Using Macroprudential Policy:
Country Experiences and Implementation Challenges

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Macroprudential Policy at Work: Systemic Risk and Macroprudential Instruments
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Outline

- Setting the stage
- Use of macroprudential tools
- Experience with macroprudential policy
- Challenging issues in implementation

Setting the stage

State of play on MaPP

- **The global financial crisis showed that dedicated policies were needed to**
  - Contain build-up of financial imbalances and address connectivity within the financial system
  - Reduce the likelihood and severity of financial crises and
  - Make the financial system more resilient to shocks

  → Macroprudential Policy that targets the stability of the financial system as a whole

State of play on MaPP (2)

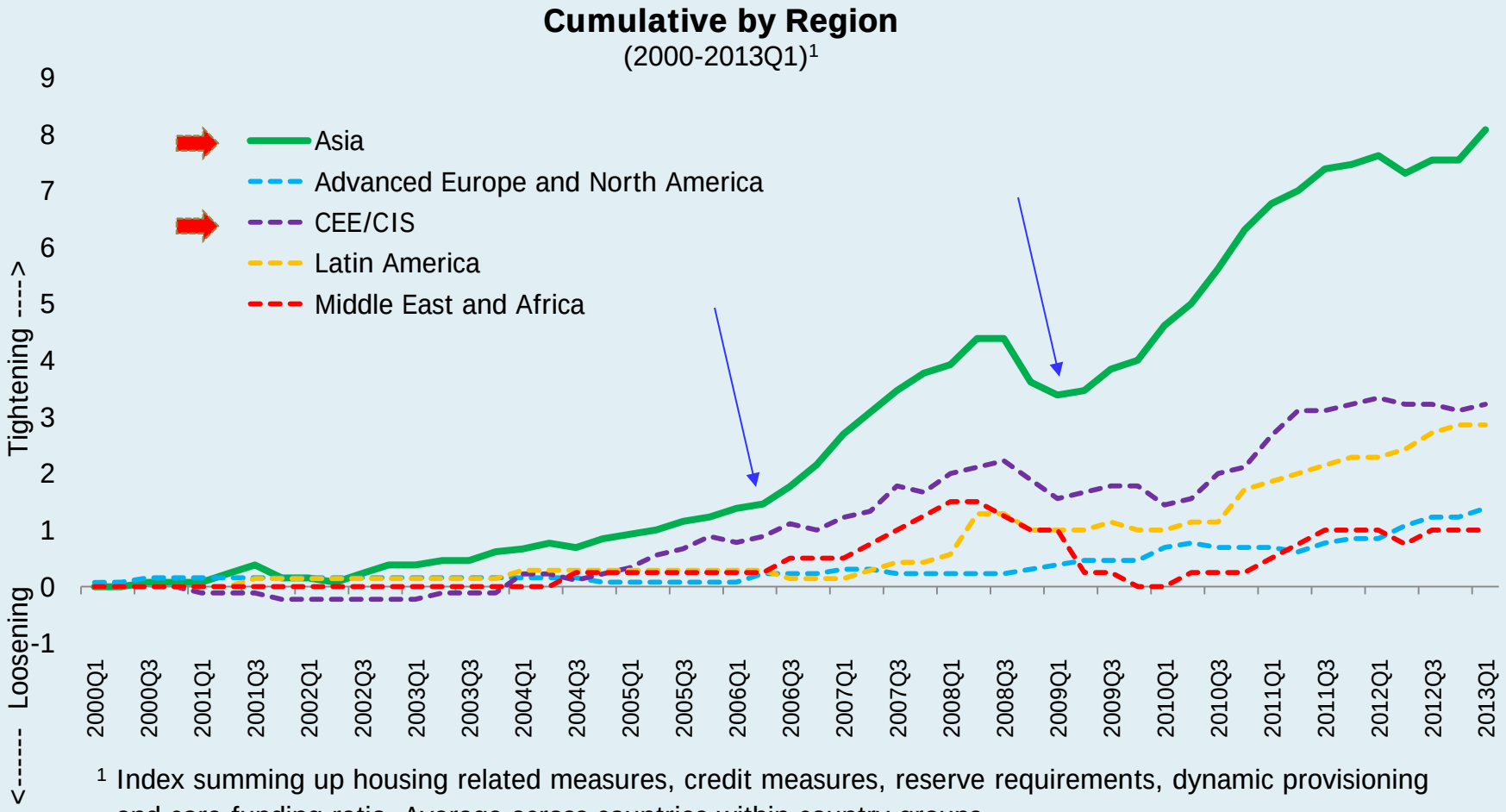
- Whether MaPP will be successful in achieving these crucial objectives is **too early to tell**
- Knowledge of the **effectiveness** of MaPP is still evolving as countries apply the tools and we learn from their experiences
- **The impact and transmission** of MaPP are not yet fully understood empirically
- Understanding of **how MaPP should be implemented** in practice is also evolving, subject to further analysis and country experiences with actual use

Use of Macroprudential Policy Tools in Practice

The actual use of MaPPs depends on a range of factors

- Exposure to certain shocks and risks
- Structural and financial market characteristics that affect the amplification of financial and economic cycles:
  - Financial structure (bank vs. capital market based financing)
  - Level of economic and financial development and openness
- Availability/effectiveness of fiscal, monetary, and microprudential policies to manage financial cycles
- Institutional constraints (data, expertise, legal environment)
- Political economy factors

The use of MaPPs has been increasing over time...

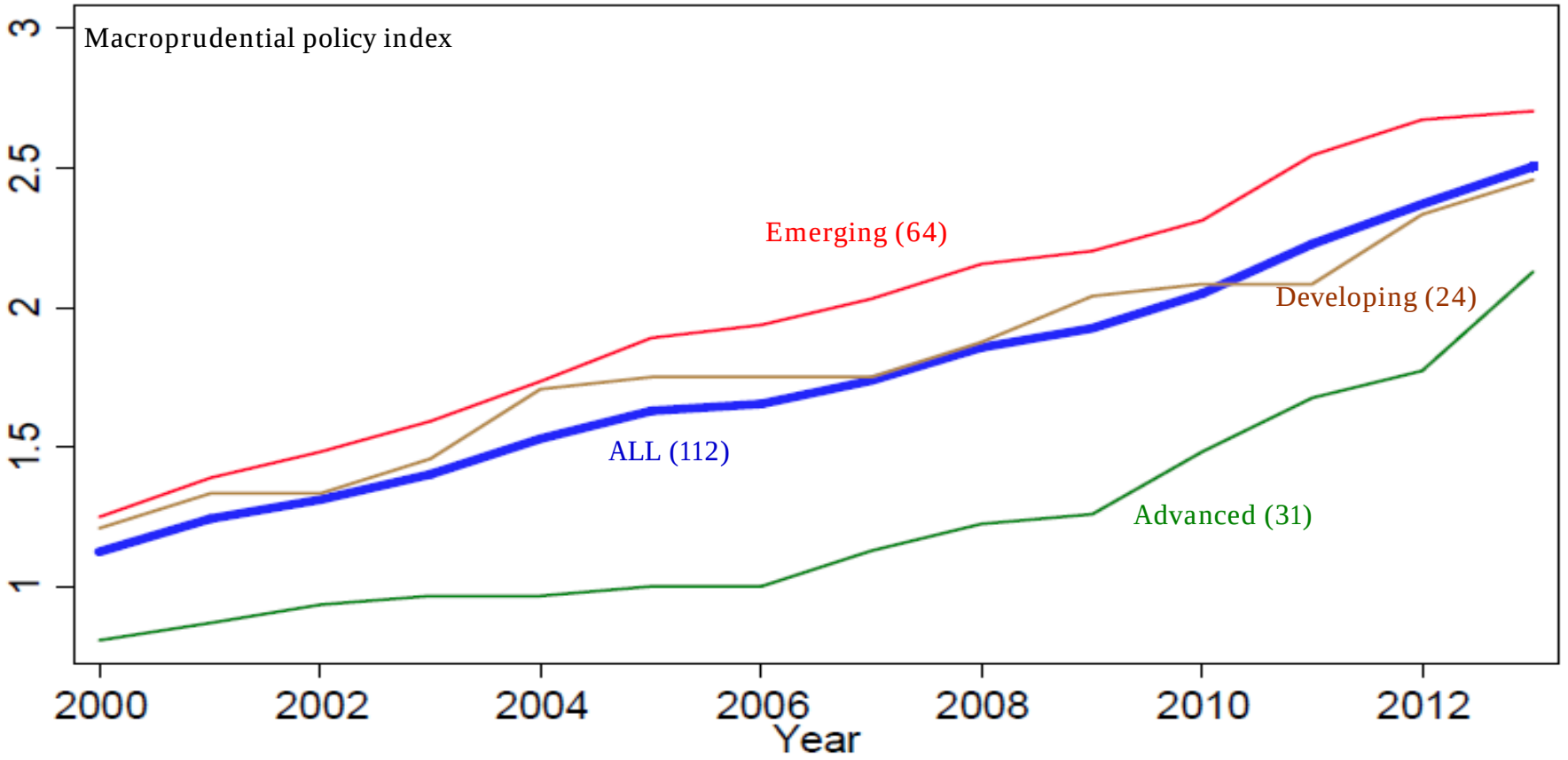


[1] Index summing up housing related measures, credit measures, reserve requirements, dynamic provisioning and core funding ratio. Average across countries within country groups.

Source: Zhang and Zoli (2014)

… and used more frequently by EM and Developing Economies

(greater exposure to external shocks + less liberalized financial systems with more market failures)



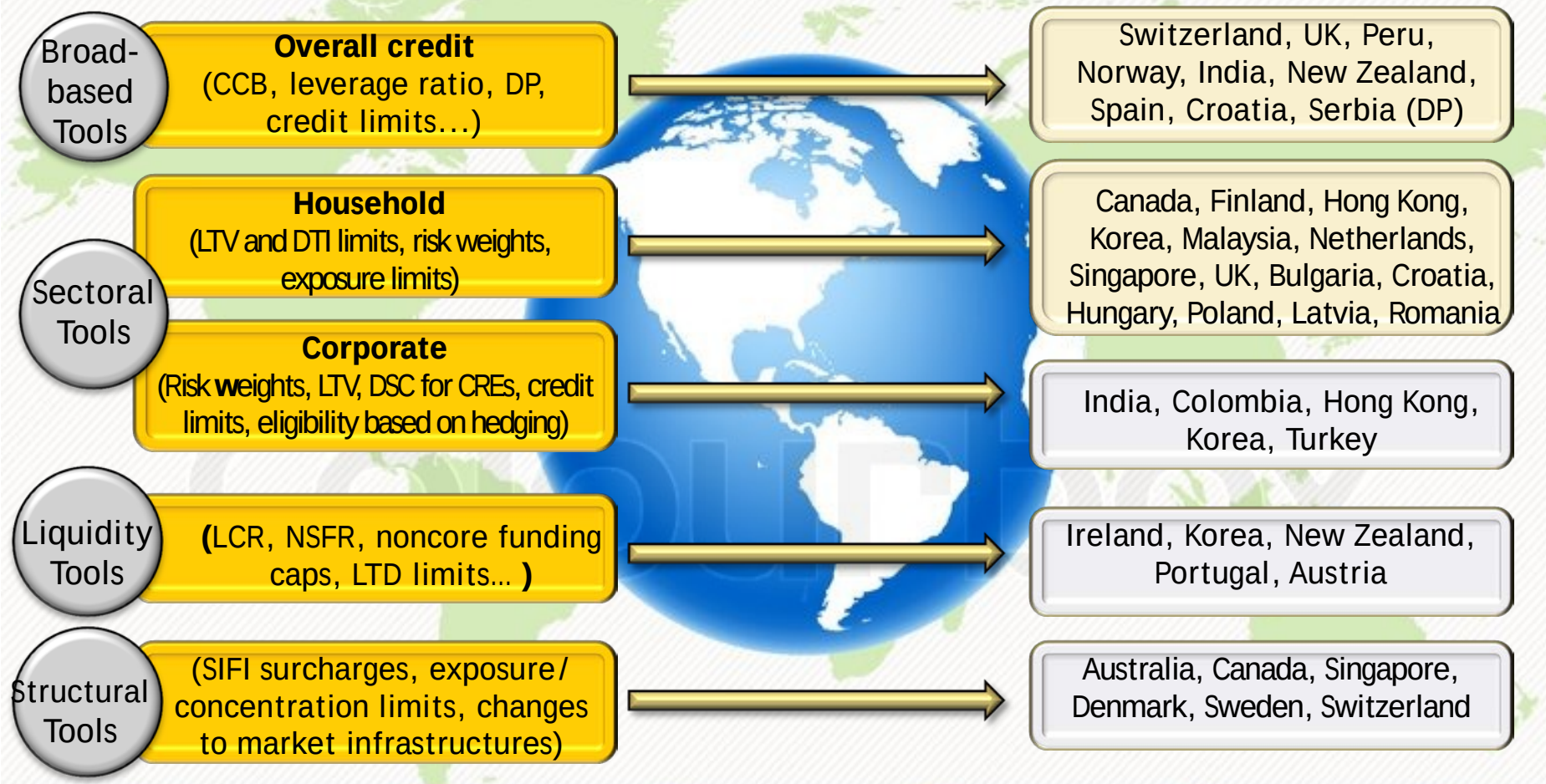
Source: Cerutti, Claessens, Laeven (2015), based on the IMF GMPI Survey (112 countries over 2000-2013)

What Tools?

Broad-based Tools	**Overall credit** (CCB, leverage ratio, DP, credit limits…)	Risks from broad-based credit booms and asset price inflation
Sectoral Tools	**Household** (LTV and DTI limits, risk weights, exposure limits)	Bank, household, corporate sector vulnerabilities to asset prices, exchange rates, & interest rates
	Corporate (Risk weights, LTV, DSC for CREs, credit limits, eligibility based on hedging)	Liquidity & funding risks
Liquidity Tools	(LCR, NSFR, noncore funding caps, LTD limits…)	Increase resilience of financial system & institutions (SIFIs)
Structural Tools	(SIFI surcharges, exposure/ concentration limits, changes to market infrastructures)	Reduce excessive exposure in funding/derivatives market, limit contagion, counterparty risk

Source: Key Aspects of Macroprudential Policy (IMF, 2013)

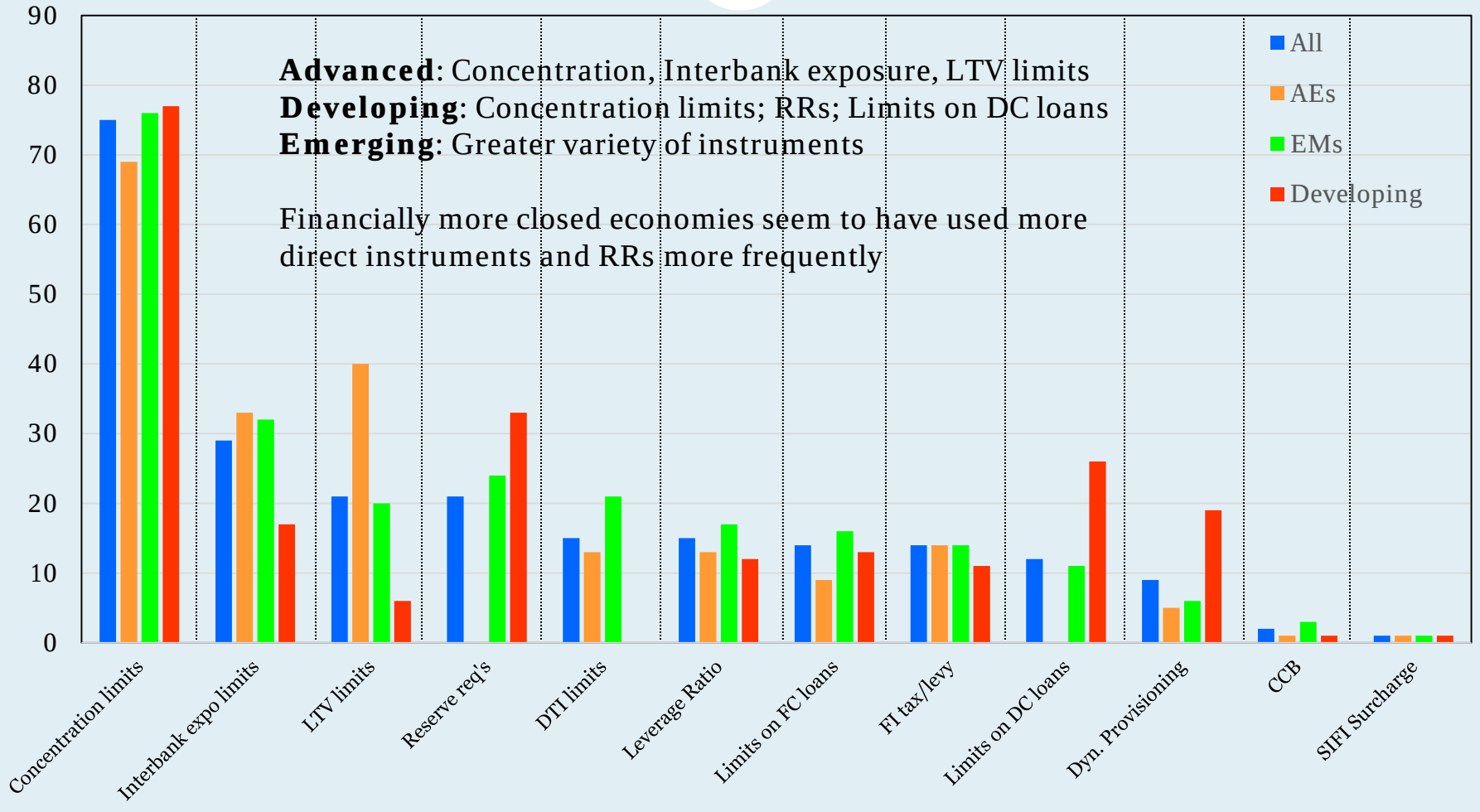
Users of Tools:
Used both for time and structural dimension of systemic risk



Source: Staff Guidance Note on Macroprudential Policy (IMF, 2014)

Most frequently used MaPP tools

(in %)



Source: Cerutti, Claessens, Laeven (2015), based on the IMF GMPI Survey (112 countries over 2000-2013)

Housing market risks have historically been a key focus of MaPP tools and their use

Macroprudential and monetary policy actions affecting housing markets

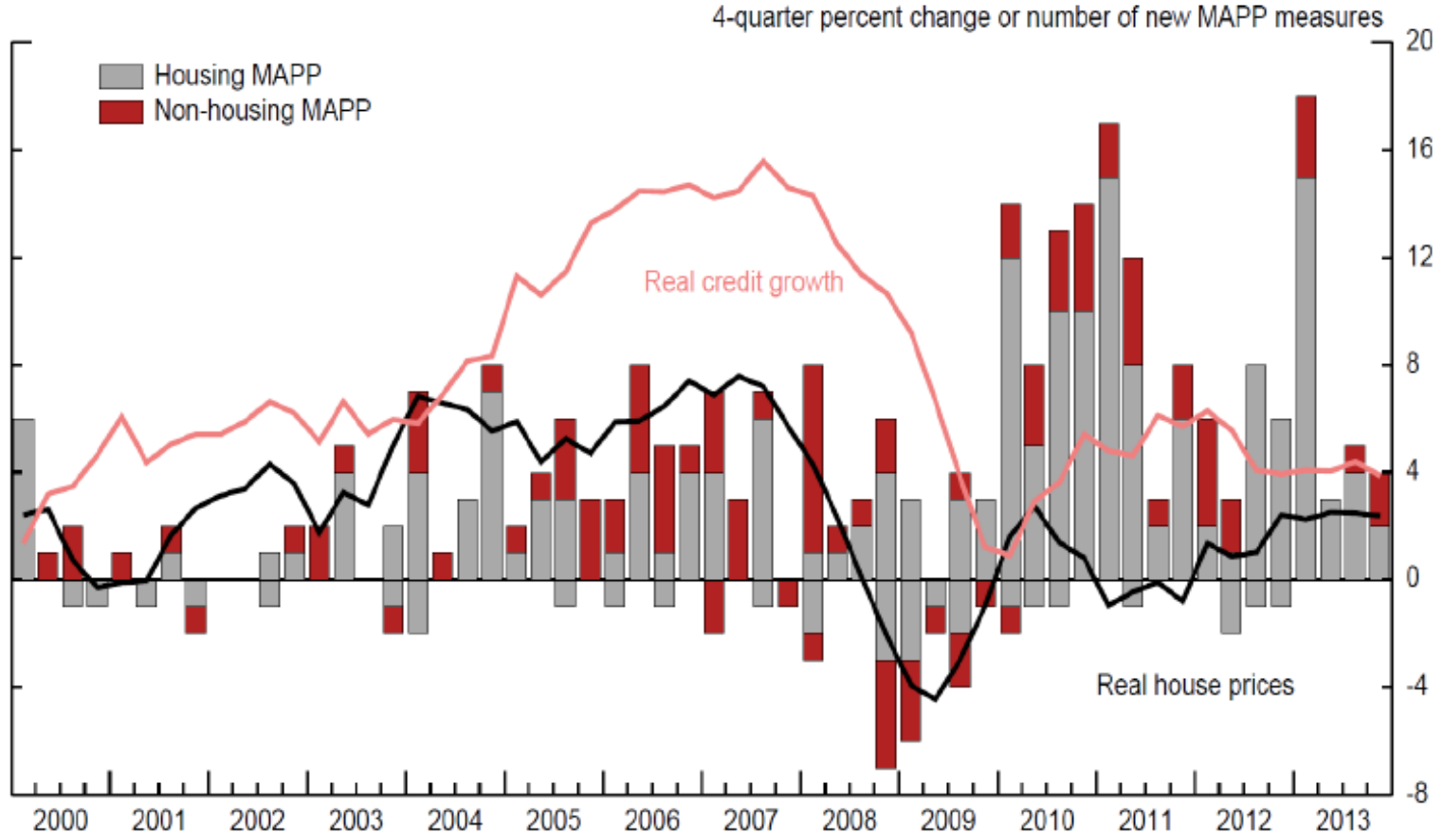
Number of policy actions, January 1990–June 2012

	Asia-Pacific [13]	Central and eastern Europe [15]	Latin America [7]	Middle East and Africa [4]	North America [2]	Western Europe [19]	All economies [60]
Macroprudential measures							
Loan-to-value ratios	41/15	8/3	1/1	0/0	4/0	12/9	66/28
Debt service ratios	16/4	11/1	1/0	1/0	2/0	4/5	35/10
Risk weights on hsg loans	13/1	11/8	3/2	3/0	0/0	6/3	36/14
Provisioning of hsg loans	14/2	8/2	6/0	1/0	0/0	2/2	31/6
Exposure of banks to hsg	5/6	4/4	0/0	0/0	0/0	1/0	10/10
Administrative monetary policy measures							
Reserve requirements	90/60	115/106	43/44	4/2	0/7	3/49	255/268
Limits on credit growth	3/1	4/3	0/0	0/0	0/0	2/1	9/5
Liquidity requirements	13/17	0/4	6/0	0/0	0/0	4/9	23/30

The red value in each cell represents the number of tightening measures; the blue value the number of loosening measures. The figures i square brackets indicate the number of economies in each region.

Source: Shim et al (2013).

Increasing use of MaPP (especially housing related) after the GFC; measures eased during the crisis (countercyclical use)

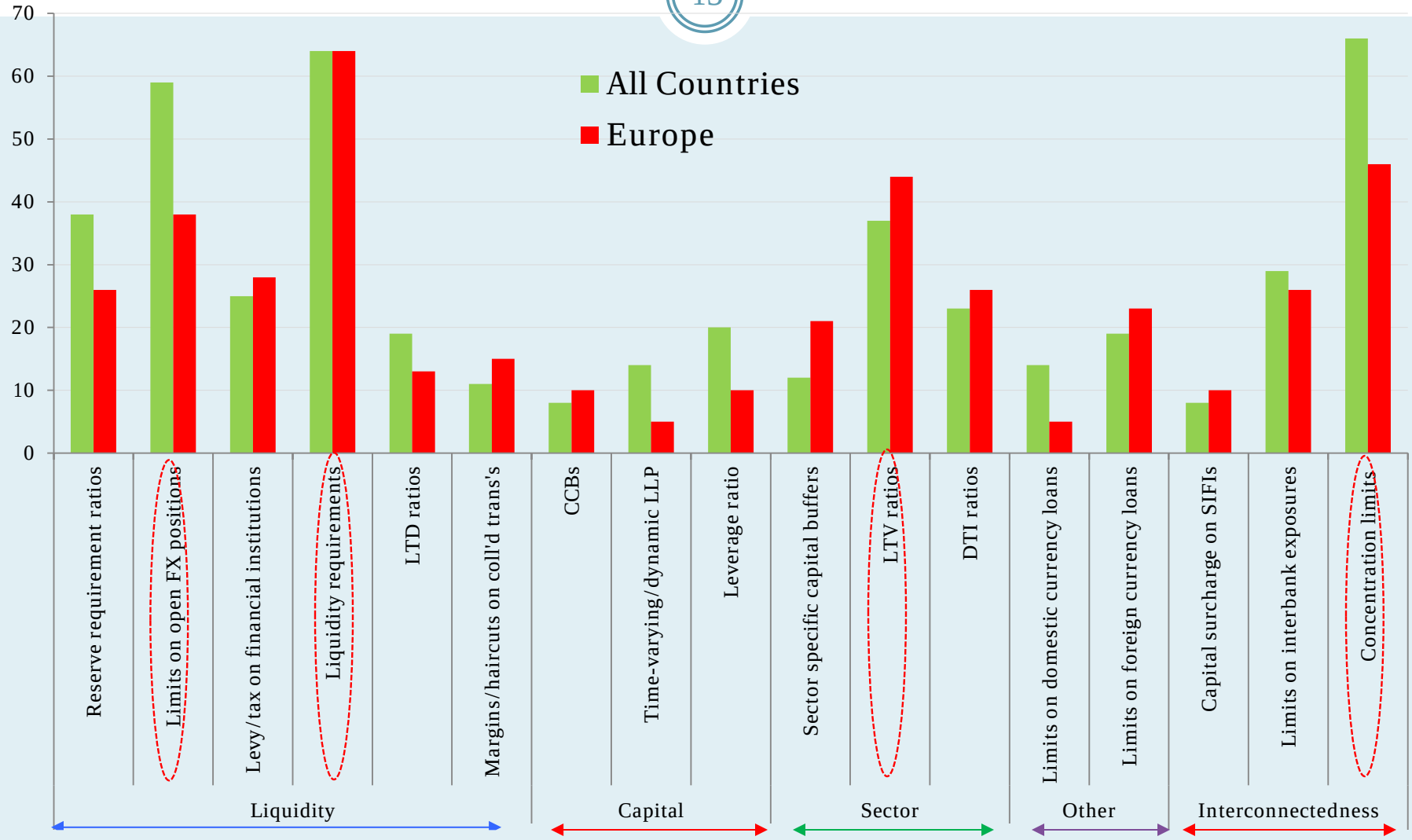


The gray bars: new housing related measures; The red bars: Non-housing related measures
Positive values: tightening; Negative values: relaxation

Source: Akinci and Olmstead-Rumsey, 2015 (57 countries over 2000-2013)

A wide range of MaPP instruments currently in use in Europe

(in % of the respondents in each group)



Source: Global Macroprudential Policy Instruments Survey of 118 Countries (September 2013)

Intensity of Use of MaPP in Europe—Especially so in CEE

	Caps on loan-to-value ratios	Caps on debt/loan-to-income ratios	Caps on foreign currency lending	Ceiling on credit or credit growth	Limits on net open currency positions / currency mismatch	Limits on maturity mismatch	Reserve requirements	Countercyclical capital requirements	Time-varying/ dynamic provisioning	Restrictions on profit distribution	Intensity of use of macroprudential policy
Croatia	3	3	0	6	4	0	5	5	5	0	31
Serbia	0	5	6	0	5	0	3	6	0	2	27
Romania	2	5	5	0	1	1	5	0	4	2	25
Bulgaria	4	0	0	0	0	0	6	6	6	0	22
Russia	0	6	0	0	3	0	5	0	5	0	19
Turkey	3	0	6	0	4	0	0	0	0	3	16
Poland	0	3	6	0	0	0	2	0	0	2	13
Portugal	3	0	0	0	0	0	0	5	5	0	13
Hungary	3	3	3	0	1	0	0	0	0	0	10
Norwey	4	3	0	0	0	0	0	0	0	0	7
Austria	0	0	5	0	0	0	0	0	0	0	5
Ireland	0	0	0	0	0	0	0	5	0	0	5
Italy	3	0	0	0	0	1	0	0	0	0	4
Spain	0	0	0	0	0	0	0	0	3	0	3
France	0	1	0	0	0	1	0	0	0	0	2
Slovakia	0	0	0	0	1	0	0	0	0	1	2
Sweden	2	0	0	0	0	0	0	0	0	0	2
Beligium	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0	0	0	0	0
Germany	0	0	0	0	0	0	0	0	0	0	0
Netherland	0	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	0	0	0	0	0	0	0	0
Great Britain	0	0	0	0	0	0	0	0	0	0	0
Total number of countries which used certian measure	9	8	6	1	7	3	6	5	6	5	

Source: Dumicic (2014) based on MaPP Survey in Lim et al (2011)

Experience with Macroprudential Policy Implementation

Assessing the benefits of MaPPs: A key issue in implementation

- Ultimate objective of MaPP is to:
  - Reduce the probability/severity of crises; safeguard financial stability
  - Reduce negative spillovers within and across borders
- But measuring these benefits is hard:
  - Absence of widely accepted definitions (e.g., financial stability)
  - Benefits not immediately visible and tend to accrue over time
  - Difficult to quantify and measure spillover effects
- Better assess effectiveness in achieving the intermediate objectives:
  - Increase resilience of the financial system to shocks
  - Contain procyclical feedback loops between credit and asset prices
  - Contain excessive increases in leverage, credit, exposures, mismatches etc.
- Benefits need to be weighed against costs
  - Circumvention/leakages through less-regulated channels
  - Distortions/side effects/unintended consequences
  - Reduced availability of financial services and output costs

Growing literature on cross-country analyses offer support that MaPPs have been effective

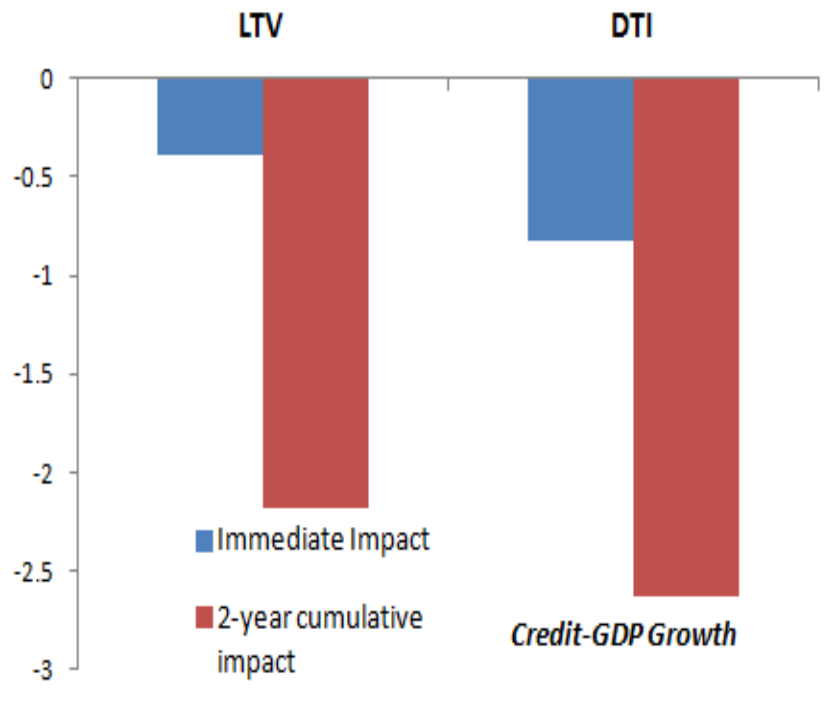
- Effective in reducing time/sectoral dimension of systemic risk; but scarce evidence for structural dimension:
  - MaPP tools reduce incidence of credit booms & probability of busts (Dell'Arriccia ... 2012)
  - MaPPs (LTV/DTI/DP/RRs) dampen procyclicality of leverage & credit→ (Lim .. 2011)
  - MaPPs are less effective on credit in financially more open economies with developed financial systems → evasion (Cerutti, Claessens, Laeven, 2015)
- Dynamic provisioning enhance resilience of banks and banking system and tame credit cycles (Jimenez et al 2011)
- Countercyclical capital buffers → reduced leverage and asset growth
- FX related measures → moderation in capital inflows, FX borrowing, mismatches

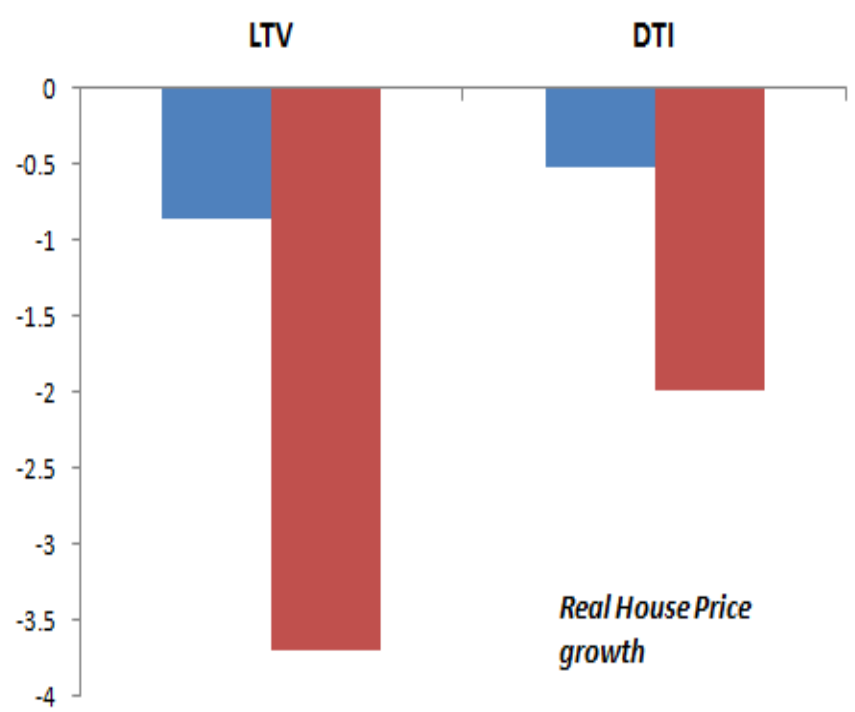
Some support that MaPPs have been effective on the housing market

- Growing empirical literature on housing markets:
  - Akinci & Olmstead-Rumsey 2015
  - Arregui, Benes, Krznar, Mitra and Santos 2013
  - Cerutti, Claessens, Laeven 2015
  - Detragiache & Vandenbussche 2014
  - Igan & Kang 2012
  - Kuttner & Shim 2013
  - Wong, Fong, Li, Choi 2011…

- Some takeaways
  - ✓ MaPP tools generally effective on housing credit, real estate booms
  - ✓ Demand-side measures more effective than supply-side measures
  - ✓ Mixed results for MaPP tools impact housing price inflation
  - ✓ Housing related taxes moderately effective in reducing house price inflation

Evidence on Effectiveness of LTV, DTI Limits





Source: Arregui, Benes, Krznar, Mitra and Santos (2013)

Mixed results on the effects of MaPPs during upturns vs. downturns

- MaPPs have symmetric or asymmetric effects?
  - During upturns vs. downturns
  - When tightened vs. relaxed
- Evidence is mixed:
  - Effect of LTV, DTI limits, capital requirements largely symmetric: buffers built in good times may pay off during bad times (IMF 2013)
- Recent research suggests, however:
  - **Booms vs. busts:** Tightening LTV, DTI caps have bigger effect during booms compared to busts (McDonald 2015; Cerutti, Claessens, Laeven, 2015)
  - **Tightening vs. relaxation:** Loosening LTV, DTI limits stimulate lending by less than tightening constrains it (McDonald 2015)
- More research needed...

Country-specific studies provide broad support for effectiveness on their intermediate objectives

- Capital-based tools, min payment requirements, LTV limits **(Turkey)**
- Combination of capital, liquidity, FX lending **(Macedonia)**
- Capital adequacy rules, differentiated eligibility rules by currency **(Poland)**
- CCB, mortgage related measures **(Switzerland)**
- Leverage limits **(Mexico)**
- LTV limits, housing tax, and FC-related measures **(Asia)**
- Core funding ratio **(NZ)**
- Levy on noncore liabilities **(Korea)**
- **.....**

Sources: Guidance Note for MaPP 2014, literature cited therein.

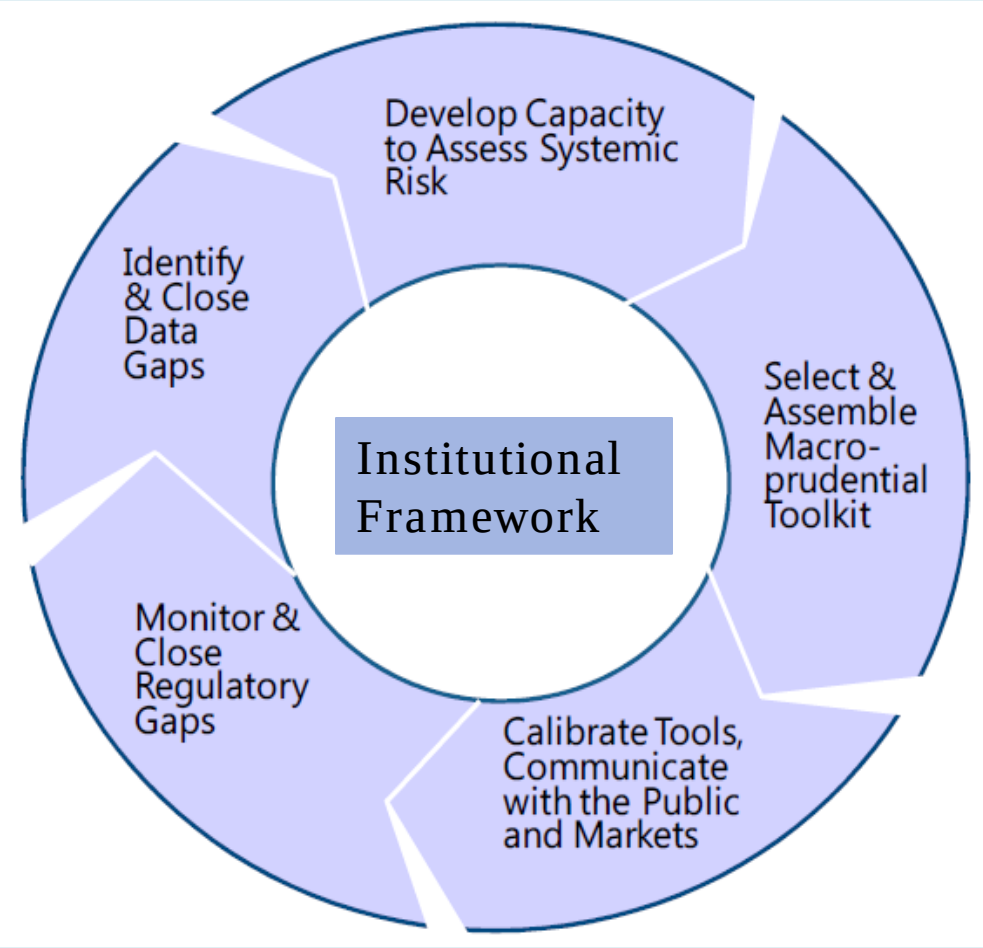
Challenging issues in implementation

Have gone a long way, but still more to go…

- We know much more about
  - The concept of MaPP
  - What it can and cannot do
  - The toolkit, and potential benefits, potential side effects
  - Role in preserving financial stability
- But still many unknowns
- Many operational challenges in putting it in effective use
- Many remaining questions on assessing policy interactions

Implementing MaPP is an evolving process

- MaPP an evolving process
  - All 5 key aspects of MaPP require ongoing development supported by strong institutional frameworks…
- 'MaPP is an art than science' (Schoenmaker 2014):
  - Consequences depend on the specifics of a financial system
  - Some consequences may be unintended



Source: IMF 2014, Key Aspects of MaPP

Challenge 1: Understanding Transmission of MaPP

- Even for countries using MaPP tools for some time, a key implementation challenge: still limited understanding of the transmission mechanism through which MaPP operates
- Better understanding the transmission channel is key to:
  - Deciding which tool to introduce (one with the most efficient transmission to the intermediate objective)
  - Proper calibration of the tools: when/at what level/pace to introduce
  - If/when to relax them as circumstances change

→ Need to address data gaps and develop appropriate models

→ Continue learning from analyses of actual experiences

Challenge 2: Calibration of MaPP tools (if, when, how?)

- How to decide whether to introduce/tighten/loosen a MaPP tool? When? At what level and pace?
- Proper calibration of a tool is key to maximizing its effectiveness while minimizing the costs/side effects/'unintended consequences'
- Guidelines for calibration of the tools are ongoing (ESRB, IMF → operational guidance on implementation)
- Country experiences with DTI, LTV limits (Brazil, Hong Kong, Korea, Malaysia, Poland, Romania) suggest (Jacome & Mitra 2015):
  - No formal quantitative analysis in setting the level or changes to the limits
  - No formal guidelines on the indicators to assess the need to modify
  - Adjustments made largely discretionary, using judgment, expanding scope of the measures to curb leakages

Some useful lessons in calibration and implementation (1)

- **Comprehensive toolkit**: Systemic risk needs to be addressed in both cyclical and structural dimensions. Using multiple tools can:

  → Reduce potential for circumvention → Enhance effectiveness

Number of Countries with Sectoral Macroprudential Tools

	Sectoral Capital Requirements	Limits on LTV Ratio	Caps on DSTI Ratio	Limits on LTV and DSTI ratios	At least One tool	More than two tools	All three tools
Number of Countries (Total = 46)	23 (50 percent)	25 (54)	15 (33)	13 (28)	38 (83)	20 (43)	5 (11)

Staff Guidance Note, 2014, IMF

Note: Numbers in parenthesis shows the proportion of countries with a specific instrument among the sample.

- The challenge: to find the best-targeted set of tools right for the risk, while minimizing unnecessary burden on borrower/lender/regulator

Some useful lessons in calibration and implementation (2)

- **Gradualism** to limit adjustment cost & excessive deleveraging (esp. if transmission is uncertain) but avoid *ad-hoc* and frequent adjustments
  - Korea: ceiling on LTD introduced and implemented over 2009 → 2012
  - New Zealand: min core funding ratio (in 3 steps 2010→2013)
- **Timing** of introduction/tightening is important:
  - avoid introducing during financial stress
  - adjusting tools at an early stage can help smooth the financial cycle
- **Setting the right level** is crucial to:
  - avoid hindering financial intermediation / distributional costs on borrower
  - avoid creating incentives for circumvention (domestic/cross-border)

Effectiveness but not at all cost…

- Bulgaria, Croatia, Romania, Serbia used multiple instruments
  - capital requirements
  - loan loss provisioning requirements
  - eligibility requirements
  - marginal and asset based reserve requirements
- To affect intermediate objectives of limiting
  - domestic credit and household credit growth
  - share of FX lending
  - share of foreign funding
- Temporary effect on bank lending growth; measures circumvented with
  - direct borrowing from parent banks
  - booking of loans with nonbanks
  - extra booking before measure coming into effect

→ Important to monitor transmission to key indicators

→ Adjust calibration to limit side effects and close loopholes

Source: Dimova, Kongsamut, Vandenbussche (forthcoming)

Challenge 3. Rules vs. discretion in decision making?

- Rules-based policy helps avoid risk of inaction and time inconsistency of MaPP. But:
- Systemic risk can arise in different shapes and forms in a rapidly evolving financial system →
- Appropriate combination of rule and discretion
  - → Allow some judgment in using MaPP tools, but
  - → Anchor actions in a systematic analysis of well-defined indicators
  - → Guided discretion + Clear communication → Good compromise (New Zealand, Norway, Switzerland, UK)

Challenge 4: Asymmetric effects in good/bad times?

- In periods of financial stress, authorities may want to relax MaPP to limit excessive deleveraging and prevent fire sales
- In practice, unclear if the impact of MaPP is always symmetrical along different parts of a financial cycle. Empirical findings mixed
- Variety of reasons may underlie the asymmetry (e.g.):
  - Relaxation may be interpreted as weakening prudential standards
  - Market forces may call for higher-than-required buffers
- Desired impact from relaxation may depend on:
  - Size of buffer accumulated → Release w/o undermining confidence/resilience
  - Communication → Markets understand financial stability is not compromised

Challenge 5: Interaction with Other Policies

- Systemic risk can be affected by many things →
- Interaction w/other policies crucial but understanding these interactions still evolving
- Interaction between monetary policy (MP) and MaPP: Crucial for their effectiveness
  - MaPP & MP can reinforce/conflict each other
  - Conflict → When low interest rates to support weak activity creates financial risks
    - Can MaPP support MP with measures to contain financial stability risks?
    - Can MaPP undermine the objective of MP by constraining risk taking?
    - Can MaPP hinder the transmission mechanism of MP?
- Interaction with other policies also key (use but not abuse MaPP):
  - MaPP may have limited effect when weaknesses/distortions associated with fiscal, structural, microprudential policies may be creating systemic risk

Challenge 6: MaPP may have leakage effects

- Financial activity may move outside the scope of application and enforcement of a MaPP tool
  - Reduce the effectiveness of the MaPP policy measures
- Leakages can be:
  - **Domestic**: Activity migrates to other financial institutions outside the scope of the measure (e.g., Banks → Nonbanks)
  - **Cross-border**: Activity migrates to other jurisdictions or foreign branches outside the realm of MaPP authorities

Challenge 6a: Dealing with **domestic leakage**: New sources of risk

- Tightening MaPP → Raise the cost of banking activities

  → Push activity to less regulated, poorly understood shadow banks

  → Systemic risk remains in the financial system

- Focusing MaPP solely on banks does not address fully systemic risk

  - Growing importance as NBFIs grow and remain interconnected with banks

- Expanding the perimeter of regulation to NBFIs may be needed

- Challenge: Limited experience with MaPP tools targeting NBFIs

- Most tools that directly target these markets are in their infancy

  - Better access to data to monitor new sources of financial risks
  - Strengthened analytical capacity to understand/stress test for the risk
  - Explicit mandate to act when needed with appropriate tools

Challenge 6b: Dealing with **Cross-border spillovers:** Multilateral aspects of MaPP

- Cross border spillovers can materialize in a variety of different ways:

1. **Inaction**: Lack of timely action in Country A → Negative externalities on other countries (with financial linkages, common exposures…)
2. **Leakages:** MaPP action in A → Increased cross-border credit

   → Reduced impact of measures/Increased risk exposure for foreign banks
3. **Regulatory arbitrage**: Attempt to raise resilience → Migration of activity to other (less well-regulated) jurisdictions

   → Race to the bottom
4. **Home/Host issues** (for cross border banking groups)

   → Host action → Complicate risk mitigation by cross-border groups or
   → Home action → Reduced credit provision in Host country
   → Conflict can arise when institutions are not equally systemic for H&H

Challenge 6b: Dealing with cross-border spillovers require effective international coordination

- International guidance and surveillance: Reduce bias toward inaction (BCBS guidance; IMF surveillance)
- Reciprocity: Help limit cross-border leakage (embodied in the CCB framework)
- Minimum international standards: Help address 'race to the bottom' (G-SIB surcharges by FSB; BCBS guidance for D-SIB surcharge)
- Combination of multilateral and regional mechanisms:
  - Supervisory colleges for cross border banks
  - Regional coordination efforts:
    - Nordic-Baltic Macroprudential Forum
    - ESRB at the EU level

Challenge 6b: Global efforts?

- No similar mechanism for coordination at the global level to achieve MaPP cohesiveness and collective action

  → Undermines effectiveness of MaPPs at the aggregate level in an interconnected world with diverging financial cycles

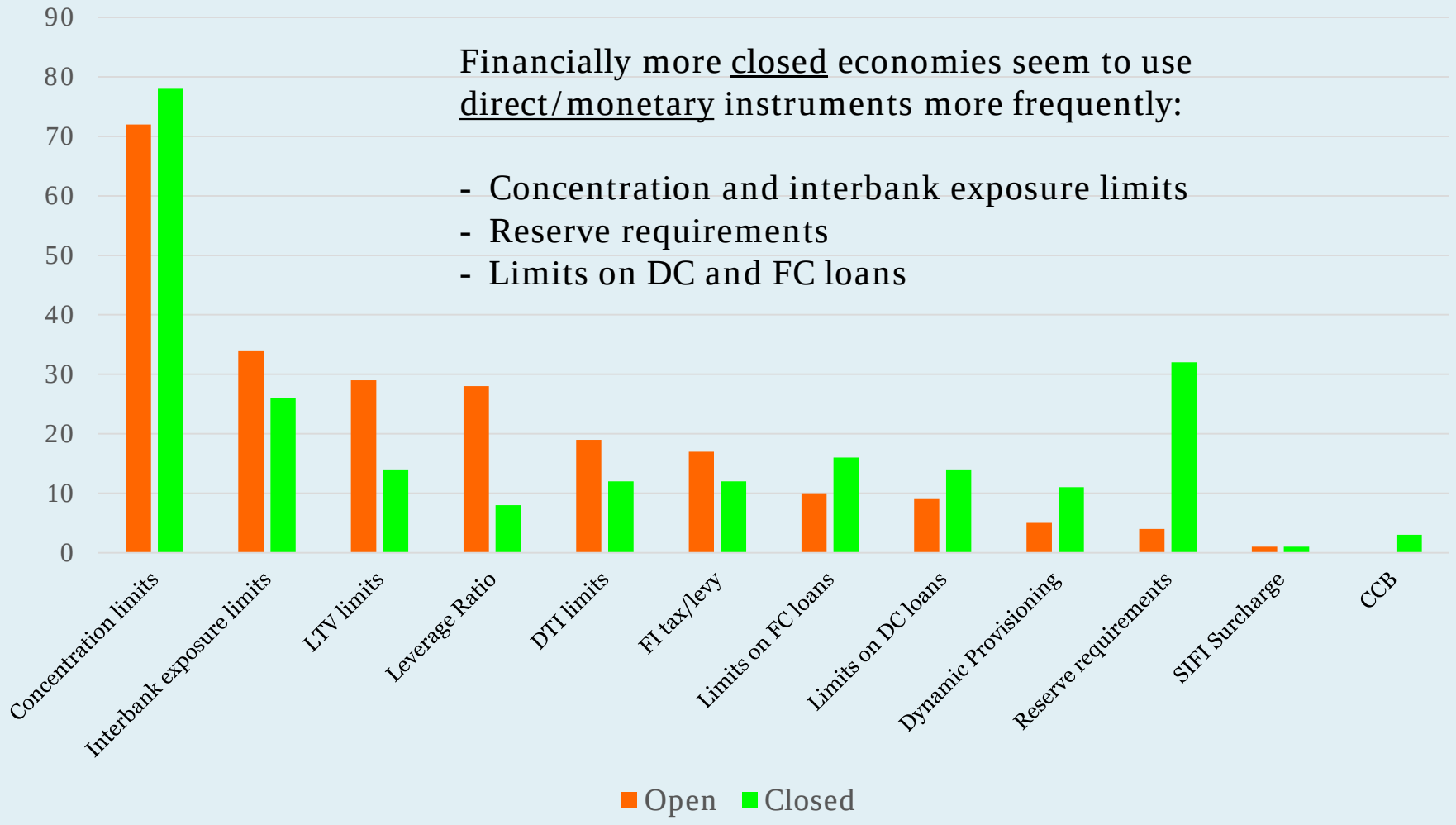
- Need to incentivize global cooperation to internalize the negative externalities countries may impose on each other

  → Further efforts to design of novel global approaches?

Thank you

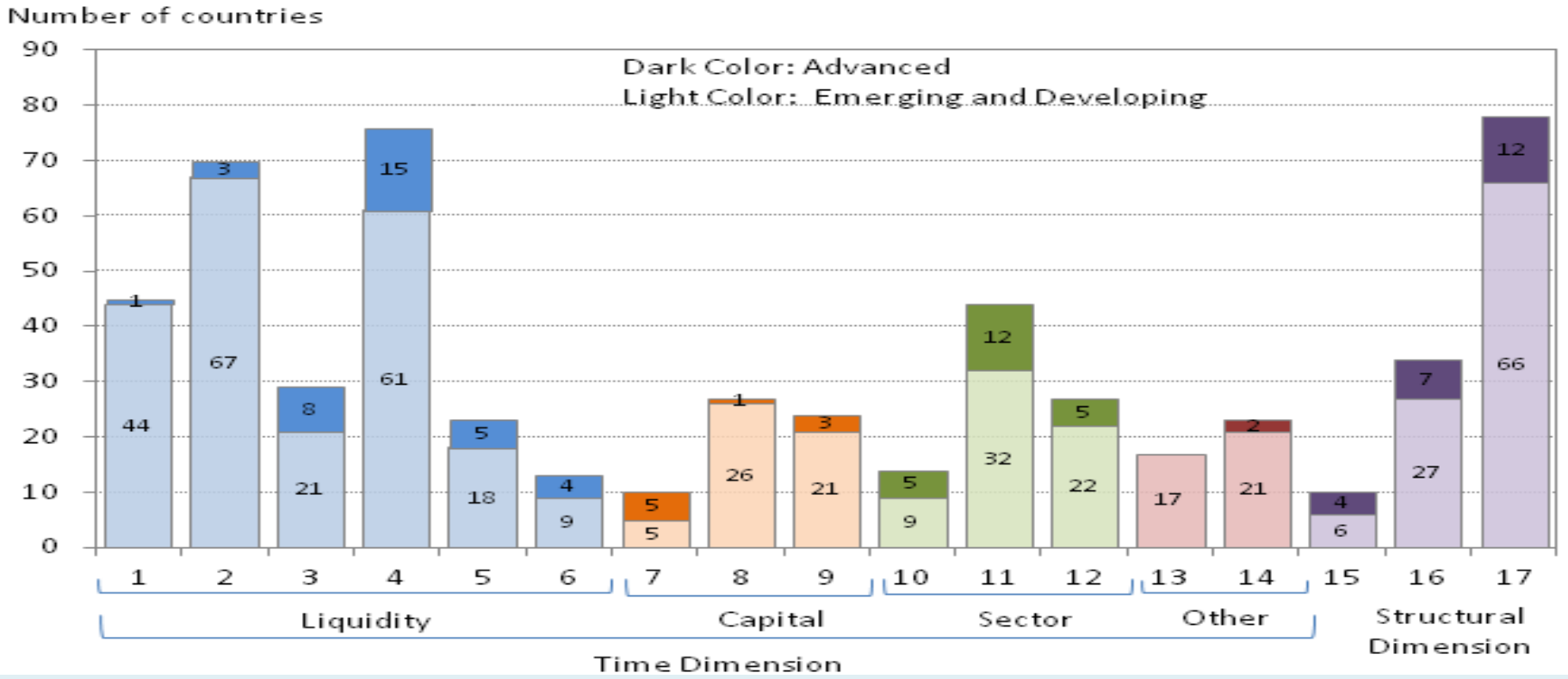
Extra Slides

Use of MaPP tools and Financial Openness



Most current use of MaPP tools globally

(IMF Global Macroprudential Policy Instruments Survey of 118 Countries (Sep 2013)



Instruments: **1) Reserve Requirement Ratios, 2) Limits on Open FX Positions or Currency Mismatches**, 3) Levy/Tax on Financial Institutions, **4) Liquidity Requirements/Buffers**, 5) Loan-to-Deposit (LTD) ratio, 6) Margins/Haircuts on Collateralized Financial Market Transactions, 7) General Countercyclical Capital Buffer/Requirement, 8) Time-Varying/Dynamic Loan-Loss Provisioning, 9) Leverage Ratio, 10) Sector Specific Capital Buffer/Requirement, **11) Loan-to-Value (LTV) Ratio**, 12) Debt-to-Income (DTI) Ratio, 13) Limits on DC Loans, 14) Limits on FC Loans, 15) Capital Surcharge on SIFI, **16) Limits on Interbank Exposures**, **17) Concentration Limits**