Implementing Limits on LTVs and DTIs: A Cross Country View

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Prudential Policy—Implementation and Interaction with other Policies
Stockholm, November 13–14, 2014

Agenda

- LTV and DTI limits around the globe
- Country experiences in implementing limits on LTV and DTI ratios
- Distilling lessons

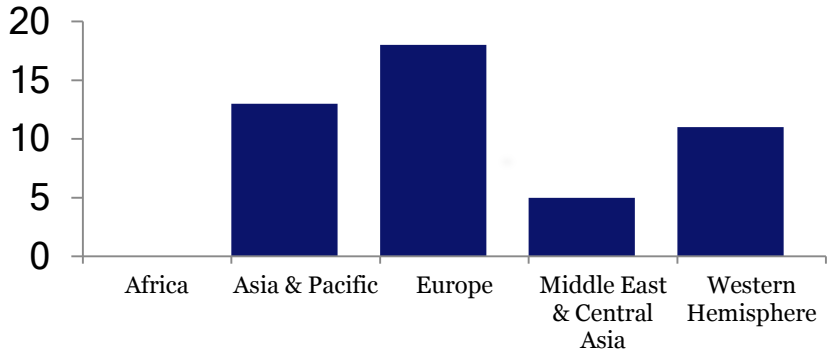
LTV and DTI limits around the globe

Why are LTVs and DTIs becoming popular?

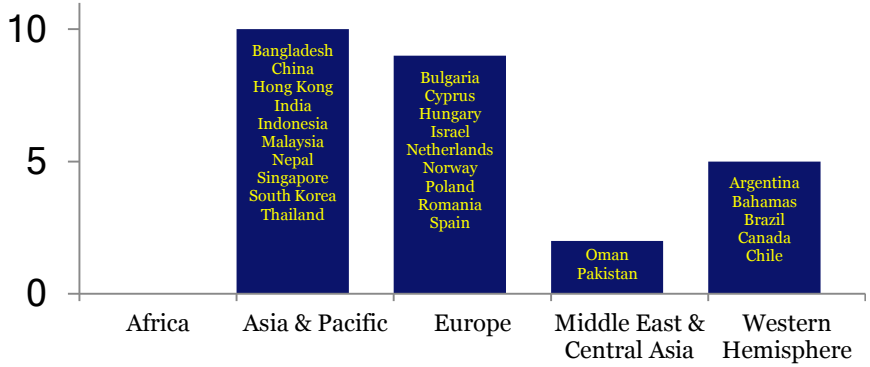
- First, the global financial crisis
- Today, several countries are going through a new wave of surging housing prices (IMF, 2014)
- Limits on LTVs and DTIs ➔ the gold standard to cope with rising housing prices

A global snapshot: who uses these tools?

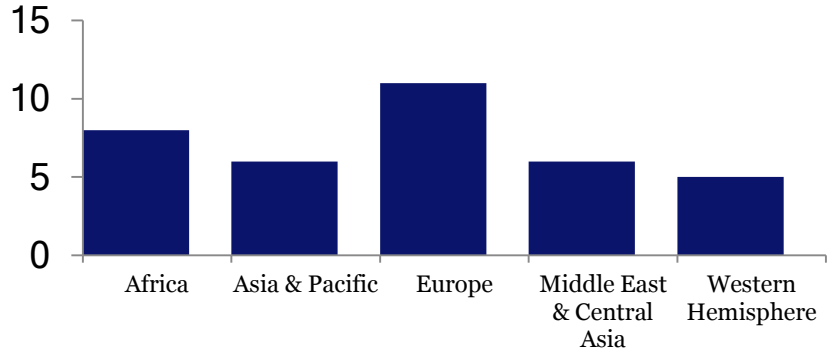
Countries with limits on Loan-to-Value ratios



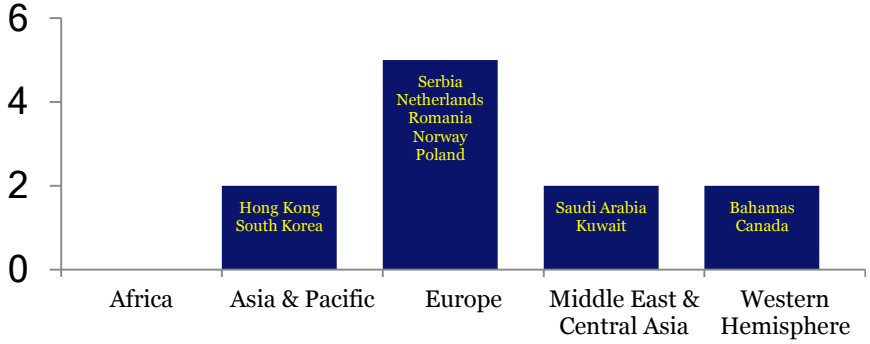
Countries that changed Loan-to-Value ratios since 2000



Country with limits on Debt-to-Income ratios



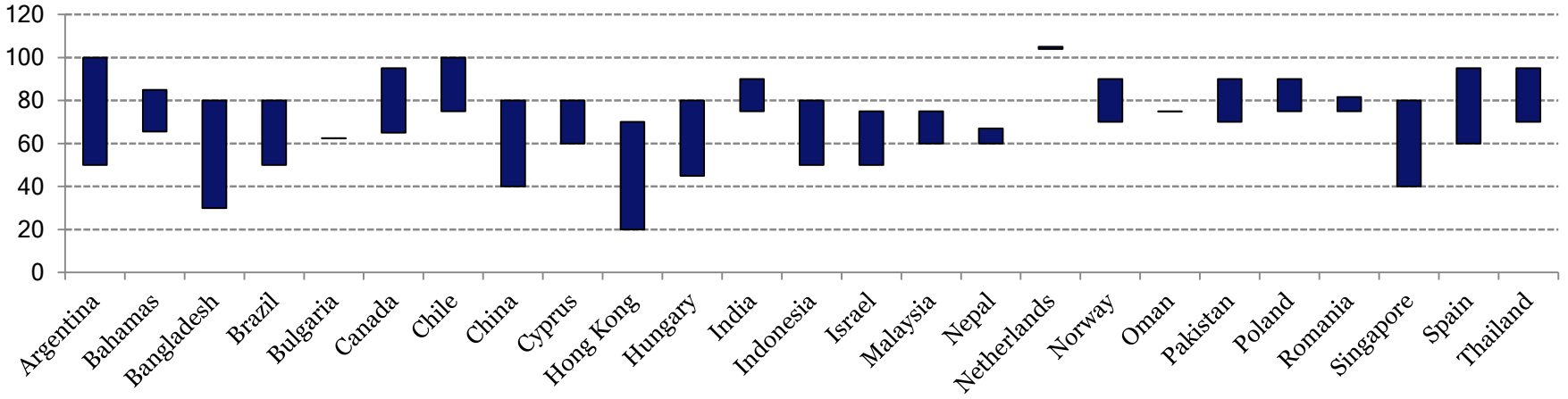
Countries that changed Debt-to-Income ratios since 2000



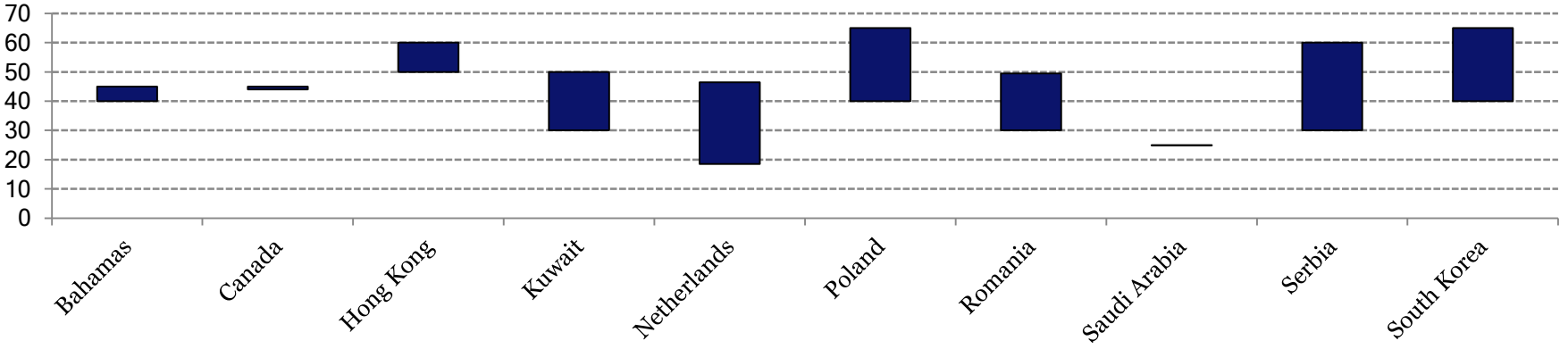
Source: IMF, Global Macroprudential Policy Instrument database

Most LTVs ➔ 60% to 90%
Most DTIs ➔ 30% to 50%

Limits on Loan-to-Value ratios



Limits on Debt-to-Income ratios



Source: IMF, Global Macroprudential Policy Instrument database

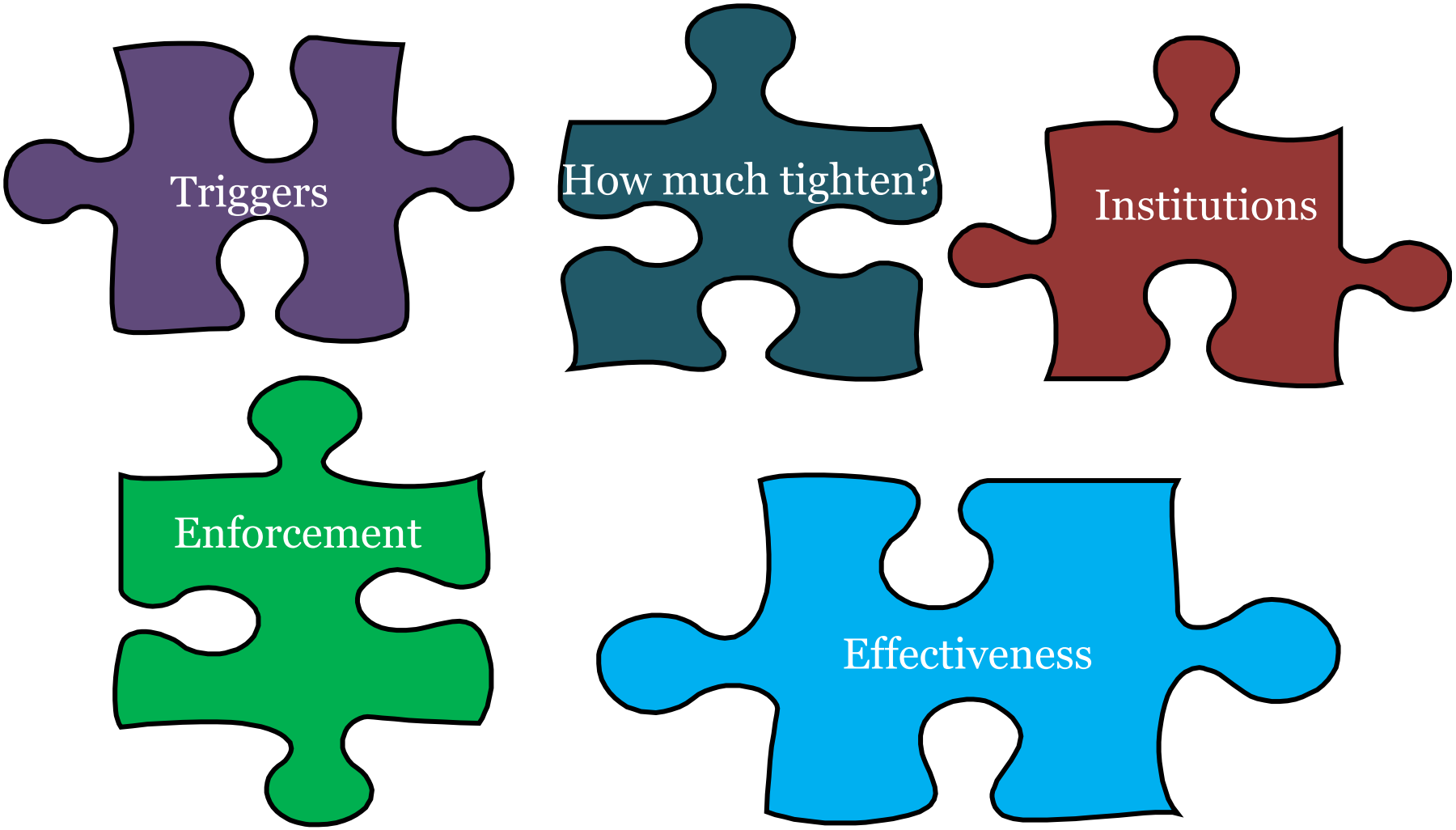
Yet, little is known about implementation

- This presentation helps to fill this gap
- Summarizes the experience of six countries

	Asia	Europe	Latin America
Advanced countries	Hong Kong SAR Korea		
Emerging economies	Malaysia	Poland Romania	Brazil

Country experiences in implementing limits on LTV and DTI ratios

Five key elements



Triggers

- Countries look at the property sector, banks, nonbanks, households, speculative activities and more
- They creatively combine micro information with macro data to see if systemic risks are rising
- With a strong eye on whether there could be debt-servicing difficulties in the future
- Various vintages of NPLs are observed
- Mortgage loan growth with rising number of multiple mortgage loans send out an alert

How much to tighten?

- No magic number
  - LTVs: 60–85%, DTIs: 30–50%
  - Varies by type of loan (forex, overseas income, maturity, speculative prone area)
- Changes (mostly discretionary, chasing leakages)
- Numerator of LTV changes (some countries add other debts)
- Numerator of DTI changes (debt service on mortgage loans vs. debt service on all loans)

No single institutional arrangement

	Twin peaks				Multi-agency	
	Brazil	Hong Kong	Malaysia	Romania	Korea	Poland
Hard powers		●	●	●		
Semi-hard/ intermediate powers	● */				● */	
Soft powers						●

*/ In Brazil, the National Monetary Council has final decision, although it often delegates to the Central Bank of Brazil, whereas in Korea the final decision rests on a high level committee chaired by the President of the Republic

Enforcement worked well

- But coped with diverse sources of leakages
  - Non-regulated entities
  - Modifying loans to meet standards
  - Cross-border mortgage lending
  - Foreign bank branches
- Various policies to deal with leakages
  - Apply right after the announcement
  - Complement with other policies

Mixed results on effectiveness

- Measures were effective in reducing loan-growth and improving debt-servicing performances
- Measures were not effective in curbing house price growth
  - When countries faced strong capital flows into banks
  - Or high demand for houses from cross-border sources
  - Better results when measures were targeted (speculative)
- To analyze effectiveness ➔ use of rich micro data

Distilling lessons

What did we learn?

- In measuring systemic risk ➔ creative use of both macro and micro data
- Be alert when high LTV loans, long maturities, speculation
- Most changes in LTV/DTI are discretionary
- Looking at LTV-specific loan vintages is useful for calibration
- Introducing simultaneously prudential and/or fiscal measures helps

What did we learn?

- Better to execute immediately after the announcement, no prior discussion
- Various institutions involved, but central banks monitor risks
- Expect leakages and prepare in advance to act
- More effectiveness on credit growth and loan servicing
- Targeting measures at mortgages most at risk works better

Further research

- How much to tighten, when to loosen?
- Benefits of being more rules-based
- How do LTV/DTI measures interact of monetary policy?
- How to enhance the effectiveness of LTV/DTI measures when
  - strong bank-based capital inflows exist? or
  - strong cross-border demand is important?

Thanks!

Luis I. Jácome and Srobona Mitra

IMF-Riksbank Conference
Stockholm, November 13~14, 2014

Macroprudential Policies in Korea

Tae Soo Kang

Disclaimer

This presentation represents the views of the author and not necessarily those of the KIEP

Contents

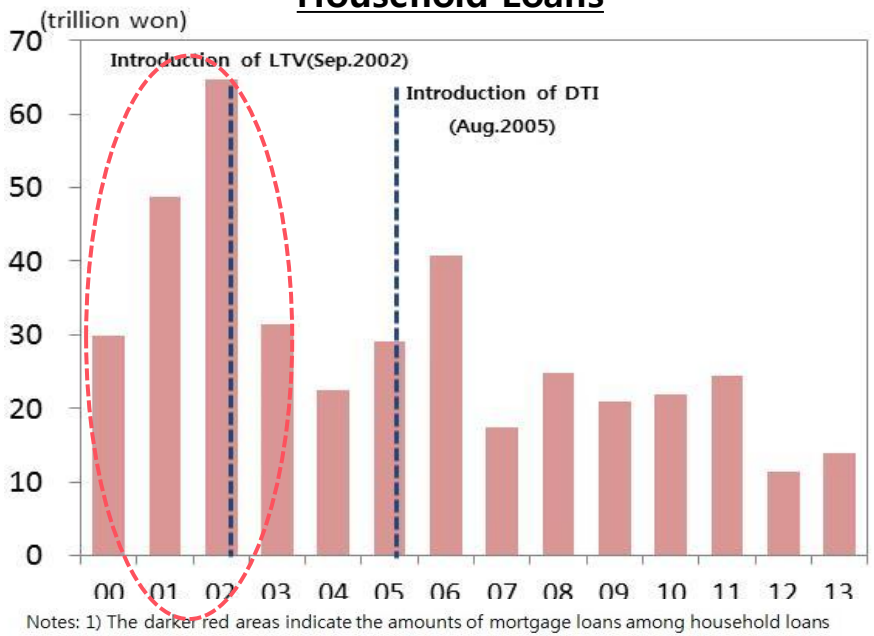
I-1 LTV, DTI Caps

Background

✓ Housing Booms and Bank Lending

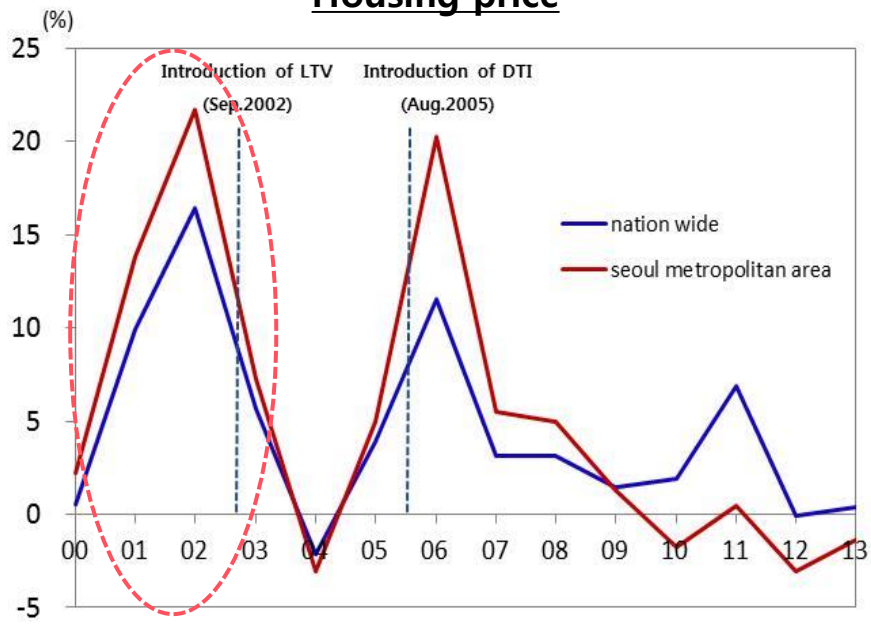
- Real estate in total assets : Korea 73.3% (March 2013)
- Housing booms in early and mid 2000s fueled by rapid increases in home mortgage lending by banks

Household Loans



Notes: 1) The darker red areas indicate the amounts of mortgage loans among household loans
2) Compared to previous years

Housing price



LTV Cap [September 2002]

- LTV has been adjusted a total of 9 times
  (6 times for tightening and 3 times for relaxing)
- Limitation : Housing price ⇧ → Collateral value ⇧ → Affordable additional borrowing ⇧ → **Procyclicality amplified**

DTI Cap [August 2005]

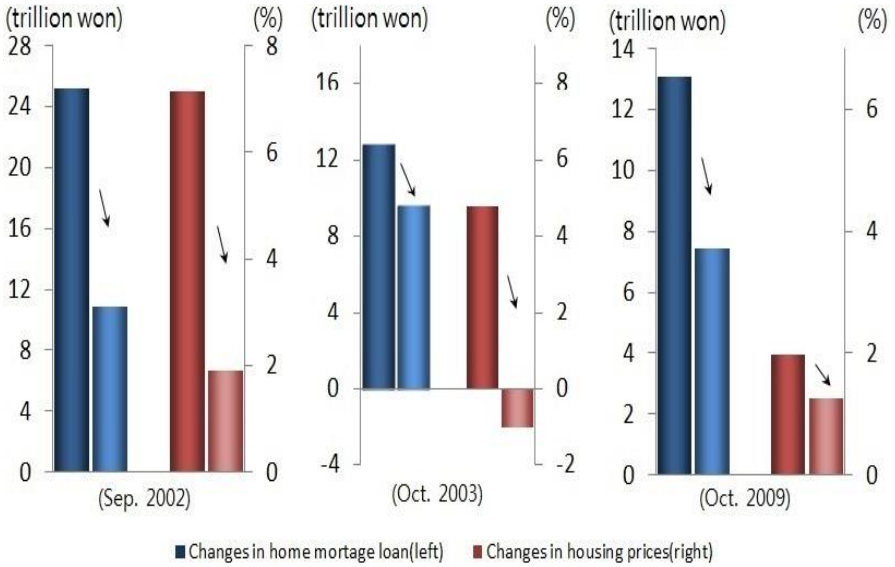
- Curbs possible procyclical behaviour resulting from LTV Cap
- Puts limit on ratio of annual debt redemption to debtor's annual income
- DTI ratio $= \left[\frac{annual\ redemption\left(=\frac{mortage\ loan}{maturity}+interest\right)}{annual\ income}\right] \times 100$
- DTI has been adjusted a total of 8 times
  (6 times for tightening and 2 times for relaxing)

Effects of LTD, DTI Caps

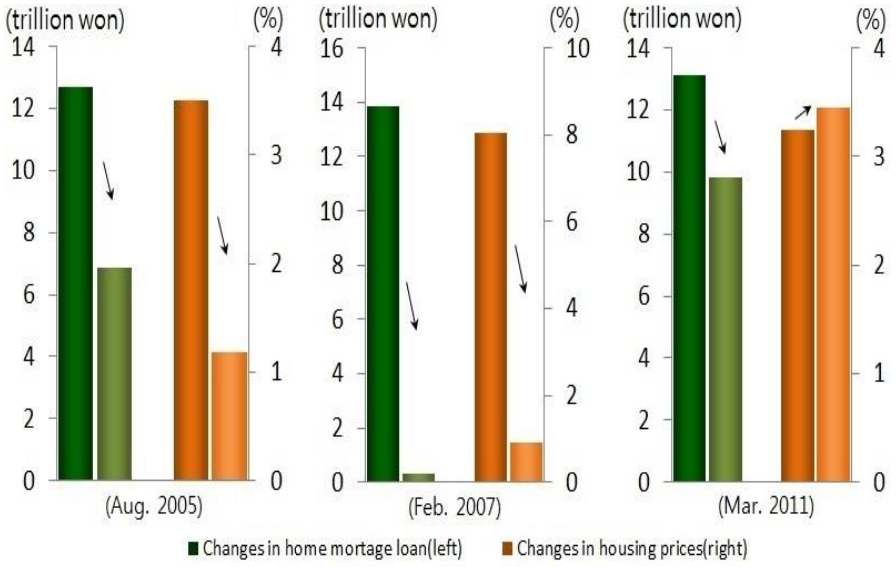
- LTV and DTI regulations put a brake on the pace of increases in housing prices and mortgage lending in a counter-cyclical manner

- The regulations appear to have a statistically significant decline in the speed at which house price and/or mortgage lending increase

Potential Effects of LTV
(six months before and after tightening)



Potential Effects of DTI
(six months before and after tightening)



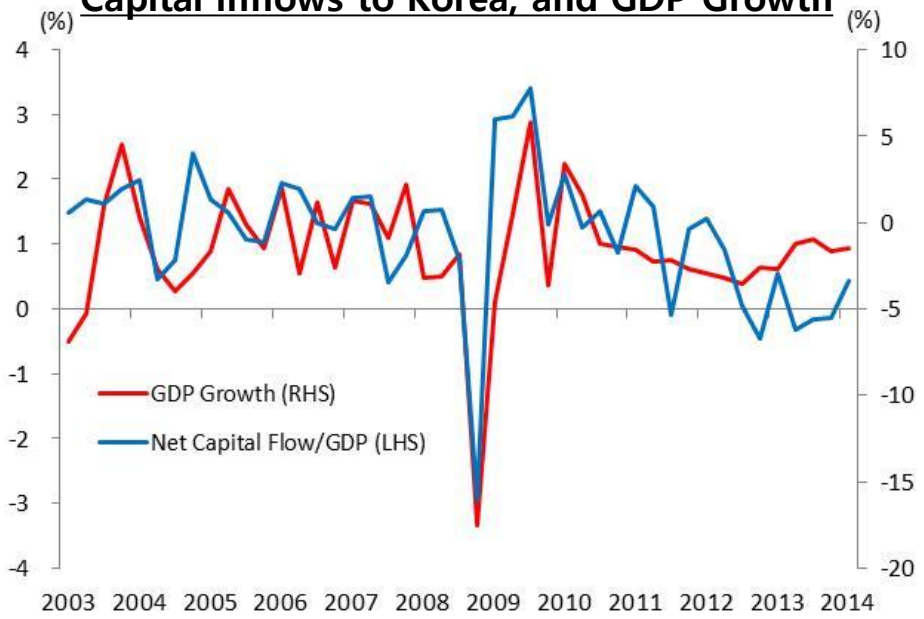
I-2 FX-related toolkits

Background

✓ Capital Flow Volatility

- Capital flows to Korea : Volatile and procyclical
- About one half of total bank inflows during two-year period prior to Lehman Crisis flowed out within five months after it

Capital inflows to Korea, and GDP Growth



Pre- and Post-crisis Capital flows

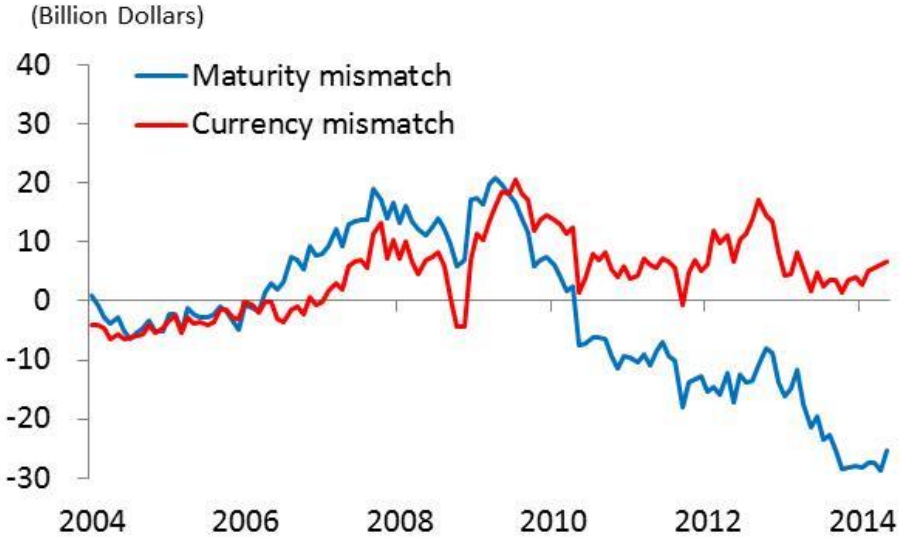
(100 million dollars)

	'06.1 ~ '08.8	'08.9 ~ '09.3
Equity	-683.8	-65.7
Bond	516.4	-108.5
Bank borrowing	**1,084.9**	**-571.5**
(Short-term)	**(998.5)**	**(-573.8)**

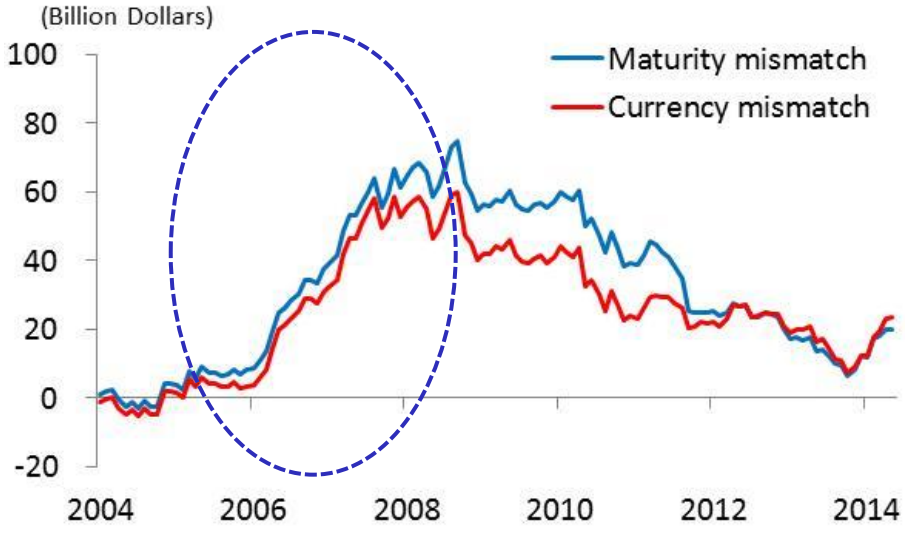
✓ Currency and Maturity Mismatches

- A sharp increase in mismatch of short-term external debt through foreign bank branches drives systemic risk

Domestic Banks



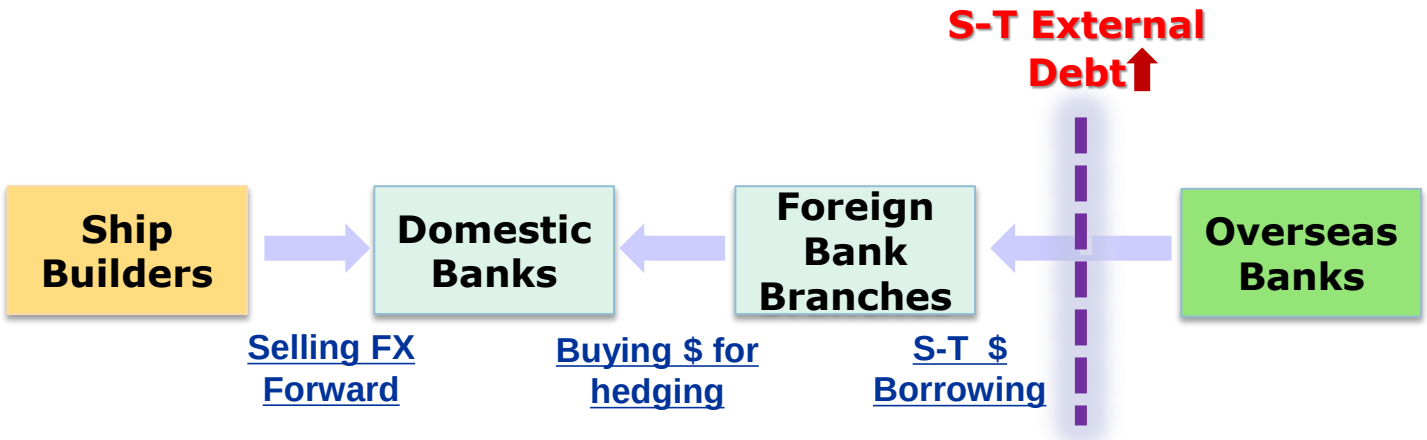
Foreign Bank Branches



Notes: Currency mismatches = foreign liabilities – foreign assets
Maturity mismatches = short-term foreign liabilities – short-term foreign assets

(1) Leverage caps [October 2010]

- ✓ Aimed at curbing banks' short-term external debt

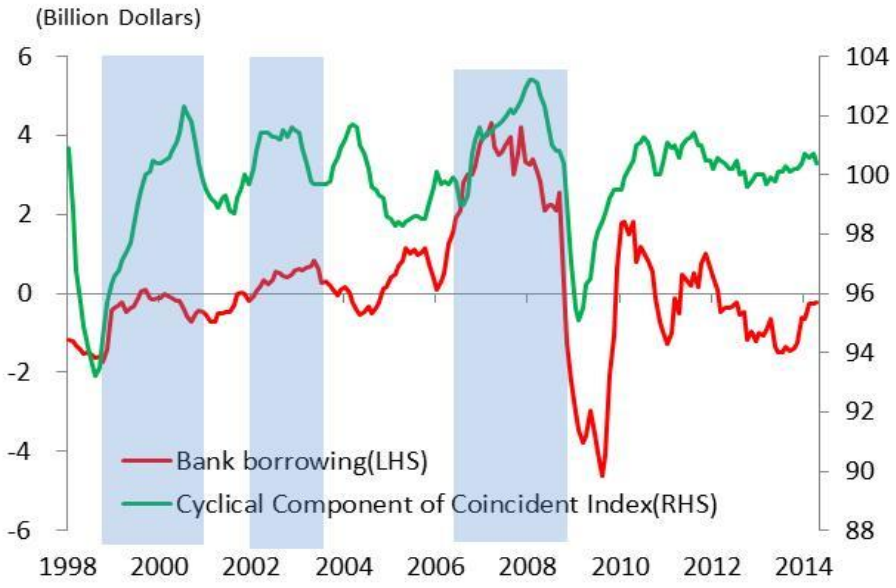


- ✓ Caps on banks' FX derivatives positions : 150 % of equity capital for foreign bank branches, 30 % for domestic banks

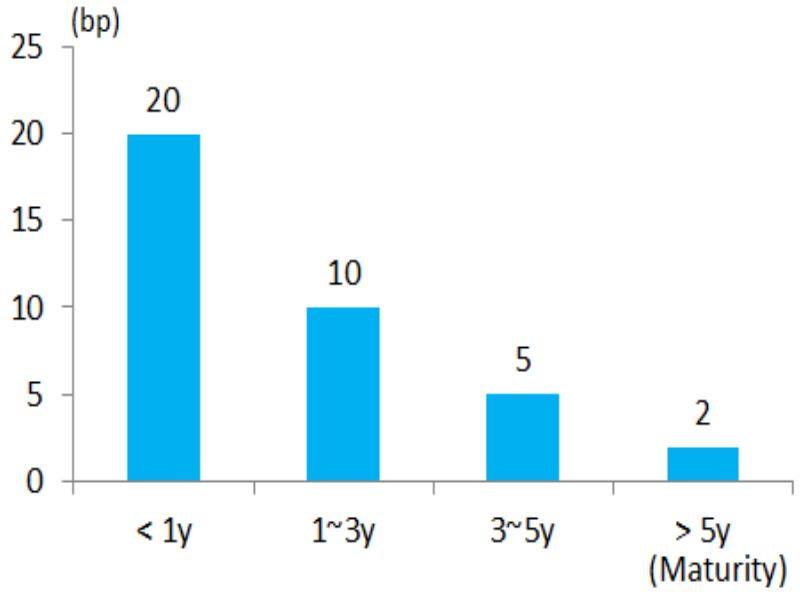
(2) Macroprudential Stability Levy [August 2011]

- ✓ Aimed at curbing excessive increase in bank's non-core liabilities
- ✓ Lower levies applied to longer-maturity liabilities

Bank borrowing and Business cycle



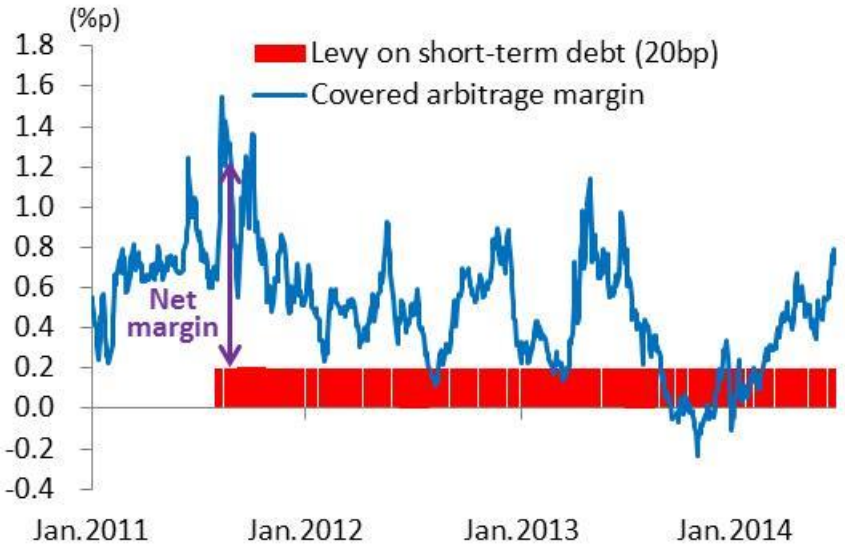
Macroprudential Stability Levy



Effects of MSL

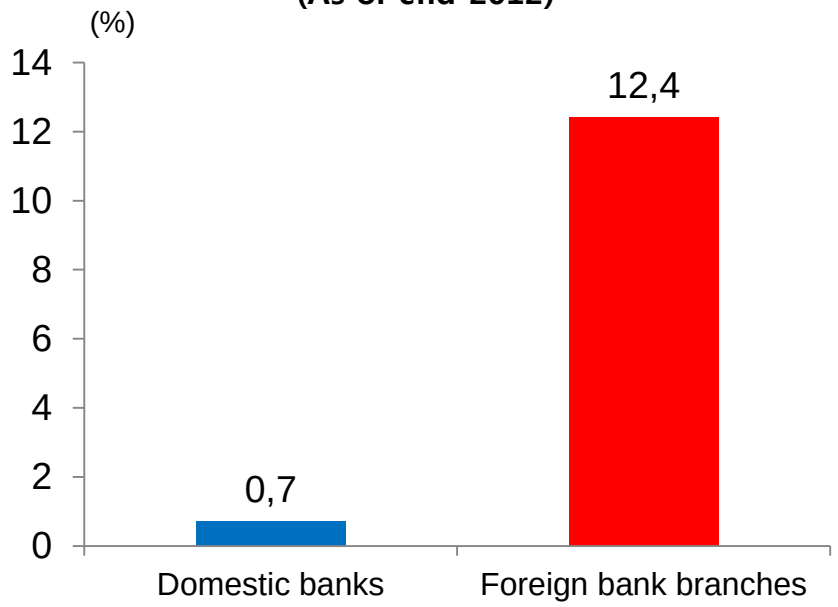
- ✓ MSL has reduced arbitrage margin and raised FX funding costs
- ✓ Total levy collected estimated to be as large as 12 % of net profits for foreign bank branches (domestic banks : less than 1 %)

Arbitrage Transaction Incentives[1)]
(Foreign bank branches)



Note : 1) Interest differential (3M)-Swap rate (3M)

Ratios of Levy to Net Profits
(As of end-2012)



Note : 1) Estimated ratios

I-3 Loan-to-Deposit Cap [December 2009]

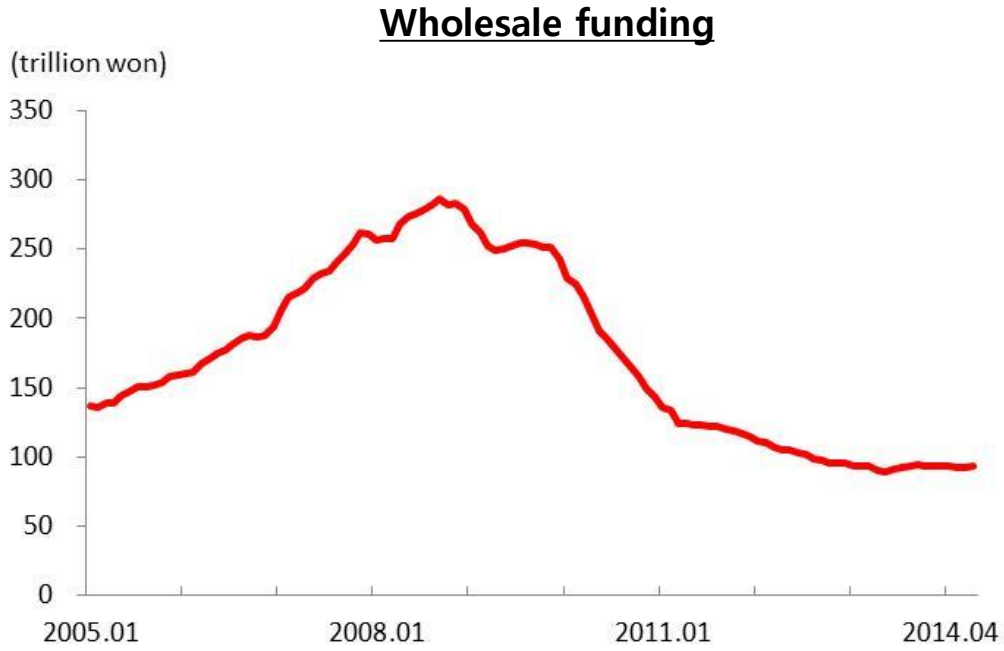
Background

Textbook Case	Reality (Boom period)
Funding → Lending	Lending opportunity → Lending expansion based on wholesale funding → ✓ Procyclicality ✓ Interconnectedness

⇒ **LTD eased procyclicality of lending and interconnectedness among financial institutions created through expansion of credit supply via wholesale funding**

- **Loan-to-deposit ratio** = $\frac{\text{KRW-denominated Loans}}{\text{KRW-denominated Deposits}} \leq 100\%$

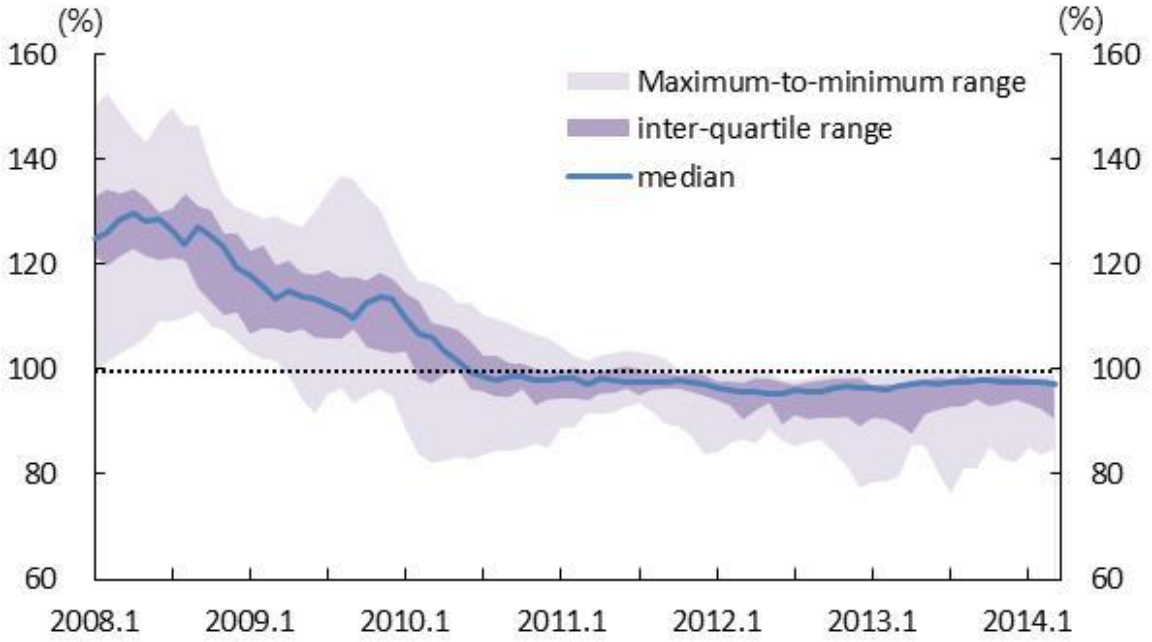
⇒ With LTD ratio limited to within 100%, banks are forced to reduce reliance on wholesale funding



Effects of LTD Cap

- **Reducing procylicality** of bank lending behavior and **interconnectedness** among financial institutions

Loan-to-Deposit ratio



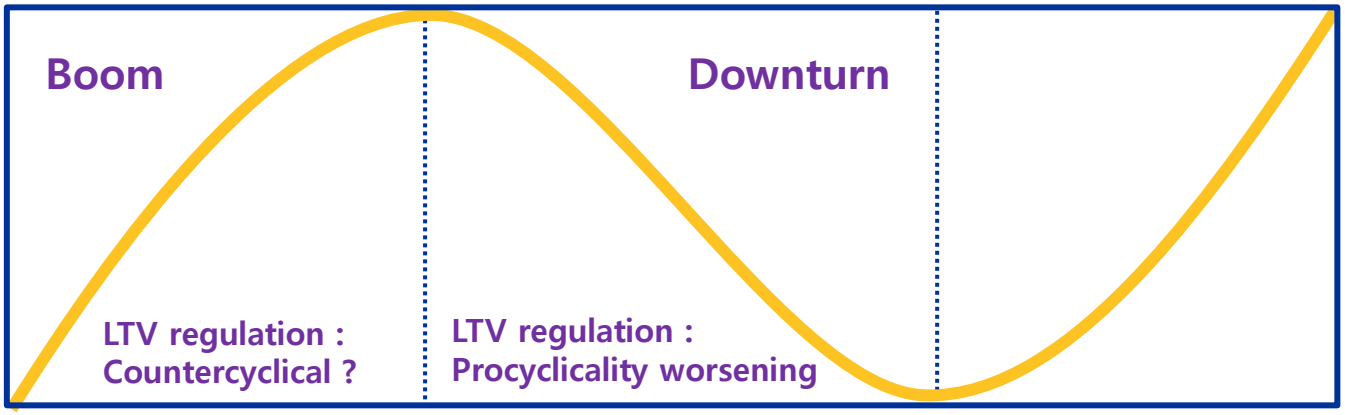
II. Perverse Incentives

LTV Cap

Procyclical behavior could be reinforced

- ✓ **Boom phase:** Mortgage collateral ⇧ → Affordable additional borrowing ⇧
  → **Countercyclical?**
- ✓ **Downturn phase:** LTV moves above threshold (violation of Cap)
  → Pressure on loan recovery ⇧ → Housing price ⇩ (fire sales)
  → **Procyclicality amplified**

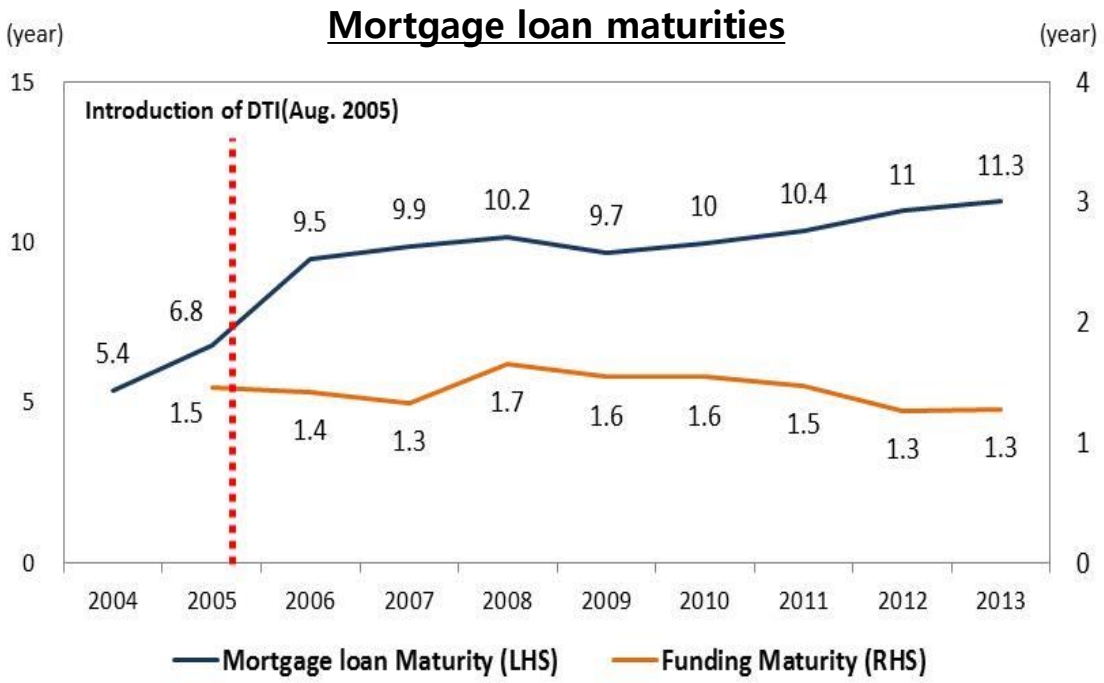
Housing Price Cycle and the Role of LTV Cap



DTI Cap

Caused **Funding Liquidity Risk**

- ✓ Average **maturity of mortgage loans** : **5.4 years** (2004) → **11.3 years** (2013)
- ✓ **Banks' funding maturity** has not changed greatly
  (Composition of banks' funding (2013) : Deposit 67%, Wholesale funding 17%, Borrowing 16%)



$$\text{DTI ratio} = \frac{\frac{mortage\ loan}{\boldsymbol{maturity}} + interest}{annual\ income}$$

- ❖ DTI caps designed in favor of longer maturity

LTD Cap

Further consideration will be needed in regard to the issue of **overlap with the LCR and NSFR regulations**, which also limit loans and deposits on banks' balance sheets

Example

- The LTD ratio excludes **bank debentures from deposit** but NSFR includes those with maturities longer than 1 year as safe funding

  ⇒ Bank's NSFR improves when it issues bank debentures with maturities longer than 1 year but its LTD ratio aggravates, creating a problem

- In **CDs,** the LCR burden is low because a low haircut is implemented but in LTD regulation the burden becomes greater since CDs are not admitted as a deposit

III. Ongoing Discussions

- ✓ **The institutional framework for macroprudential policy**
  - US type (FSOC) vs. UK type (BOE)
  - Tensions between micro- and macro- perspective
- ✓ **Homogeneity vs. Heterogeneity**
  - "Bar raised by Basel III" may induce banks to have similar business models and risk management (Basel Risk, Gerard Caprio, Jr, 2013)
- ✓ **Type I Error (Missed Crisis) vs. Type II Error (False Alarm)**
- ✓ **Macroprudential vs. Capital Flow Management**
  - Potential conflicts with the Capital Liberalisation


Thank You!

Effectiveness of macroprudential policies in the Netherlands

Aerdt Houben, 14 November 2014, Stockholm

DeNederlandscheBank

EUROSYSTEEM

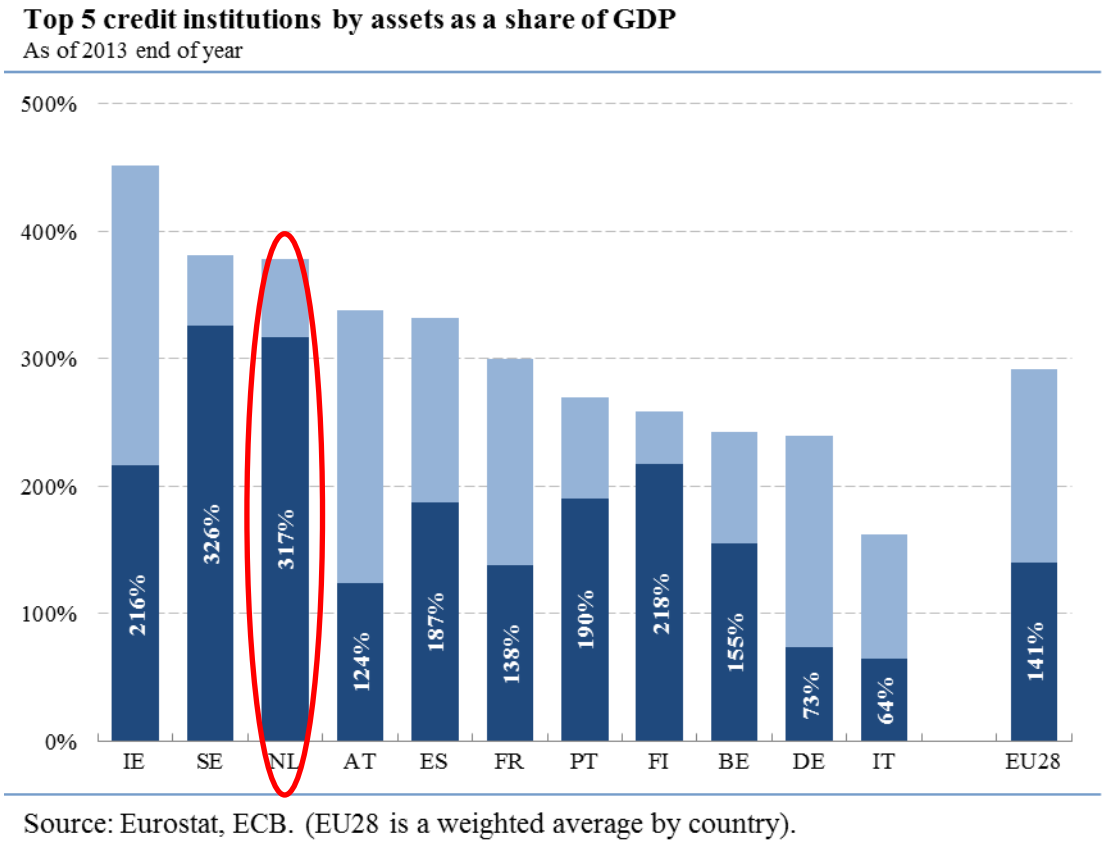
Macroprudential tools in the Netherlands

- systemic importance (O-SII buffer and SRB)
- leverage ratio (LR)
- housing markets (LTV limits)
- Counter-cyclical capital buffer (CCB)

Key questions for each measure:

- what risk does it address?
- who takes the measure?
- how constraining is it?

Systemic importance and too big to fail



Source: Eurostat, ECB. (EU28 is a weighted average by country).

→ Bank size / concentration is a key systemic risk in the Netherlands

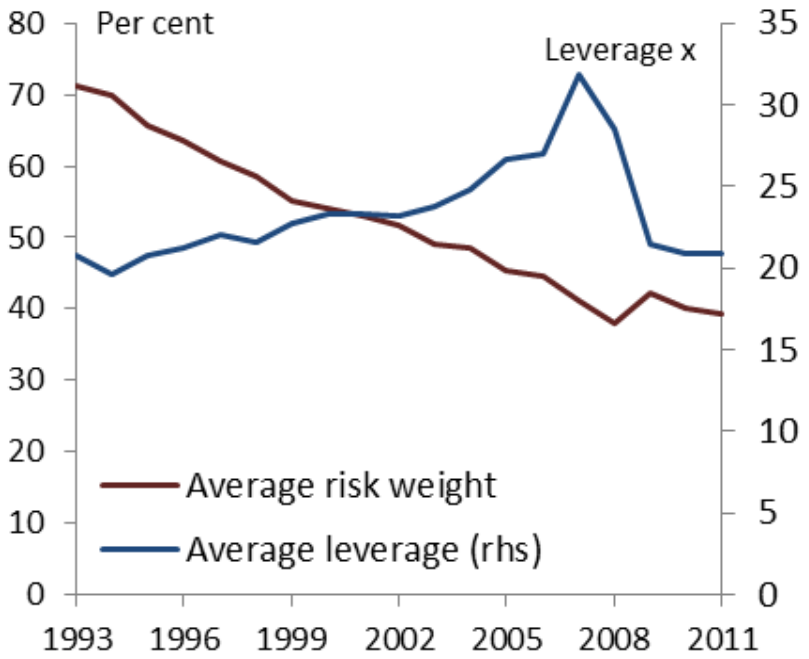
Policy steps: SRB and O-SII buffer

Buffer for:	Level:
ING Bank	3%
Rabobank	3%
ABN AMRO	3%
SNS Bank	1%

- Initially communicated in November 2011 (1-3%)
- Formally announced in April 2014
- CRR/CRD-IV: 2% cap on O-SII buffer and complex notification → problematic

Leverage ratio as a backstop

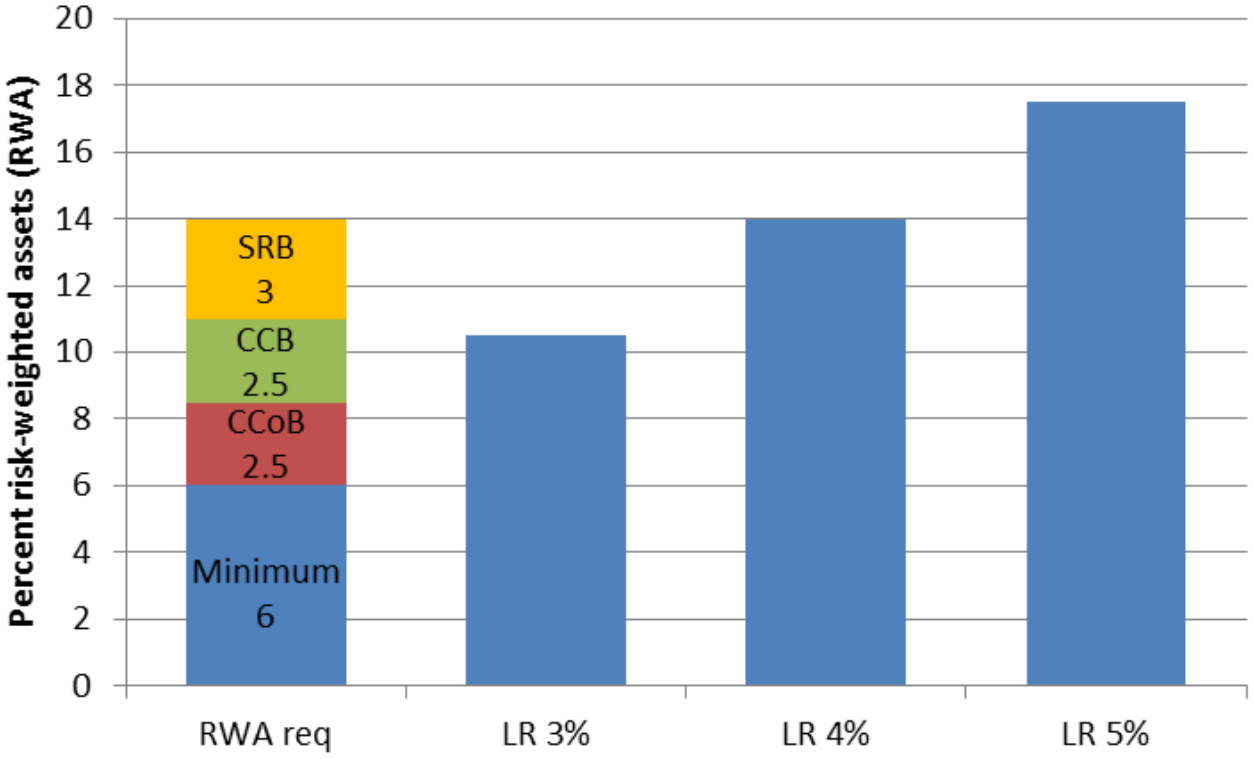
Average risk weights since 1993*



→ Risk weights can move cyclically, allowing for rising leverage in booms
→ If risk-weighted requirements rise, LR must rise to maintain relevance

*Source: ESRB/BoE. Sample includes Bank of America, Barclays, BNP Paribas, BONY, Citigroup, Deutsche Bank, JPM, RBS, State Street, UBS, ING, LBG, Santander, UniCredit, Wells Fargo

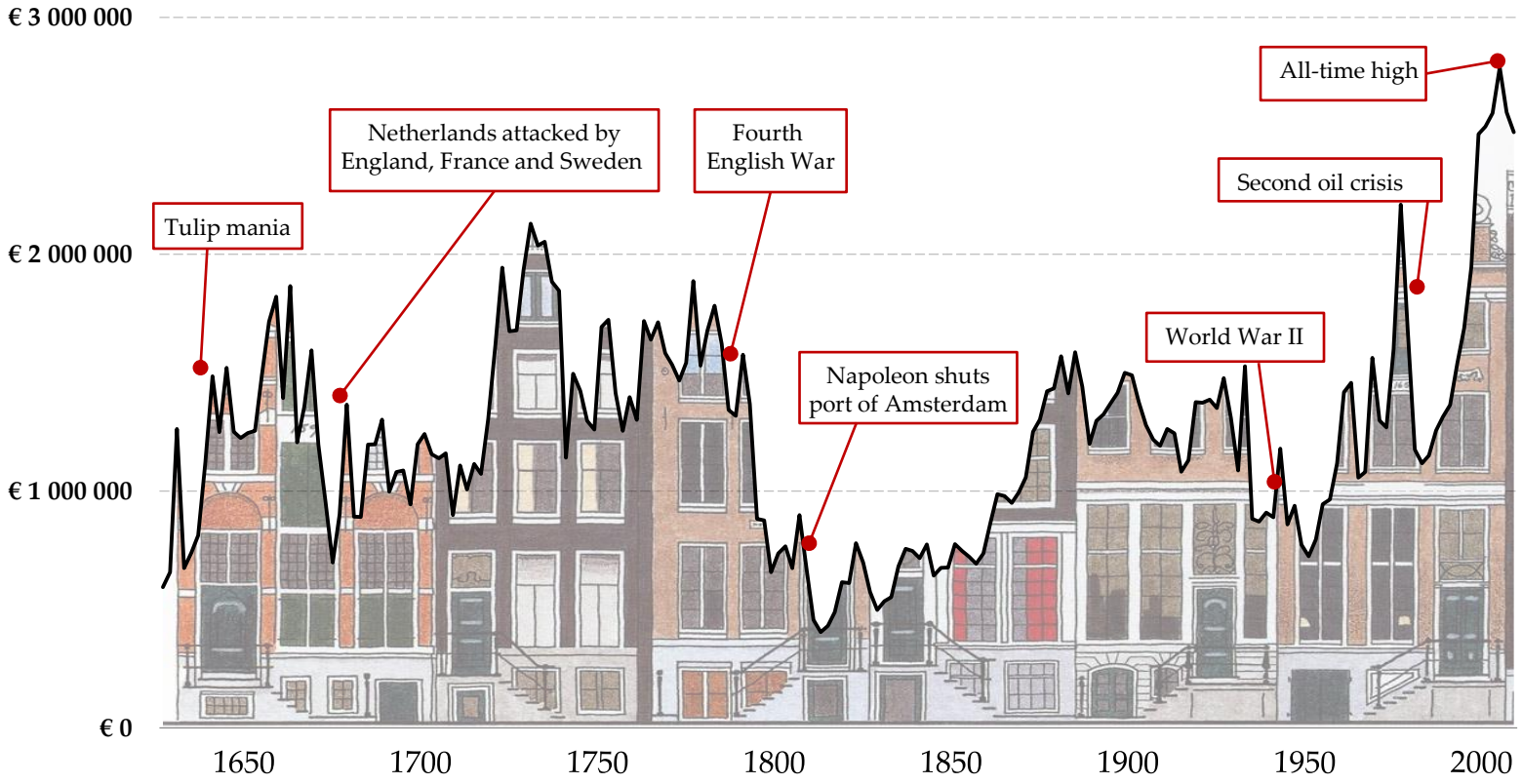
Leverage ratio of 4% for Dutch banks



→ At current risk weights, a 4% LR is binding for several banks
→ Different levels of LR justified in other banking sectors (e.g. UK, SE)

Housing booms and busts are nothing new

Price of a canal house on the Herengracht in Amsterdam
in euros, corrected for inflation

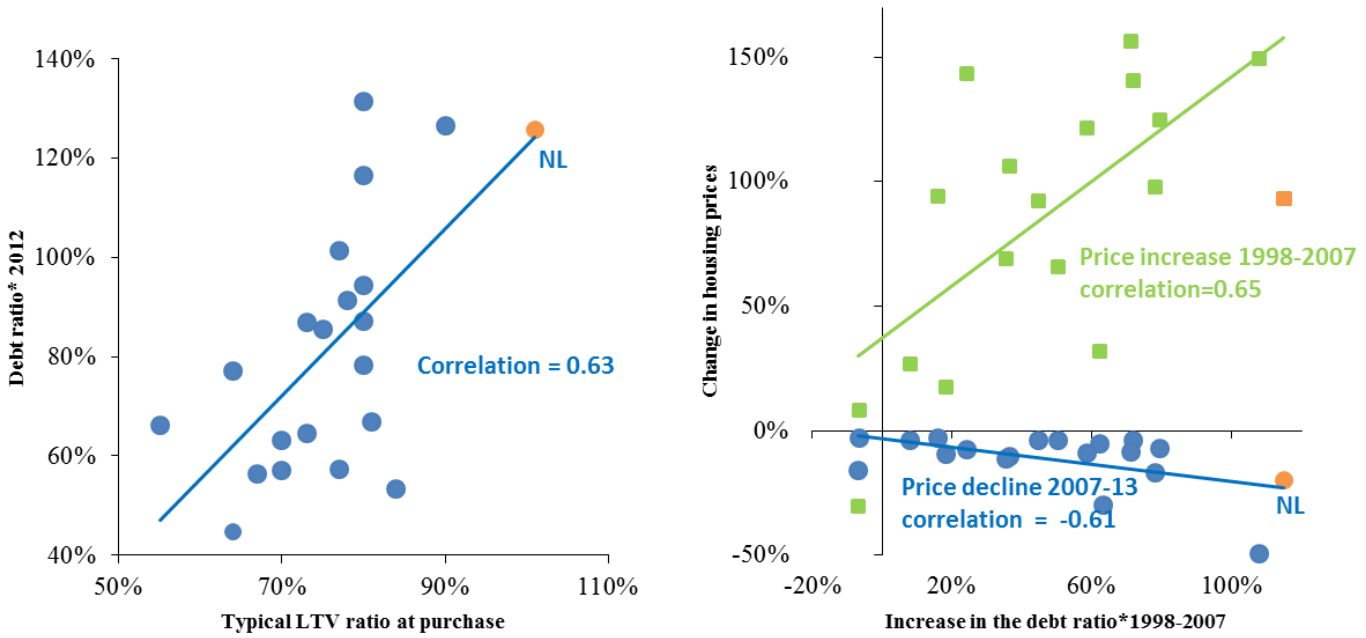


Source: Eichholz (1997) and DNB

High LTV ratios are associated with high debt and volatile housing prices

LTV ratios, mortgage debt and housing prices

Countries: AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, NL, NO, PT, SE, US



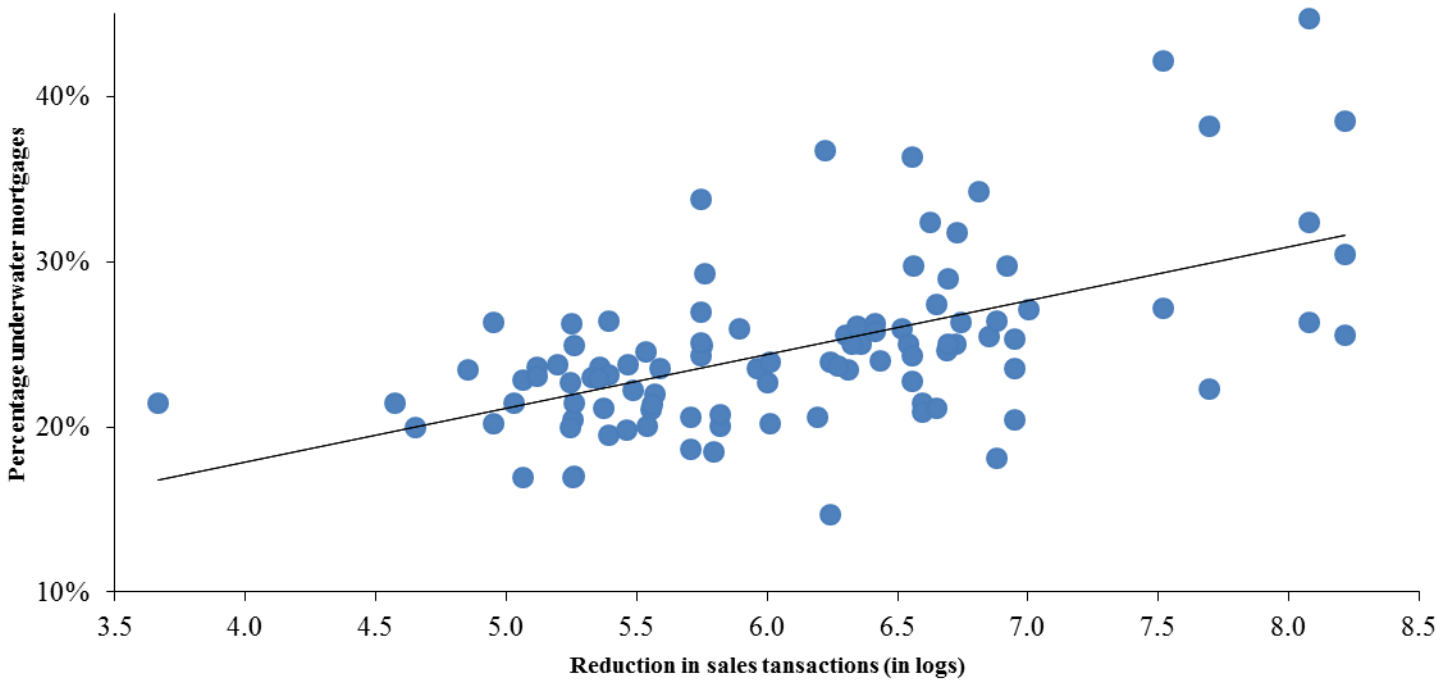
Source: Almeida et al. (2006), ESRB, OECD, DNB calculations

* Total debt of households as a percentage of GDP

Debt overhang reduces labour mobility

Underwater mortgages and sales transactions

Observations per NVM region in the Netherlands (by zip code). Fall in transactions (logs): 2012 compared to 2008.

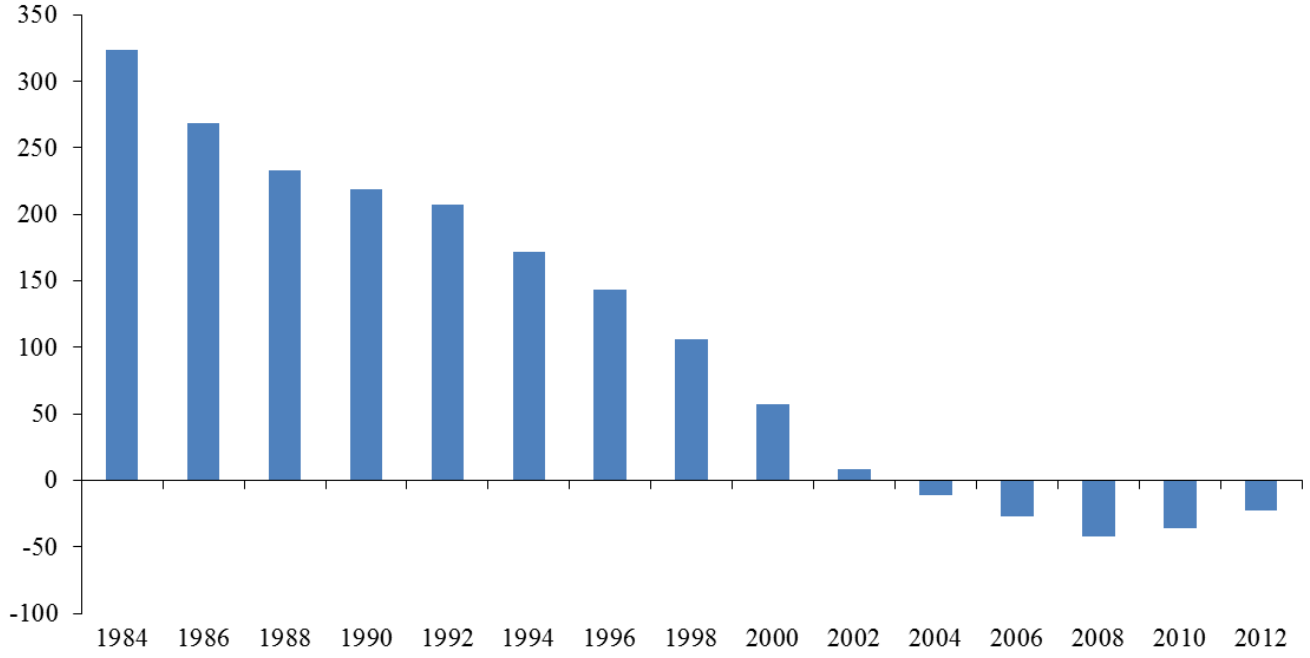


Source: NVM, DNB (LLD)

Boom-bust cycles impact intergenerational wealth distribution

Intergenerational distribution of house wealth

Average housing wealth by year of first purchase, in € thousand



Source: DNB, loan level data.

Addressing structural housing market risks

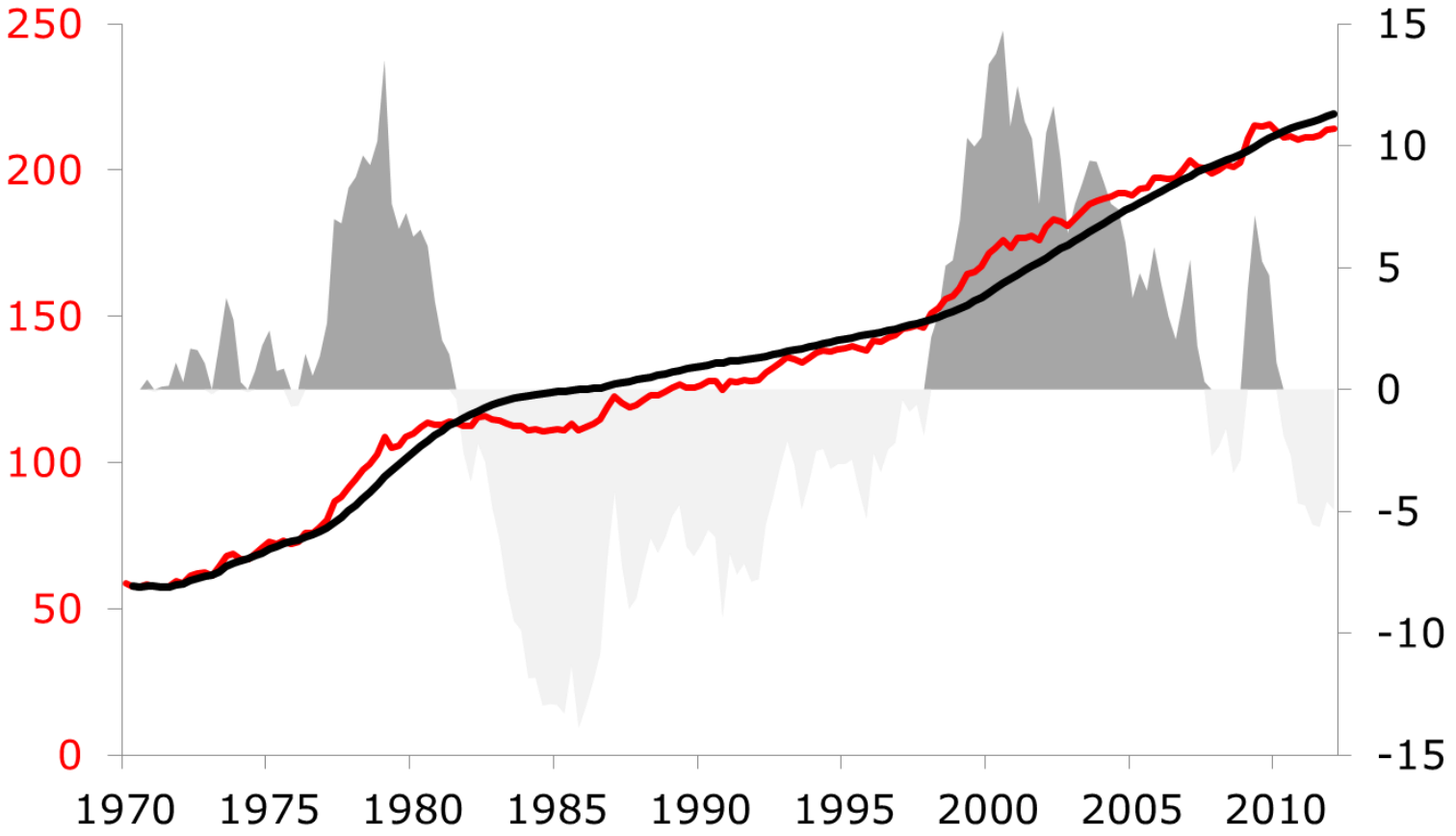
i) LTV limit, lowered by 1% per year, to 100% in 2018

ii) reducing mortgage interest deductibility

→ mandatory amortization within 30 years for new mortgages

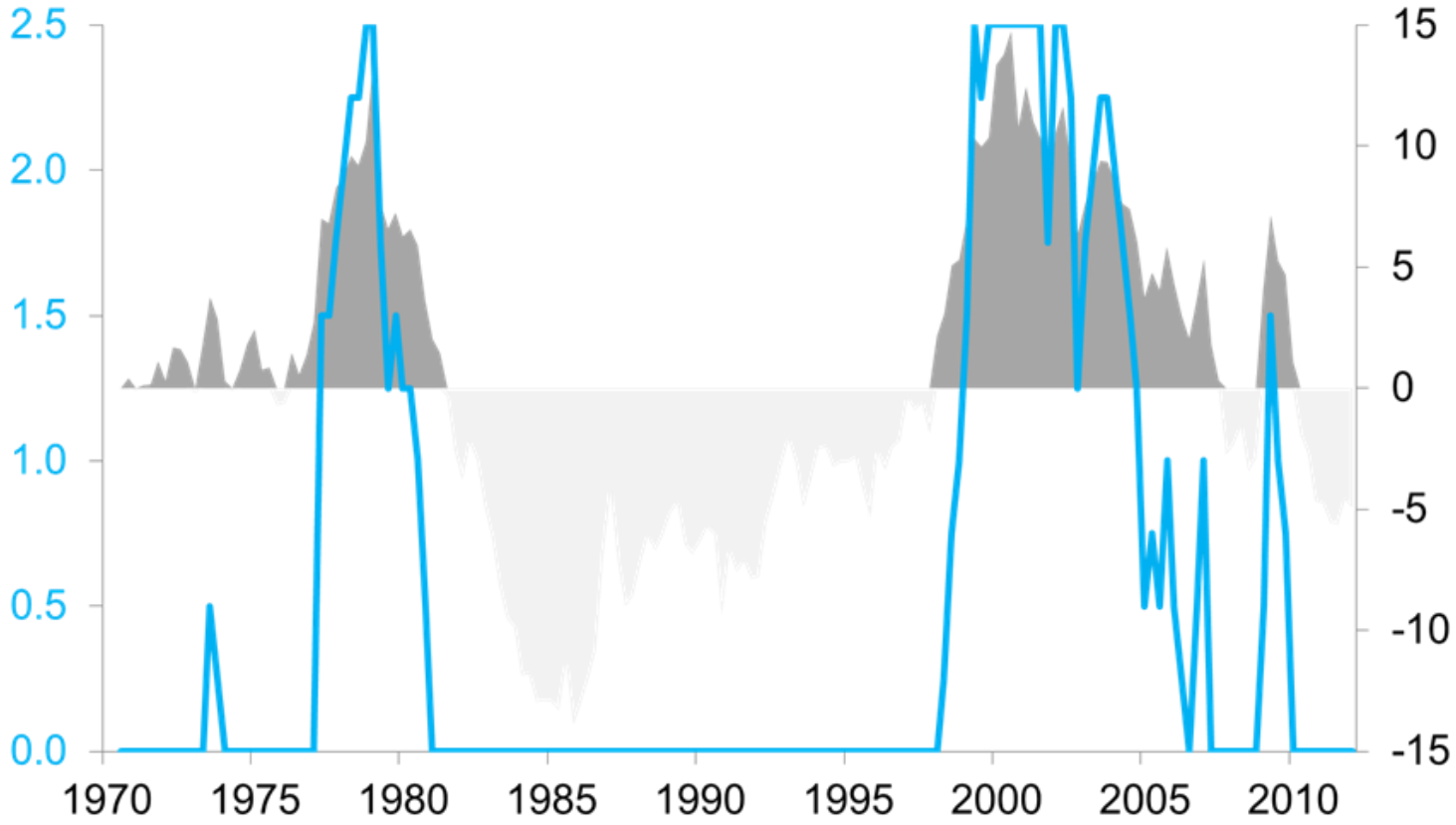
All measures in control of Ministry of Finance, gradual reform

Credit gap Netherlands 1970-2012



→ Private credit to GDP rose rapidly in the 1970's and late 1990's/2000's

The counter-cyclical capital buffer (CCB)



→ CCB would have meant higher capital buffers in 1970's and 2000's
→ Now enshrined in national legislation

Policy lessons so far

1. National discretion needed for different structural risks
2. Leverage ratio and risk weights: belt and suspenders
3. Avoid household debt problems before they arise (use LTVs)
4. Excessive mortgage credit is a problem for households and the economy; less so for banks (use LTVs)
5. Time-varying measures (like CCB) can build buffers in upturns to enhance resilience against downturns