Household Leverage Metrics & Assessment
— The Korean Case

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Outline

I. **Concerns over Household Leverage**

II. **A Set of Granular Metrics to Assess Sustainability of Leverage**

   A. Metrics to Assess Household Debt Servicing Ability

   B. Metrics to Assess F.I.'s Loss-Absorbing Capacity
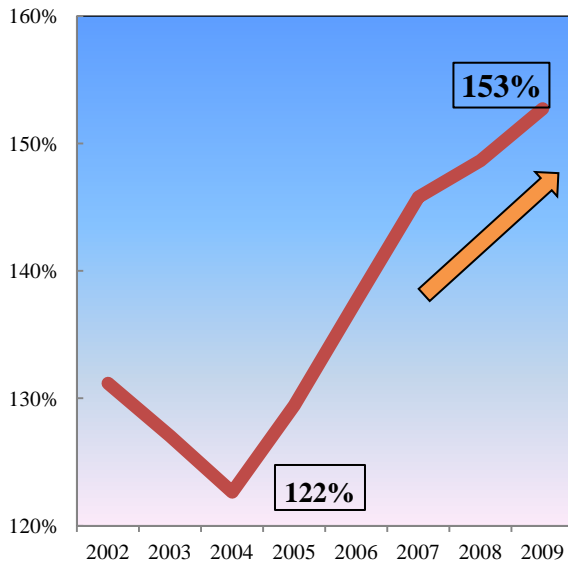
   C. Stress Test

III. **Ways Forward**
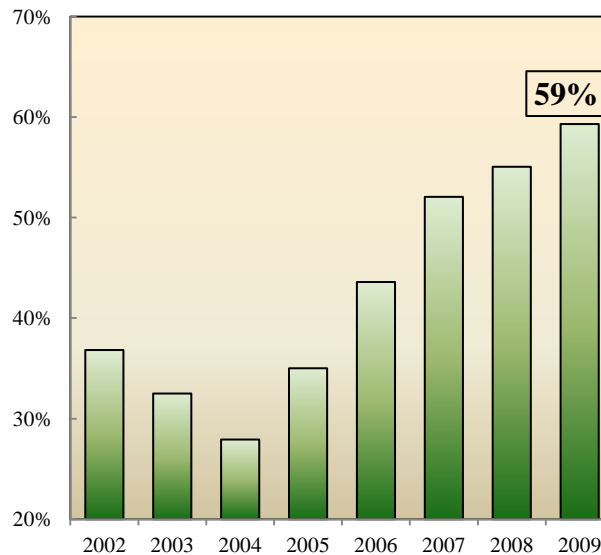
I. Concerns over Household Leverage

✓ High level   ⇒ Household leverage at historic peak
✓ Rapid growth ⇒ Up 59% since 2000
✓ Variable rate loans ⇒ More than 90% of household debt

Level[1]

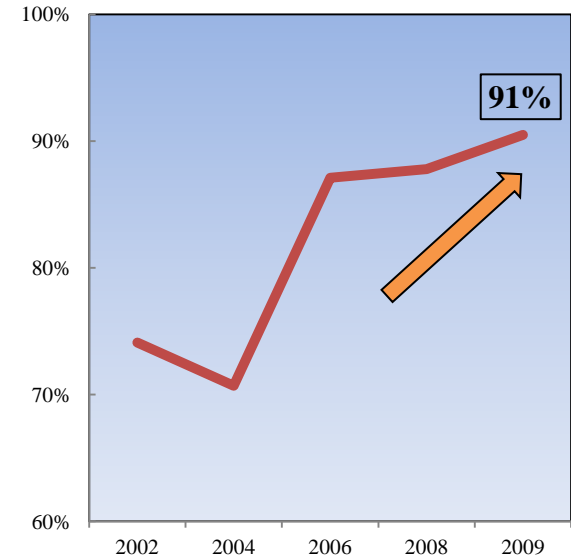153%

122%

Note : 1) Household debt/PDI
Source : Bank of Korea

Growth Rate[1]

59%

Note : 1) Growth Rate (Debt/PDI) Since 2000

Variable rate Loans[1]

91%

Note : 1) Share of variable rate loans out of total household loans

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- **McKinsey Report(2010)**

  ✓ "Household sectors in Spain, UK, US, Canada, **Korea** have a high likelihood of deleveraging in the years ahead"

- **Assessment of Debt Sustainability ?**
  More diverse & granular approaches using multiple sector-specific metrics required

  ✓ Our approach : Micro Granular Metrics* + Stress Test

      * Focused on Metrics of
         A. "Household Debt Servicing Ability" and
         B. "F.I.'s Loss-absorbing Capacity"

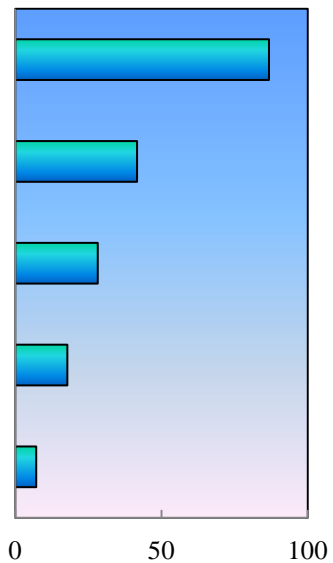| A. "Debt Servicing Ability Metrics" for Households	1	Debt Holdings by Income Group
	2	DSR by Income Group
	3	Leverage by Borrowers' Credit Rating
	4	Vulnerability to Income Shock (Household Capital Gearing Ratio)
	5	DTI Ratio
	6	Demographic Shift

B. "Loss-absorbing Capacity Metrics" for Financial Institutions	1	Vintage Delinquency Rate
	2	Delinquency Rate - Delinquency Roll Rate
	3	NPL Ratio
	4	LTV (Loan to Value) Ratio
	5	Coverage Ratio (Loan Loss Provisioning Ratio)
	6	BIS Ratio

A. Household Debt Servicing Ability Metrics

1 Debt holdings by Income Group
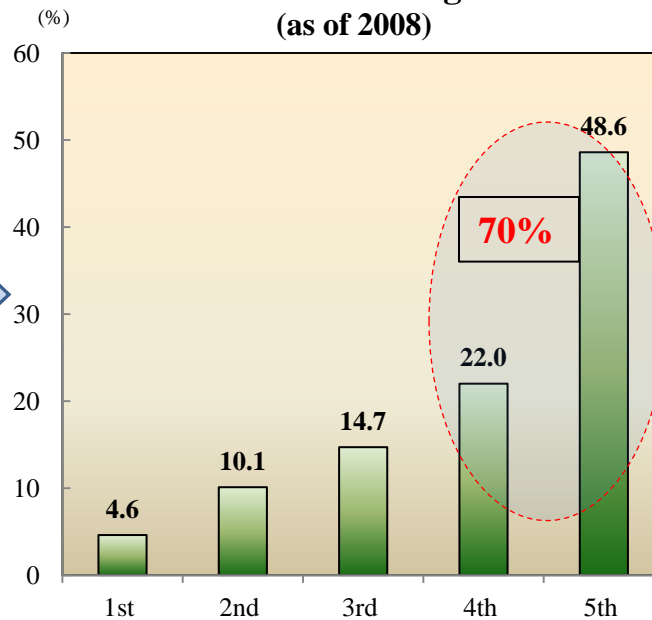
⇒ **4~5th Quantile : 70% of Debt, 75% of Asset**

Income by Group

(million KRW)
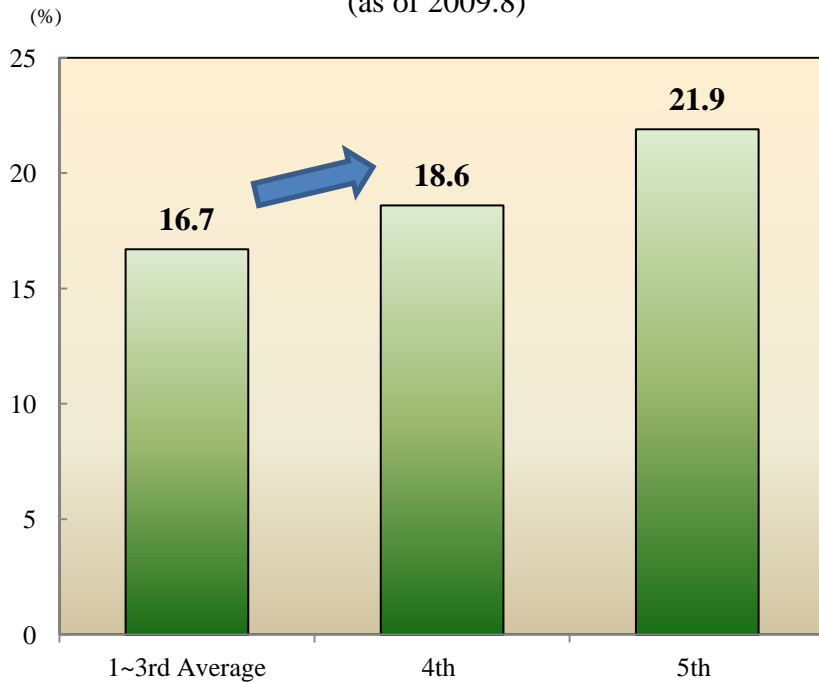
Debt Holding
(as of 2008)

(%)

- 1st: 4.6
- 2nd: 10.1
- 3rd: 14.7
- 4th: 22.0
- 5th: 48.6

70%

Asset Holding
(as of 2008)

(%)

- 1st: 4.2
- 2nd: 7.8
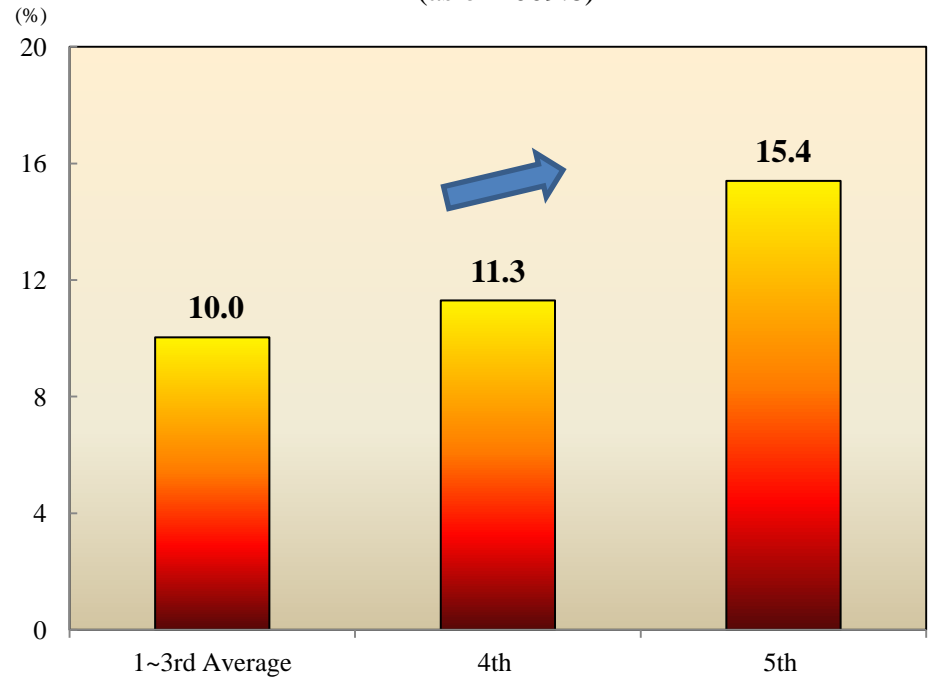- 3rd: 13.5
- 4th: 22.5
- 5th: 52.0

75%
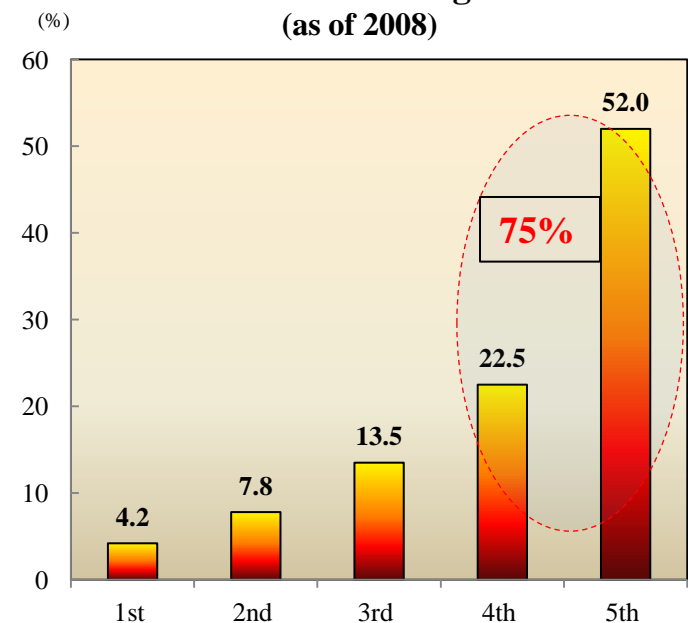
Source : 「Korea Labor and Income Panel Study」, Korea Labor Institute(2010)

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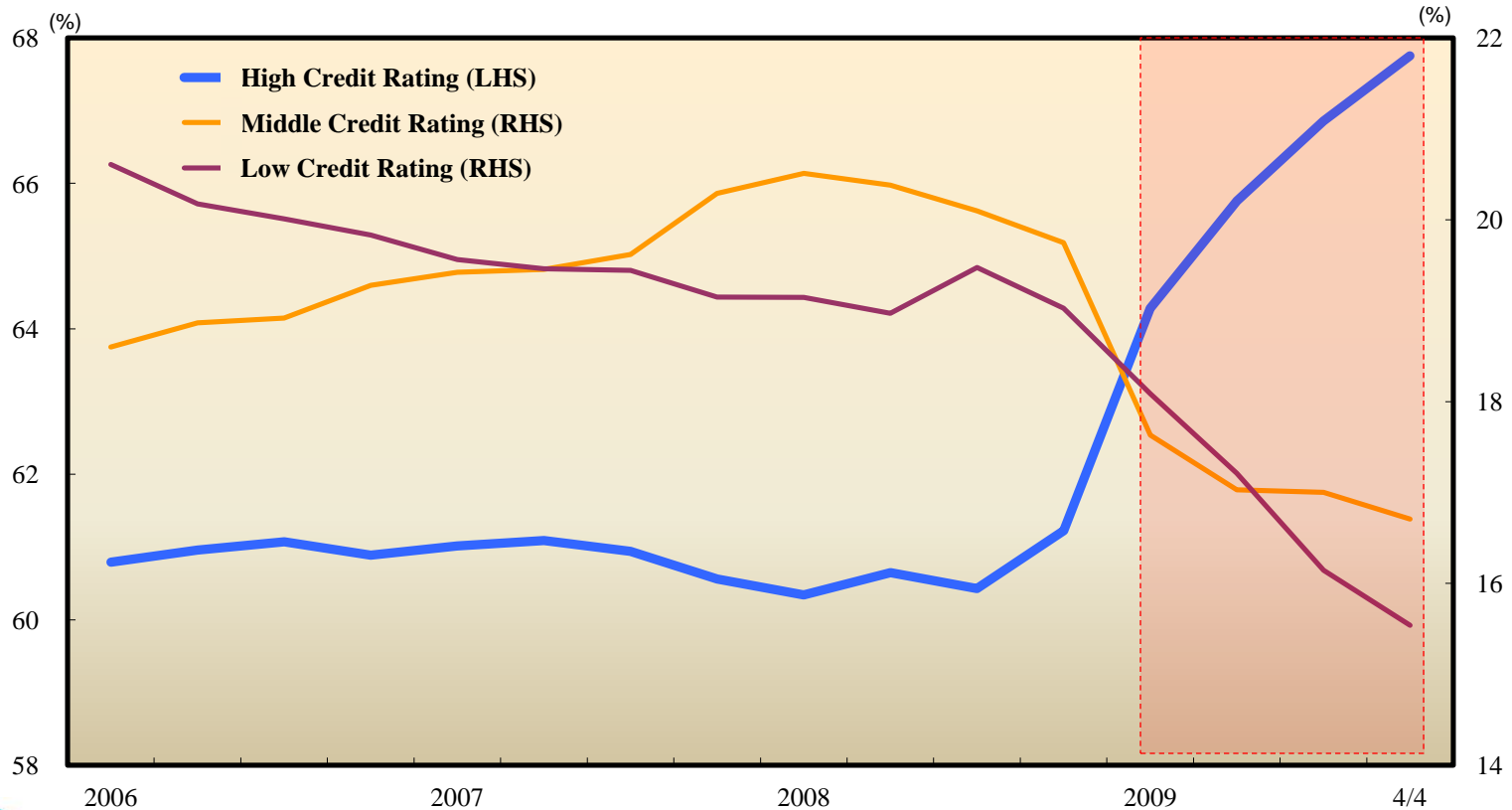
2 DSR by Income Group

DSR
(as of 2009.8)

(%)

Over-indebted Households[1]
(as of 2009.8)

(%)

Note : 1) Share of household with DSR>40% in each quantile
Source : Korea Credit Bureau

A. Household Debt Servicing Ability Metrics

3 | Leverage by Borrowers' Credit Rating

Source : National Information & Credit Evaluation (NICE)

A. Household Debt Servicing Ability Metrics

4 Vulnerability to Income Shock

Household Capital Gearing ratio
(=Debt/Fin. Asset)

(trillion won)

- Financial Asset (RHS) : A
- Debt (RHS) : B
- B/A (LHS)

47.6%

42.8%
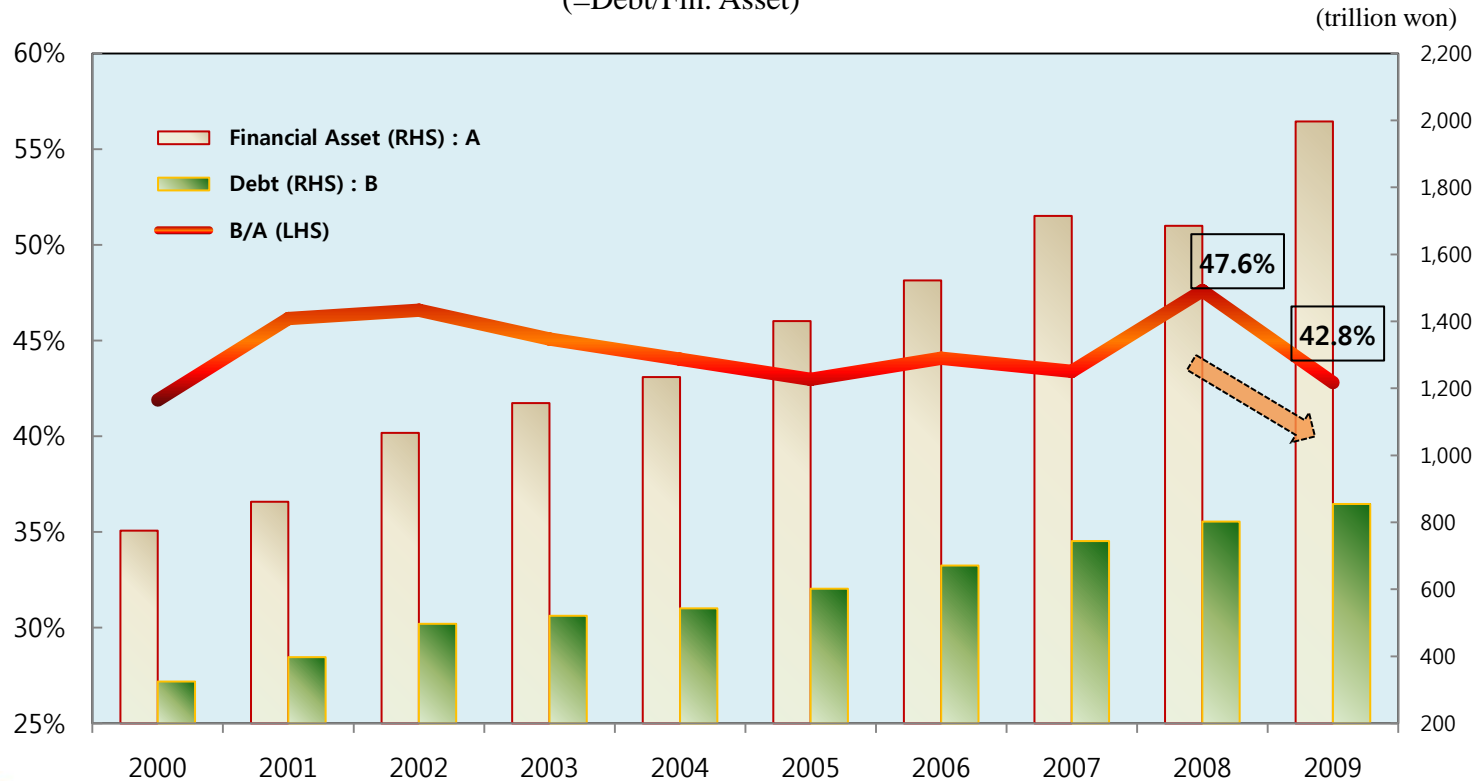
Source : Bank of Korea

5 Debt to Income Ratio*

$$* \quad \frac{\text{Annual principal \& interest payment for mortgage loan} + \text{annual interest payment for other liabilities}}{\text{Annual income}}$$

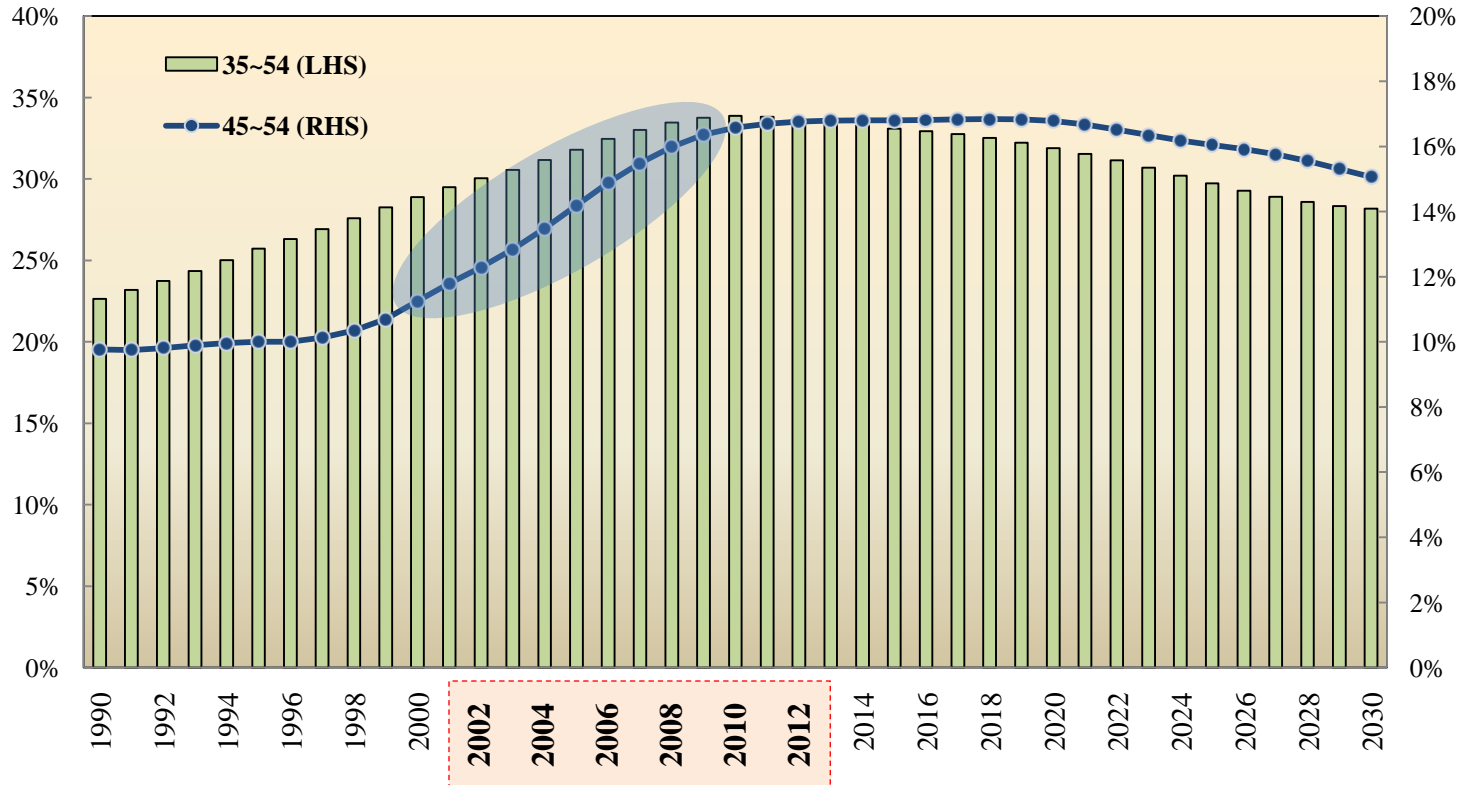⇒ **A subset of DSR focusing on mortgage lending**

    - DTI requirement : currently at 40~60%

⇒ **The DTI data reviewed by banks in the process of screening each loan can be useful information, if available to supervisory authorities**
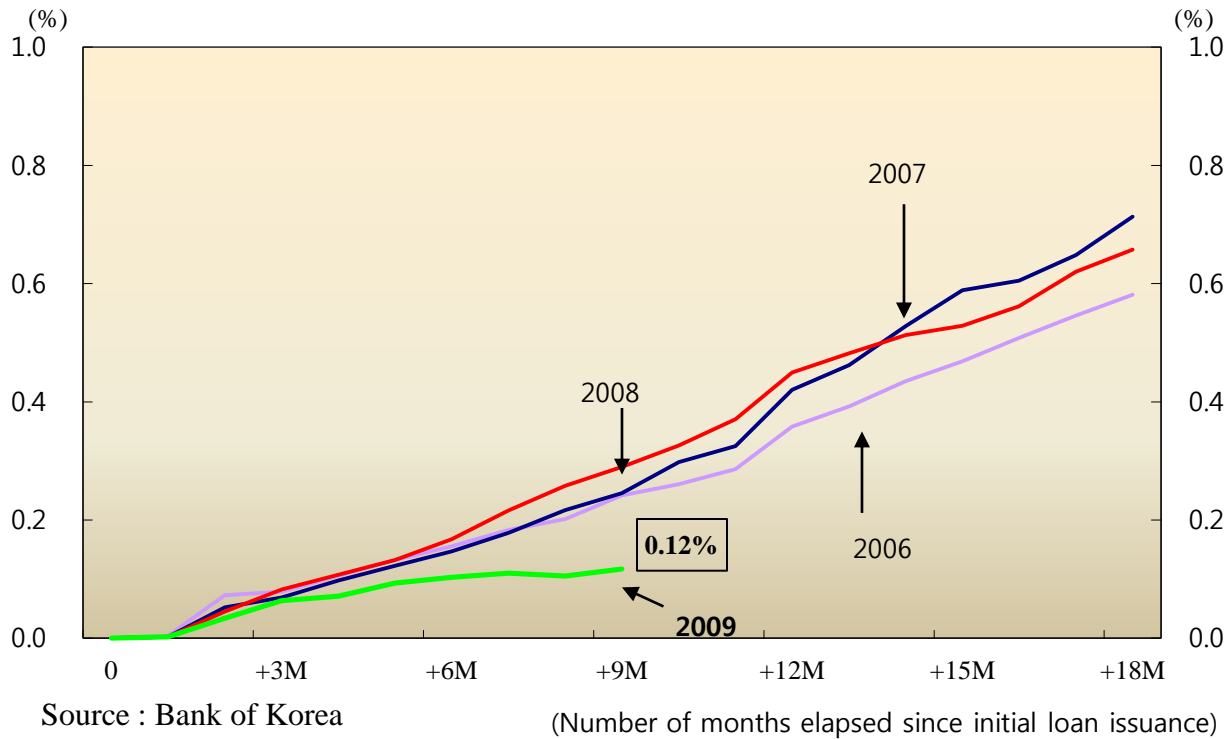
6 Demographic Shift

B. F.I.'s Loss-absorbing Capacity Metrics

1 Vintage Delinquency Rate*

* Aggregate delinquent loan amounts since initial loan issuance at T till T+3M, 6M,...

Total loan issuance at T

Source : Bank of Korea

(Number of months elapsed since initial loan issuance)

B. F.I.'s Loss-absorbing Capacity Metrics

2 Delinquency Roll Rate*

* The rate at which delinquent loans in arrears within 3months are "rolling" into the
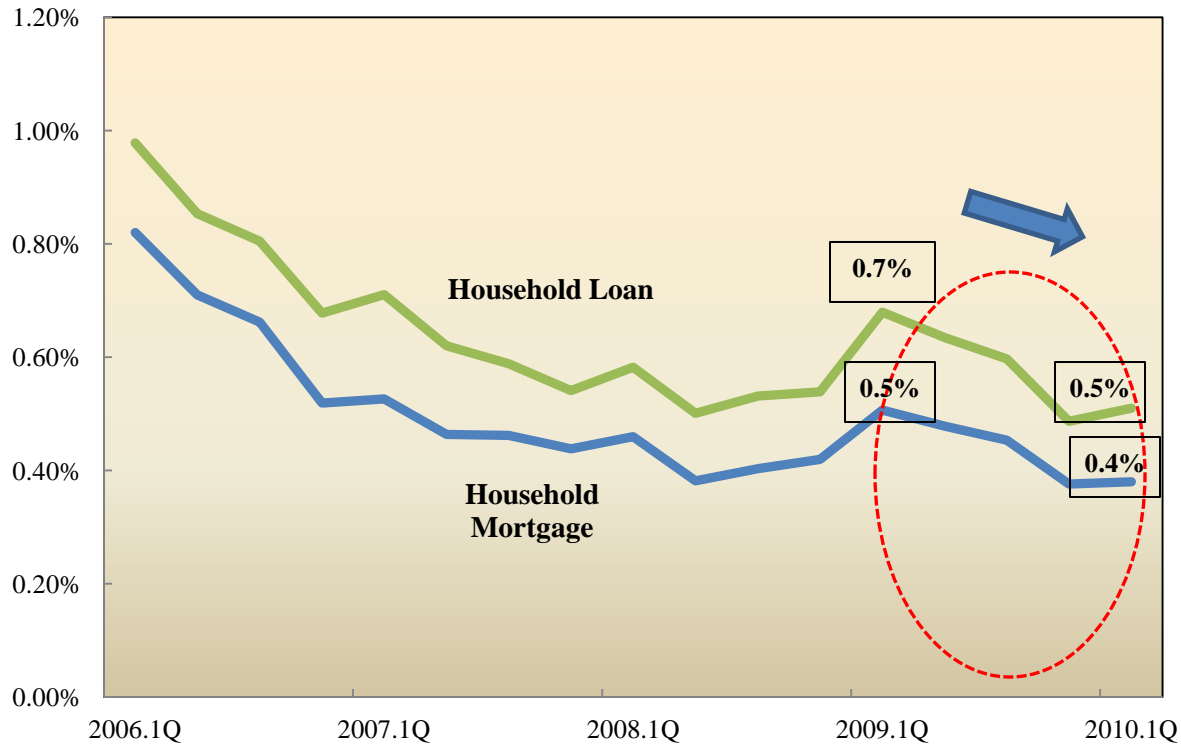   next bucket (more than 3months in arrear)
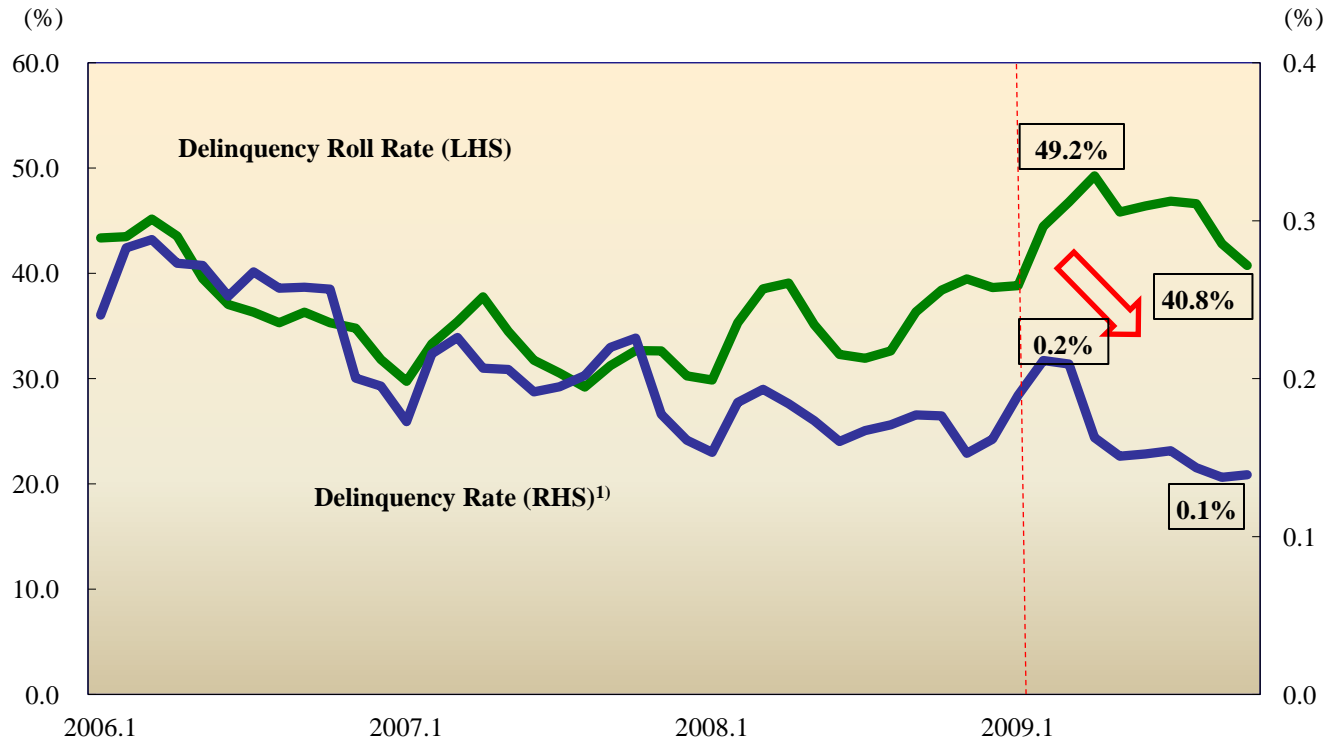
Note : 1) Share of loans turning into arrear status each month out of total household loan outstanding
Source : Korea FSS

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B. F.I.'s Loss-absorbing Capacity Metrics

3 NPL Ratio

Source : Korea FSS

B. F.I.'s Loss-absorbing Capacity Metrics

4 | Loan To Value Ratio*

$$* \left[\frac{\text{Loan Amount}}{\text{Collateral Value of the Property}} \right]$$
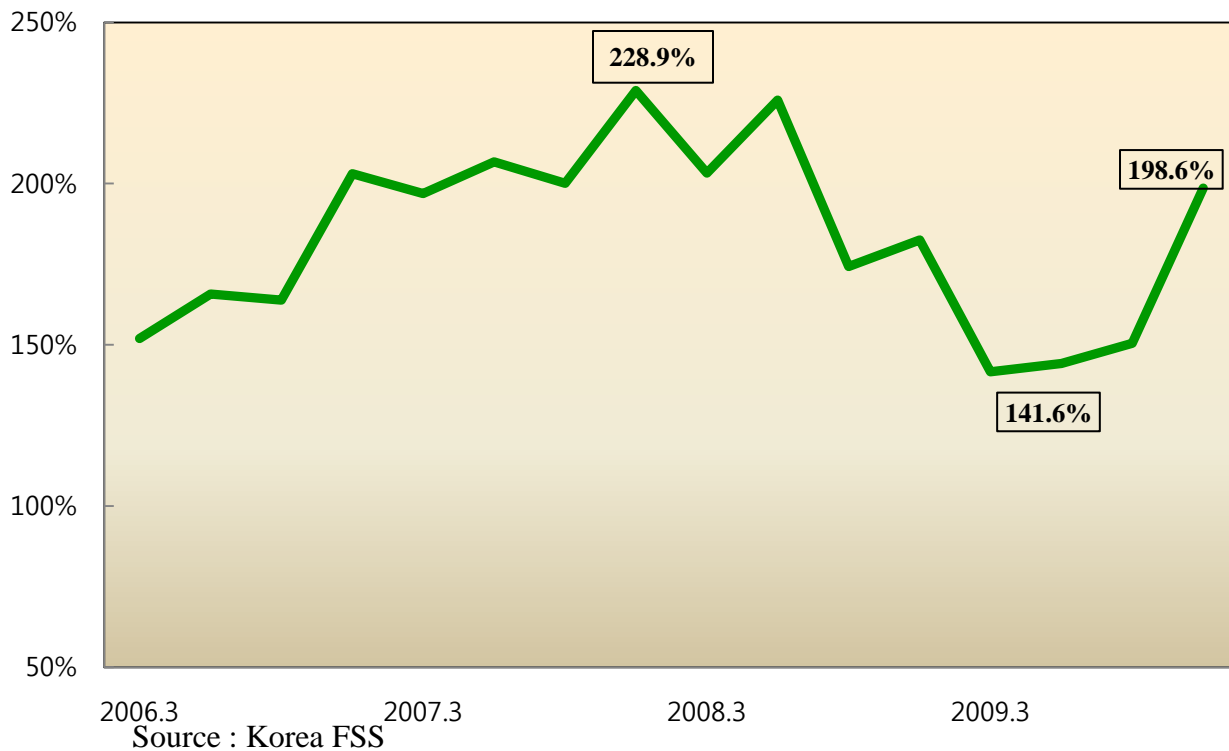
	2006	2007	2008	2009[1]
LTV	49.3	47.5	46.2	46.4

Note : 1) as of 2009.9

* LTV of U.S. Mortgage => 79.4% (2007 average, Federal Housing Finance Agency)
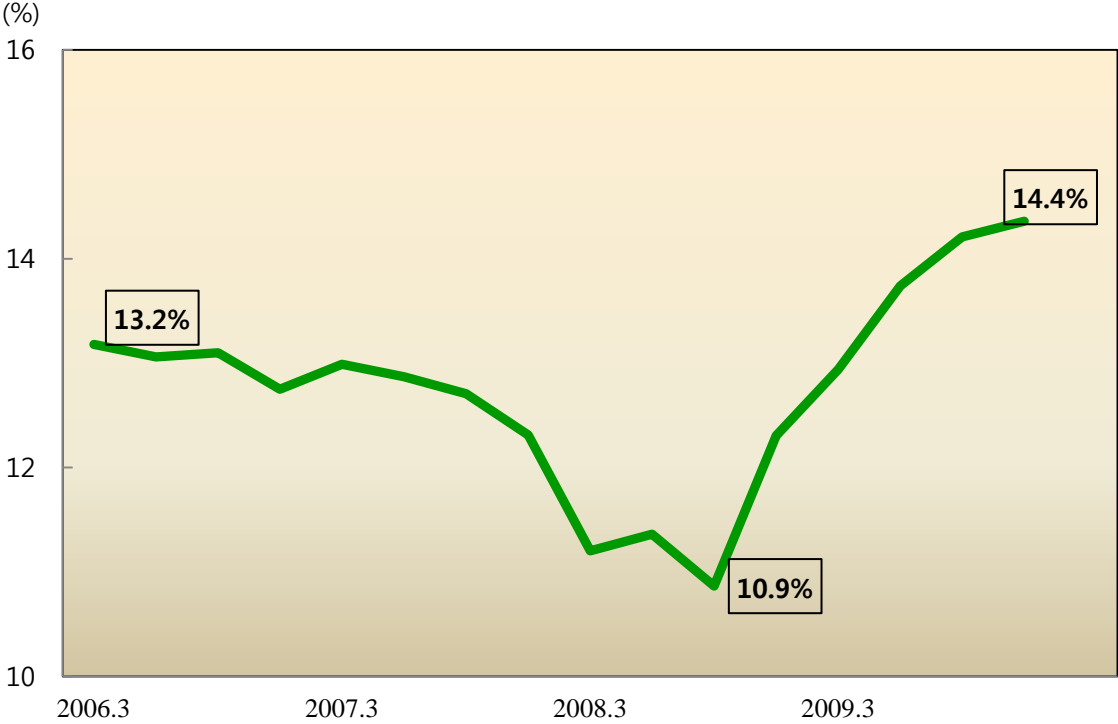
B. F.I.'s Loss-absorbing Capacity Metrics

5 **Coverage Ratio** (Loan Loss Provisioning Ratio)*

* $\left[\dfrac{\text{Total loan loss provisioning}}{\text{Non performing loan}} \right]$

Source : Korea FSS

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B. F.I.'s Loss-absorbing Capacity Metrics

6 | BIS ratio

Source : Korea FSS

C. Assessment : Stress Test

✓ **Risk Factors**

    - Income growth

    - Interest rate movement

    - House prices

	Methodology	**Results**
Bank of Korea (2010)	Household Default Prob. Model	**<Income Shock>** GDP Growth 1%p ↓ => BIS ratio => 0.2%p ↓, * '09.12 BIS ratio : 14.4%
FSS (2010)	DSR Sensitivity Analysis	**<Interest rate Shock>** 2%p interest rate ↑ => DSR 2.1%p ↑ (14.1% -> 16.2%) * Maximum DSR sustainable : 22.4% based on survey

III. Ways forward

- **Considering diverse granular metrics of household debt, drastic deleveraging is less likely than perceived**

- **However, absolute level of household debt is still very important concern**

  - ➢ **With more than 90% of household loans having a variable rate:**
    ⇒ exposed to interest rate risk

- **Policy responses under way**

  - **- LTV : 60%→ 50% ('09.7)**

  - **- DTI : 3 speculation zones in Seoul→ expand toward other metropolitan area**
    (DTI : 50~60%) ('09.9)

  - **- Gradual reduction of 「loan to deposit ratio」 to 100% by 2013**

■ **The simple comparison of macro aggregate metrics among countries does not provide an accurate assessment of risk from leverage**

■ **The data gaps among countries make a strong case for setting up a forum led by IMF or FSB to search for consistent, comparable and granular metrics**

Thank you

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