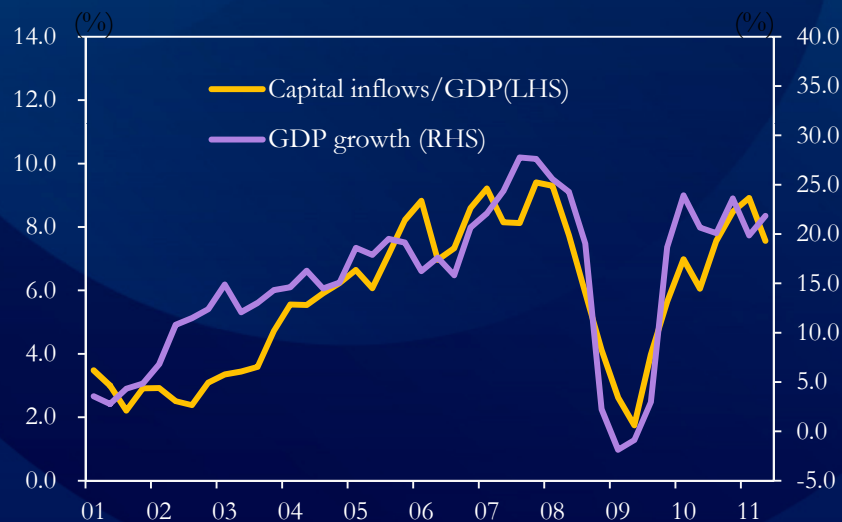
Household Debt

- ✓ Both factors affect systemic risk in terms of **procyclicality**.
 - ⇒ Implies **Korean economy exposed more to systemic risk in the time-varying dimension**, than in the cross-sectional dimension.

(B. Aydin, M. Kim and H. Moon: “Financial Linkages across Korean Banks” IMF ,WP/11/201, 2011)

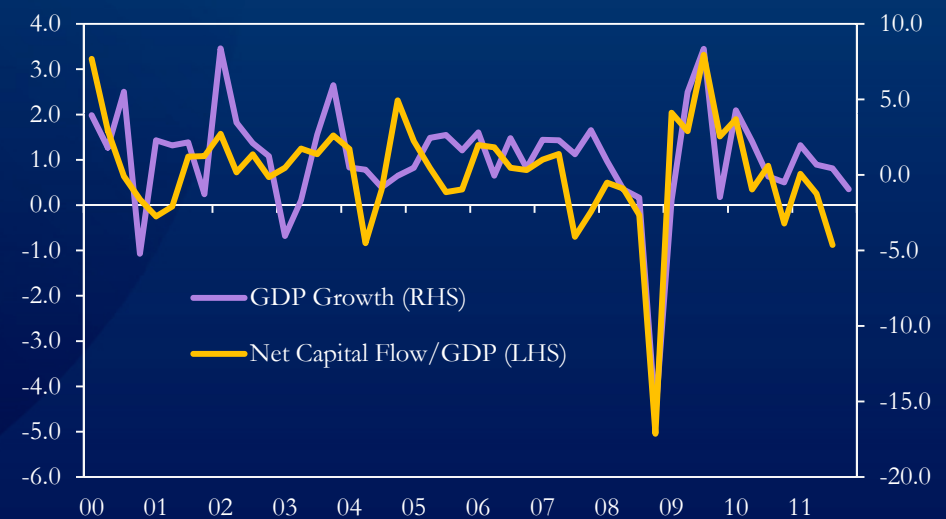
- ✓ In particular, **strong procyclicality of capital flows** amplifying business cycle fluctuation is a systemic risk factor common to emerging Asian countries

Capital Inflows to Asia & GDP Growth



Source: BOK staff calculation

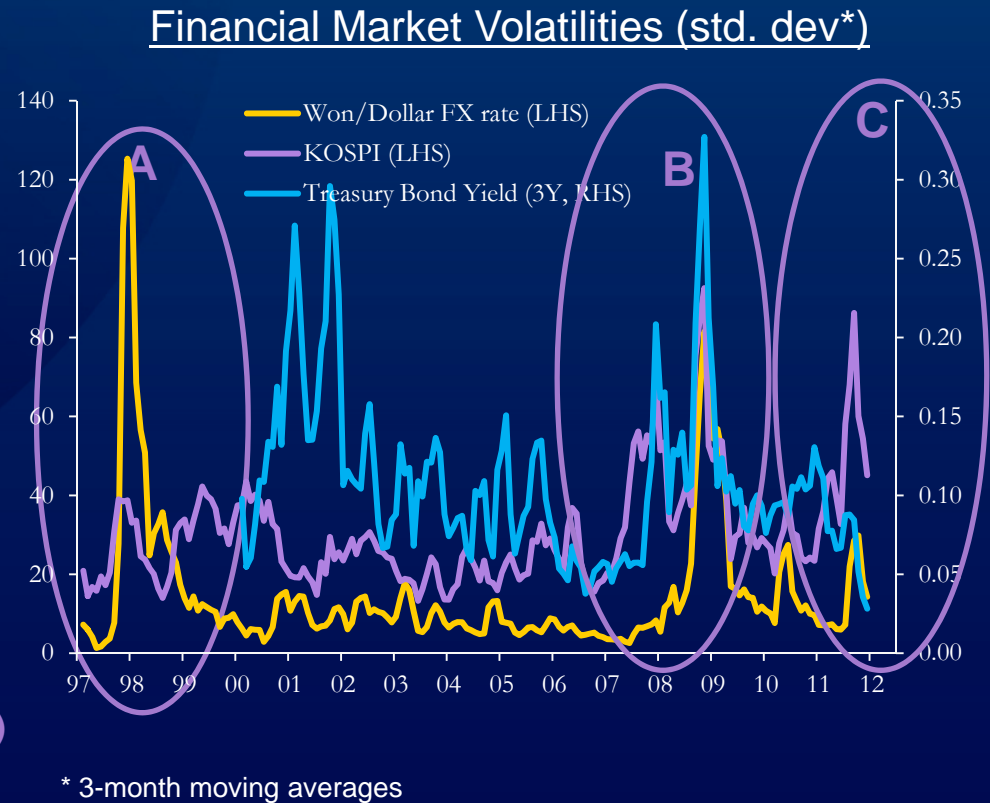
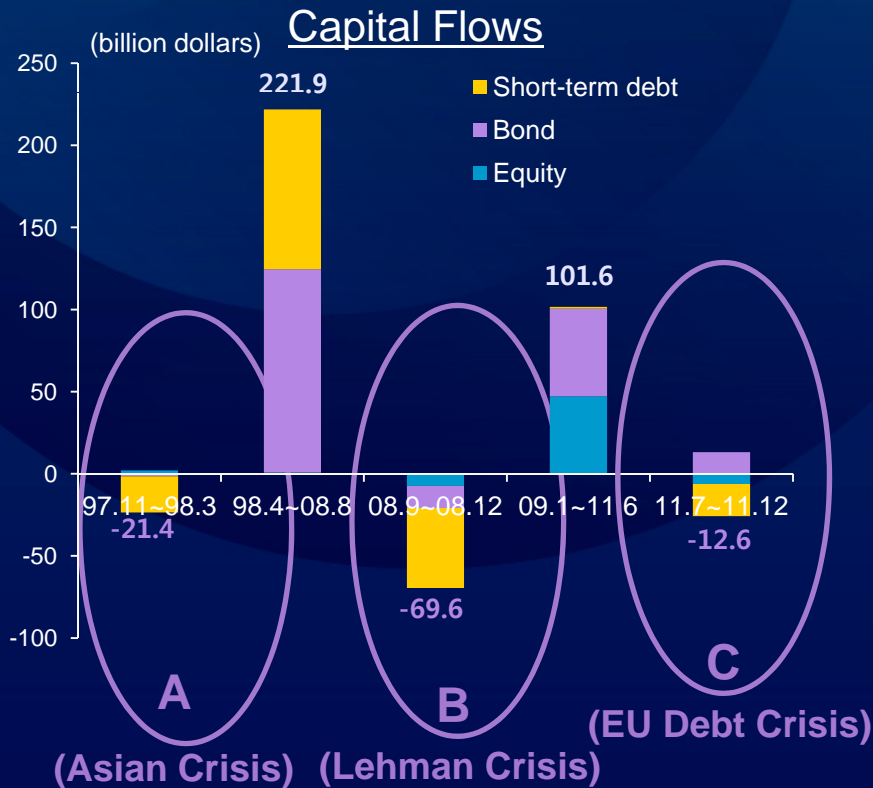
Capital Inflows to Korea & GDP Growth



- ⇒ (conjecture) Emerging Asian Economies may have **high reliance for credit supply on capital inflows** in the form of external liabilities, rather than on funding by domestic bank deposits.

1

High Capital Flow Volatility



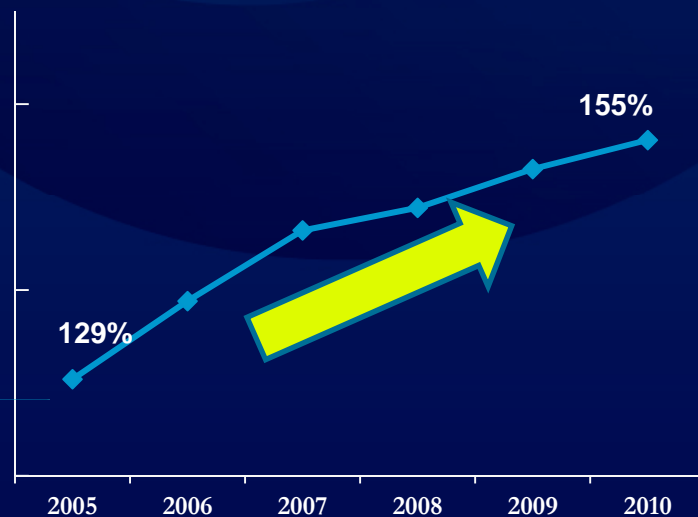
Source: BOK staff calculation

2

Rapid Increase in Household Debt

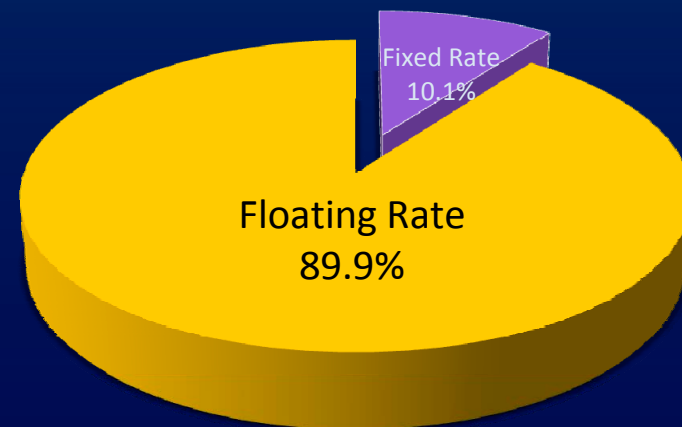
- ✓ High Level ⇒ Household leverage at historic peak
- ✓ Floating Rates ⇒ Almost 90% of mortgage loans

Household Debt-to-Disposable Income



Source : Bank of Korea

Mortgage Loans, by Interest Rate Type¹⁾



Sources : Bank of Korea, 9 major domestic banks
Note: 1) As of end-2011

II. Macroprudential Measures Deployed

1

Responses to Capital Flow Volatility

Capital Inflows

Ceilings on FX
Derivative Positions
(October, 2010)

Macroprudential
Stability Levy
(August, 2011)

Reimposed Taxation
on Foreigners' Bond
Investment
(November, 2011)

Capital Outflows

1. Currency Swaps with Major Central Banks

FRB (\$30bil., Aug. 08)
BOJ and Jpn MOF
(\$70bil., Oct. 11)
PBC (\$56bil., Oct. 11)

2. Global/Regional Financial Safety Nets

e.g. CMIM

International
Cooperation

⇒ Aimed at **stabilizing short-term capital flows** and **establishing backstop (safeguard)** against sudden capital outflows

1) Main reasons we advanced these measures

- ✓ In open emerging markets, **non-core liabilities** take form of short-term FX liabilities, increasing **vulnerability to outbreak of crisis**
- ✓ High capital flow volatility also causes interest and FX rate deviation from economic fundamentals, thereby **weakening monetary policy transmission channel**

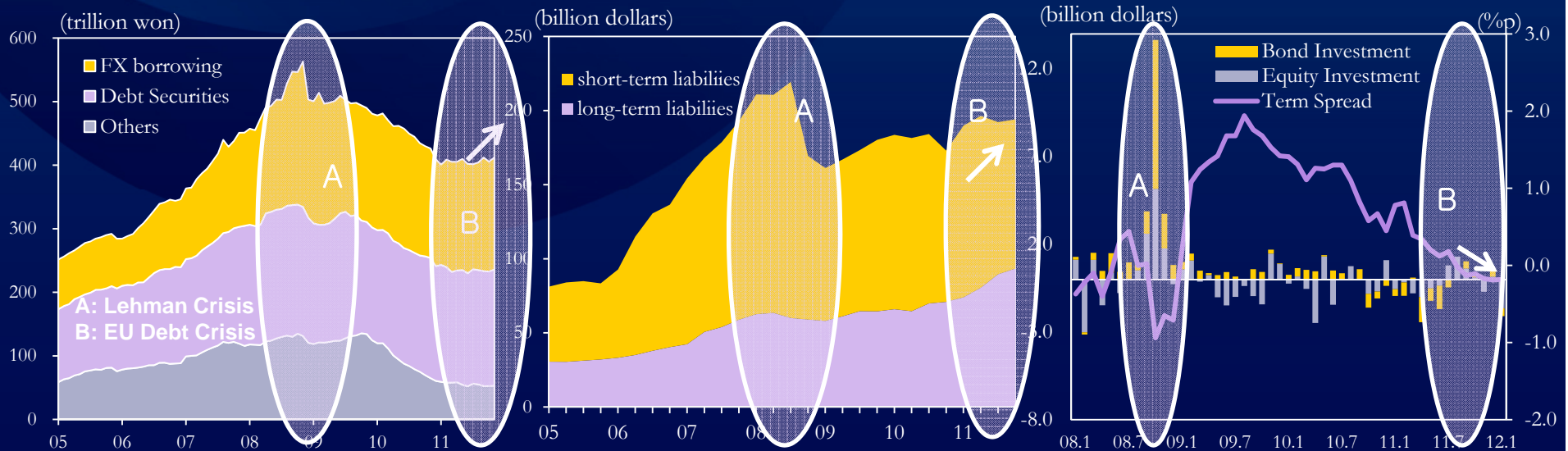
Non-core Liabilities of Korean Banks



Net FX Liabilities



Foreign Portfolio Investment and Term Spread



Source: Shin & Shin (2010), updated by BOK staff

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2) Impacts of these measures (in response to capital inflows)

✓ Effective so far

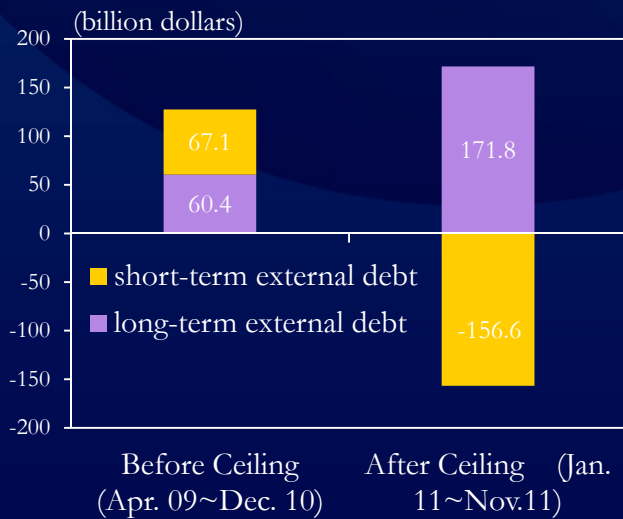
- ⇒ Short-term External Debt Decreased
- ⇒ Arbitrage Incentive Reduced
- ⇒ Terms of Foreigners' Bond Investment Lengthened

Ceilings on FX
Derivative
Positions
(October, 2010)

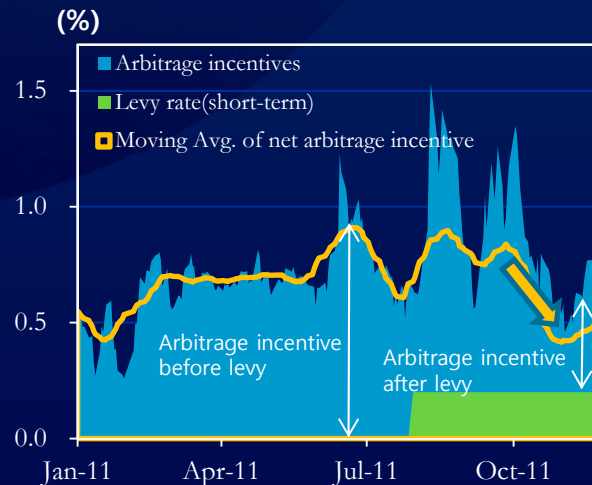
Macroprudential
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Changes in External Debt, before and after ceilings

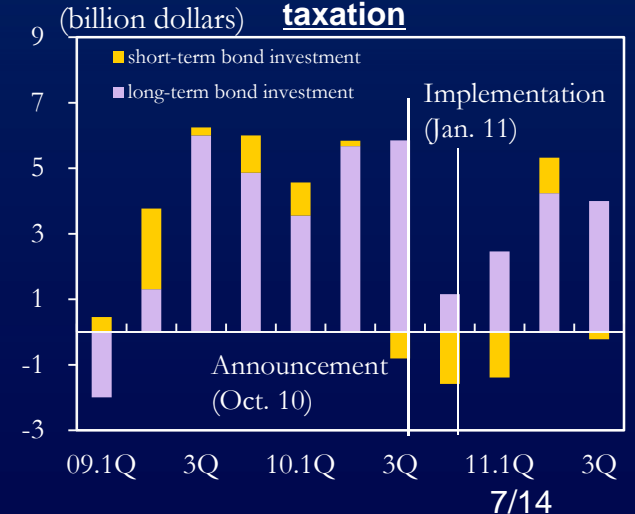


Foreign Bank Branches' Arbitrage Incentive



Source: Bank of Korea

Foreigners' Bond Investment, before and after taxation



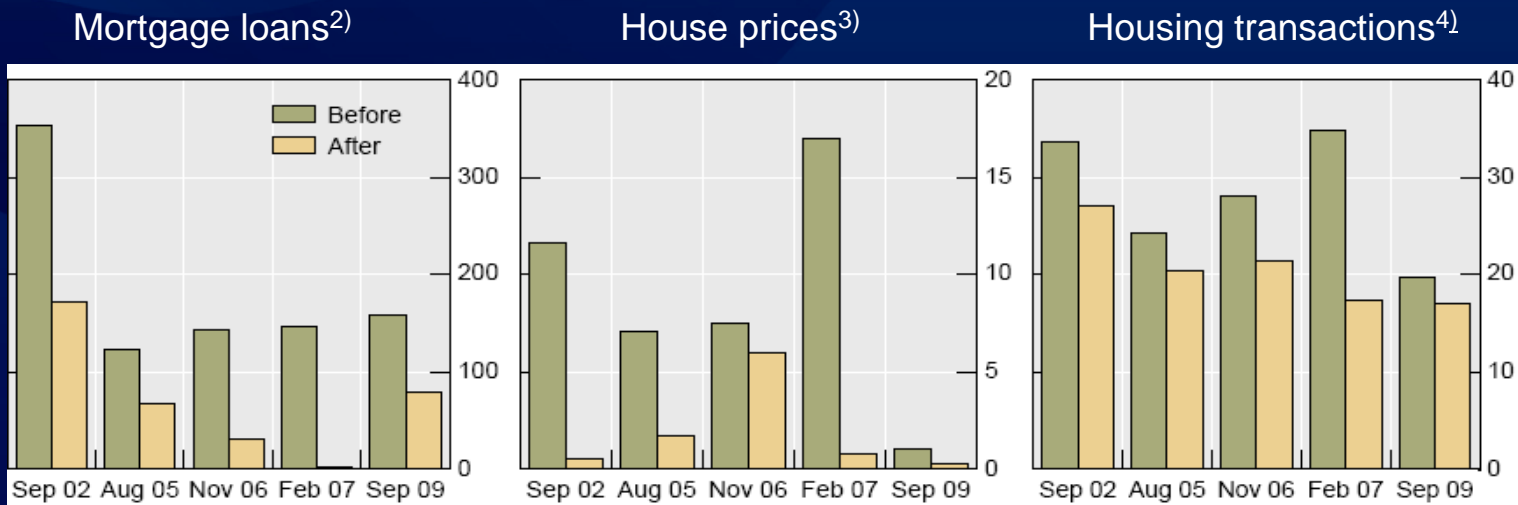
2

Responses to Household Debt

Tightening of DTI ('05, '06, '09) and LTV ('06, '07, '09, '11)

➔ **Caveat: more work needed to establish how much of changes in house price and loan growth attributable to macroprudential policy tightening**

Housing indicators (Seoul area) before and after loan regulation tightening¹⁾

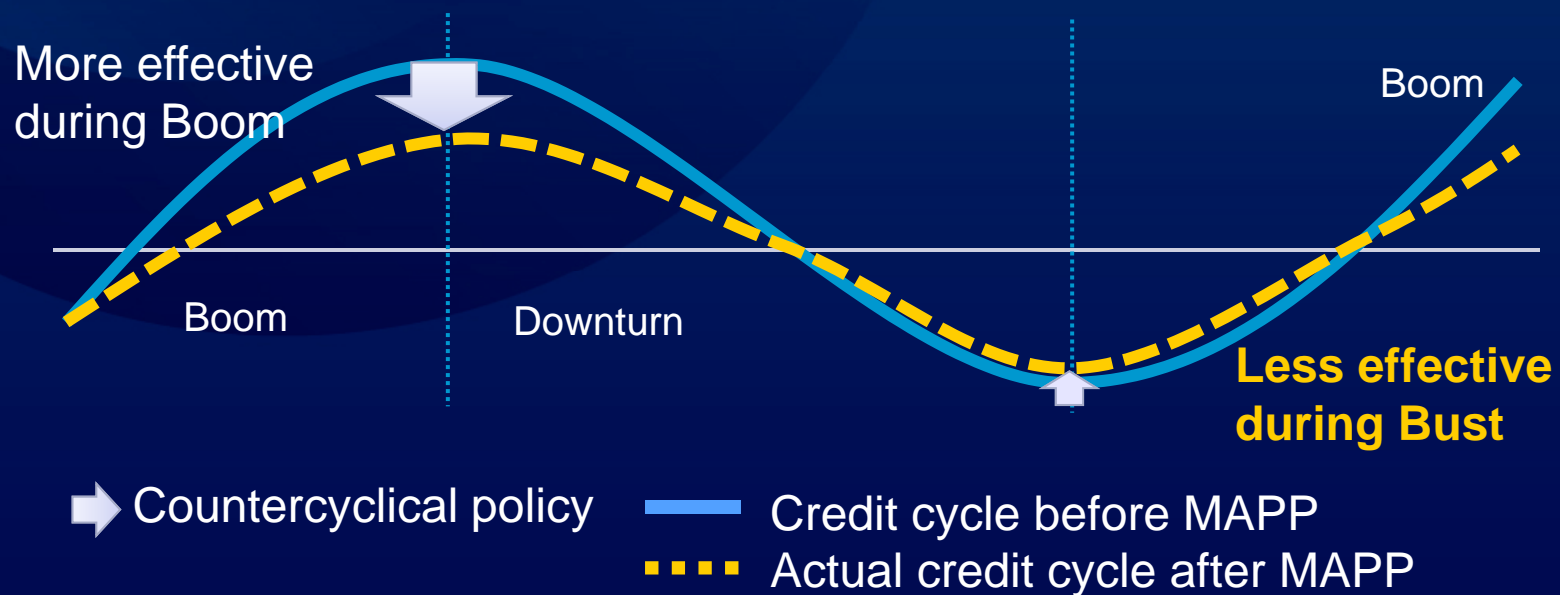


1) Comparison between six-month periods before and after strengthening of loan regulations
 2) In trillions of won 3) Apartment basis 4) In units of 10,000 * Source: Bank of Korea

III. Possible Obstacles to Implementation

✓ Asymmetric impacts in addressing procyclicality

- 1 Countercyclical Buffers/ Dynamic Provisioning
- 2 Ceilings on LTD/DTI
- 3 Adjustments of Risk Weights on Specific Exposures



1

Countercyclical Buffer (CCB)

✓ **Boom: $E \uparrow + w \downarrow \Rightarrow A \downarrow ?$**

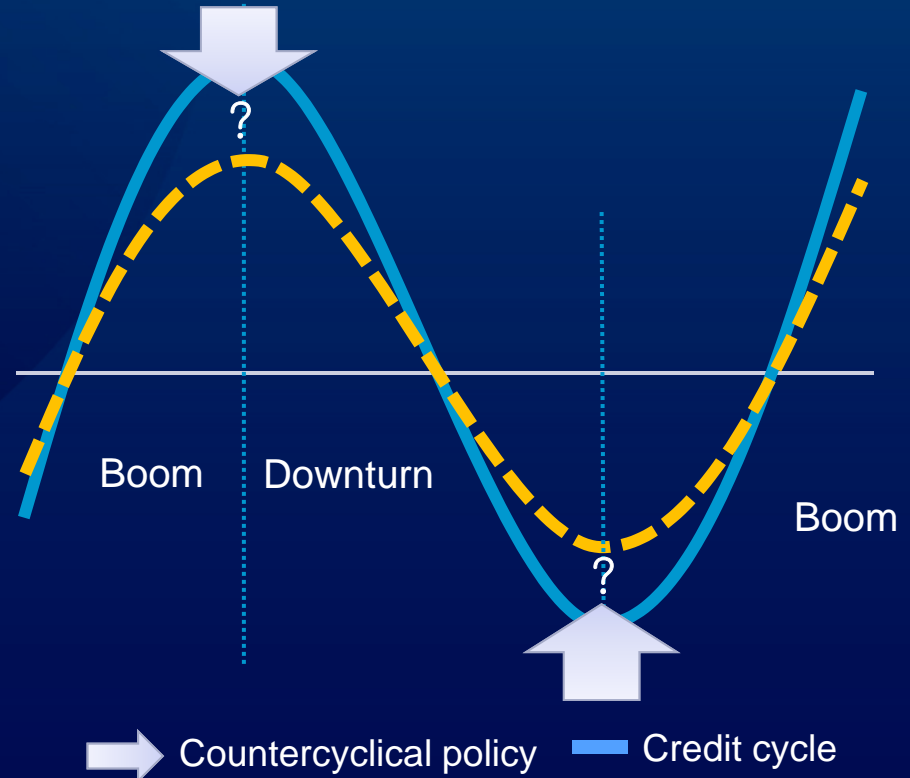
- Doubts about effectiveness in credit control
- Despite regulators' deployment of CCB, banks still have incentive to increase more profitable loans.
- Impacts may be offset by time lag, or less effective in periods of rapid credit expansion, since banks given transition period up to 12 months to meet CCB targets.

✓ **Bust: $E \downarrow + w \uparrow \Rightarrow A ?$**

- Doubts about effectiveness in mitigating deleveraging (slowing decrease in A)
- Under uncertainties about duration of financial crisis, banks likely to opt to maintain their capital buffer targets set during boom, out of concerns that declines in their capital ratios might be interpreted as aggravated financial soundness

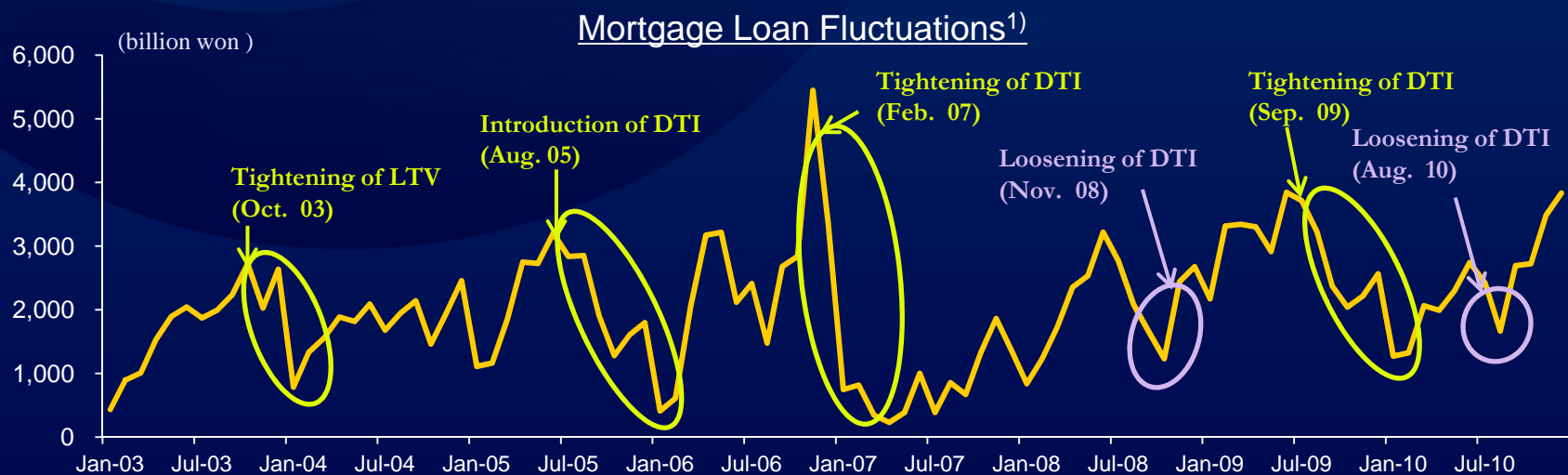
$$K = \frac{E}{w \cdot A}$$

K: capital ratio
 E: equity
 w: risk weight
 A: asset value



Ceilings on DTI/LTV

BOOM	BUST
Effective in limiting excessive credit provision by banks during economic upturns	May be less effective in improving liquidity conditions or supply of credit ⇐ Despite eased LTV/DTI limits, banks likely to focus on cash hoarding rather than lending



Empirical Test on Determinants of Loan Size

$$L_i = \alpha_i F_i + \beta_i N_i + \gamma_i R_i + \epsilon_i$$

F_i : financial variables, N_i : non-financial variables
 R_i : regulatory variables (i : household, ϵ_i : residual)

Dependent Variable: Household Loans (with income information)						
	2006 (Tighter DTI)	2007 (Tighter DTI)	2008 (Eased DTI)	2009 (Tighter DTI)	2010 (Eased DTI)	2011 (Tighter DTI)
Financial Variables						
Log (collateral value)	0.705***	0.622***	0.653***	0.782***	0.687***	0.621***
Income of Borrower	0.009**	0.022***	-0.003	0.010**	0.014***	0.011**
Interest Rate (CD yield) ¹⁾	-0.072***	-0.029*	-0.095***	-0.136***	-0.043**	0.072***
High Credit ²⁾ dummy	0.082***	0.038***	-0.059***	0.089***	0.046***	0.048***
Gangnam ³⁾ dummy	0.045***	0.075***	0.171***	0.003	0.088***	0.111***
Non-financial Variables						
Interest Only Payment ⁴⁾ dummy	-0.164***	-0.043***	0.059***	0.118***	0.101***	0.006
Group Loan dummy	-0.019*	0.017	0.035***	0.089***	0.083***	-0.007
Business Owner ⁵⁾ dummy	0.023**	0.024**	0.026***	0.042***	0.034***	0.029***
Maturity	0.025***	0.021***	0.015***	0.015***	0.020***	0.023***
Regulatory Variables						
LTV dummy	-0.093***	-0.046*	0.004	-0.102***	-0.031	-0.116***
DTI dummy	-0.051***	-0.096***	-0.066***	-0.046***	-0.008	-0.019**
Constant	2.431***	2.858***	3.110***	1.230***	1.963***	2.583***
	Adj. R ² : 0.364 Obs.: 48,016	Adj. R ² : 0.308 Obs.: 35,530	Adj. R ² : 0.295 Obs.: 55,698	Adj. R ² : 0.332 Obs.: 71,545	Adj. R ² : 0.292 Obs.: 72,481	Adj. R ² : 0.282 Obs.: 40,985

⇒ Analysis shows LTV/DTI to have asymmetric policy impacts: regulation tightening more effective than regulation easing

3

Adjustment of Risk Weights on Specific Exposures (ARW)

<Operating Mechanism of ARW>

Increase in credit risk in a particular asset, $A_i \uparrow$



Upward adjustment of risk weights for loans to the asset ($w_i \uparrow$)



Increase in capital requirements ($K \uparrow$)



Incentive to reduce exposure to the asset ($A_i \downarrow$)

<Banks' Responses in Unintended Direction>

$$\bar{K} = \frac{E \uparrow}{w_i \uparrow A_i \downarrow + w_j A_j \downarrow}$$

⇒: Regulator's action and intended direction of banks' response

⇒: Banks' responses in reality

Excessive concentration on a particular asset, $A_i \uparrow$

Upward adjustment of risk weights for loans to the asset ($w_i \uparrow$), and resultant tightened capital requirement ($K \uparrow$)

Banks' Responses

1 Recapitalizing ($E \uparrow$)

2 Reducing other assets ($A_j \downarrow$) with lower risk weights and returns

According to UK FSA (2009),

ARW ($w_i \uparrow$) ⇒ $E \uparrow$ 50%, exposure to other assets ↓ 25%

exposure to targeted asset ↓ 25%

Thank You for Your Attention