



EUROPEAN CENTRAL BANK

EUROSYSTEM

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Has financial regulation made the financial system safer?

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Macroeconomics and Finance
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** The views expressed here are my own and not those of the ECB's Executive Board or Governing Council*

1 Post-crisis financial regulatory reform

2 Credit boom-bust cycles

3 Financial disintermediation

4 International banking

5 Conclusions

Pre-crisis regulatory view of bank capital

- Bank liabilities are safe
- Banks allowed to operate with low capital and high leverage
- Emphasis on book values of bank capital
- Hybrid instruments and deferred taxes qualify as bank capital
- Emphasis on risk-adjusted minimum capital requirements
- Reliance on credit ratings and internal risk models to adjust for risk
- Own government bonds carry zero risk
- Emphasis on capital as a loss absorption mechanism
- Capital requirements increase during recessions (regulations are procyclical)
- Emphasis on individual bank risk (microprudential regulation)

Pittsburgh G20 Summit, Sept 2009

- **“Building high quality capital and mitigating pro-cyclicality:** We commit to developing by end-2010 internationally agreed rules to improve both the **quantity and quality of bank capital** and to **discourage excessive leverage**. These rules will be phased in as financial conditions improve and economic recovery is assured, with the aim of implementation by end-2012. The national implementation of higher level and better quality capital requirements, **counter-cyclical capital buffers**, **higher capital requirements for risky products** and off-balance sheet activities, as elements of the Basel II Capital Framework, together with strengthened liquidity risk requirements and **forward-looking provisioning**, will reduce incentives for banks to take excessive risks and create a financial system better prepared to withstand adverse shocks.”

Taking a macroprudential perspective

- In the **cross-section**: Focus on system as a whole
- Over the **cycle**: Make the system less procyclical; build up buffers during expansions to release them during downturns
- Effective macroprudential policies should contain risks ex ante and help build buffers to absorb shocks ex post (IMF 2013)

Is the financial system safer?

Is the financial system safer? YES

- Banks have more capital
- We have macroprudential framework
- We have strengthened supervision

Higher capital requirements and capital buffers

- Focus on **loss absorption capacity** (TLAC) of capital
- Leverage ratio as additional safety valve
- **Macroprudential** perspective, including countercyclical capital (time-series) and systemic risk charges (cross-sectional)
- Capital at individual banks may be an illusion in the presence of **systemic risk**: interlinkages, spillovers, fire sales
- Complemented with **bail-in**able capital

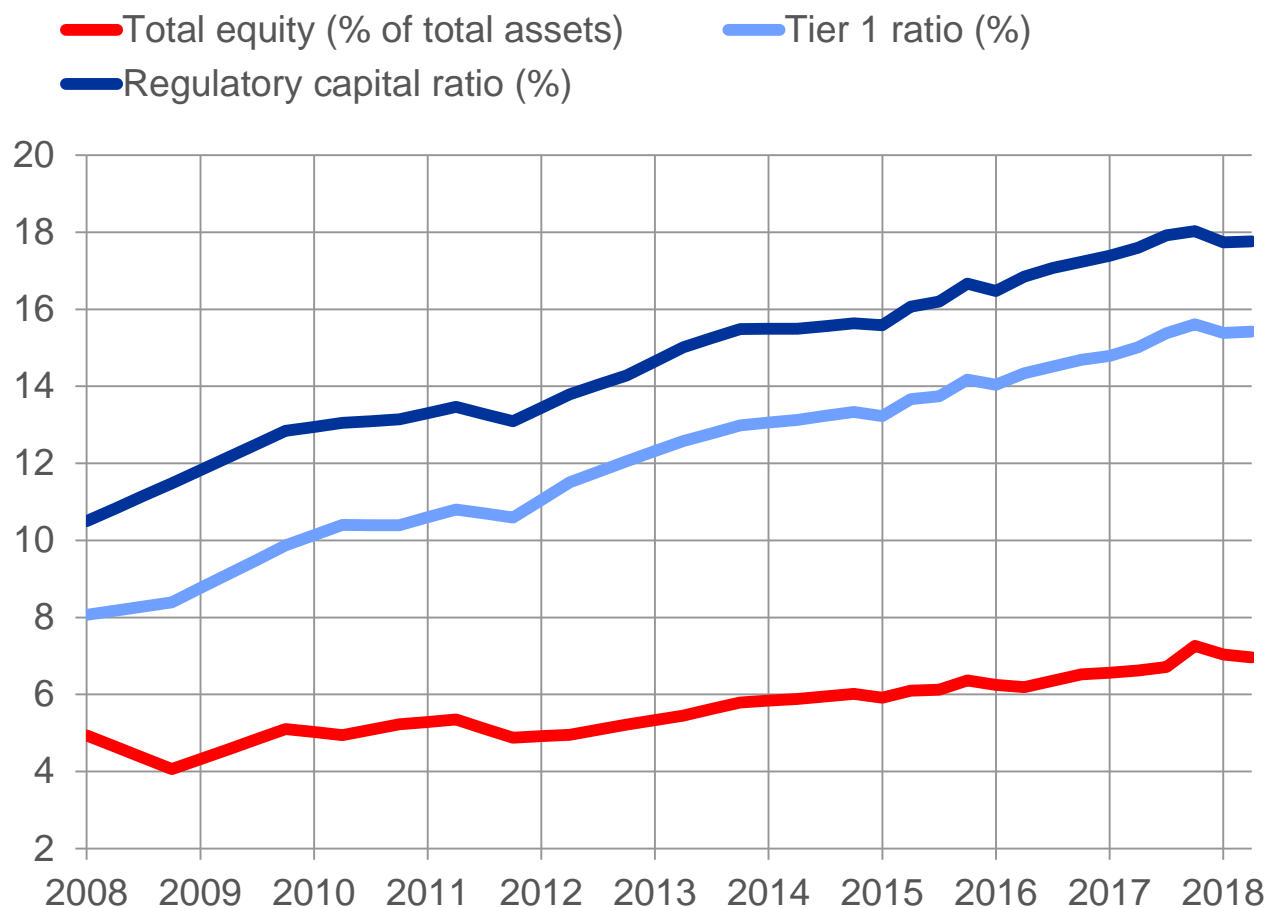
Post-crisis call for higher capital requirements

	Basel I	Basel II	Basel III 1/
Quantity of Capital			
Minimum Total Capital	8.0	8.0	8.0
Capital Conservation Buffer 2/	n.a.	n.a.	2.5
Minimum total capital plus conservation buffer	n.a.	n.a.	10.5
Countercyclical Buffer 2/	n.a.	n.a.	0 – 2.5
Systemic Risk Charge 2/	n.a.	n.a.	1 – 2.5
Minimum total capital plus conservation buffer, countercyclical buffer, and systemic risk charge	8.0	8.0	11.5 – 15.5
Leverage Ratio 3/	n.a.	n.a.	3.0
Quality of Capital			
Minimum Common Equity Capital 4/	n.a.	n.a.	4.5
Minimum Tier 1 capital	4.0	4.0	6.0
Hybrid capital instruments with incentive to redeem 5/	Eligible	Eligible	Not eligible

Source: Dagher, Jihad, Giovanni Dell'Araccia, Luc Laeven, Lev Ratnovski, and Hui Tong (2016), Benefits and Costs of Bank Capital, IMF Staff Discussion Note No. 16/4

Bank capital has increased

Bank capital ratios in the euro area

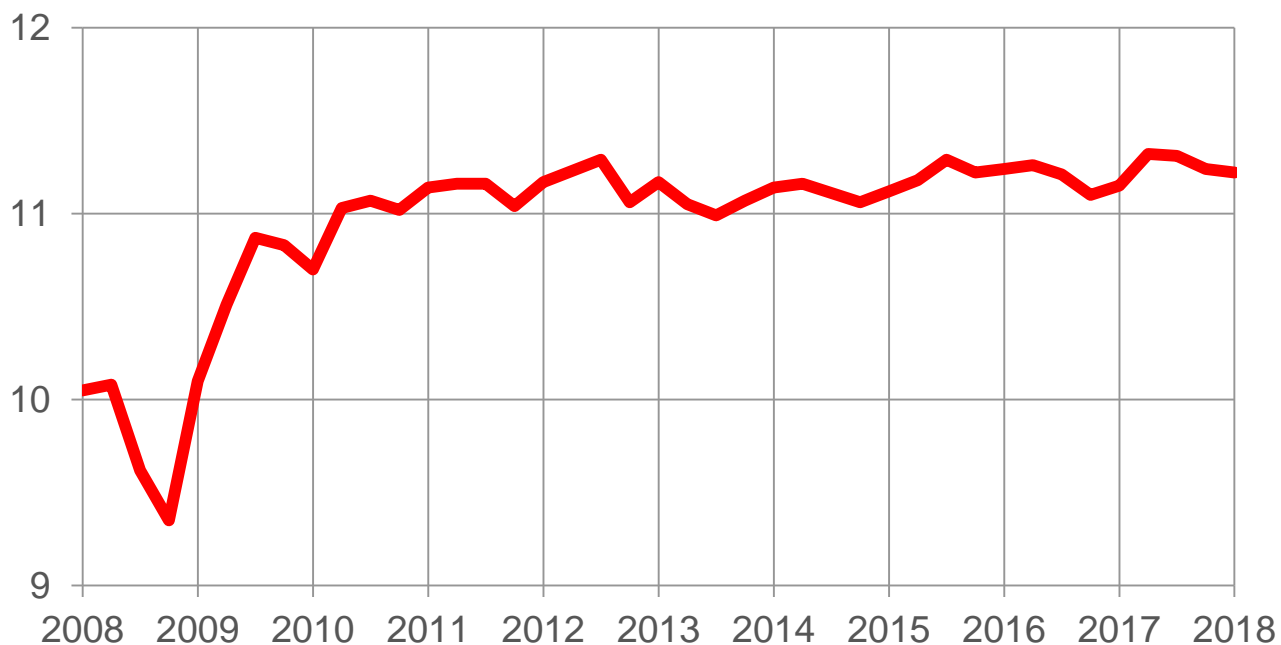


Source: ECB Supervision Consolidated Banking data, Quarterly, Domestic banking groups and stand-alone banks, irrespective of their accounting / supervisory reporting framework, Euro area changing composition, interpolated when missing data.

Bank capital has increased

Bank capital ratios in the United States

— Total equity (% of total assets)



Source: Federal Financial Institutions Examination Council (US), Reports of Condition and Income for All Insured U.S. Commercial Banks. The sum of equity held by all commercial banks with average assets greater than zero is divided by total average assets. Equity equals Total Equity Capital call item RCFD3210. Total Assets equals call item RCFD2170. Quarterly data.

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- **We have macroprudential framework**
- We have strengthened supervision

Macroprudential frameworks have been built

- Effective macroprudential policies should contain risks ex ante and help build buffers to absorb shocks ex post (IMF 2013)
- Macroprudential toolkit: various lender- and borrower-based measures that can be used to set (time-varying) **Pigouvian taxes** on the system
- Lender-side: Countercyclical capital buffers and systemic risk surcharges
- Borrower-side: LTV, LTI, DSR
- Forward-looking loan loss provisioning rules (IFRS 9)

Is macroprudential regulation effective?

- Evidence on effectiveness of macroprudential policies from Cerutti, Claessens and Laeven (2017), based on IMF survey for 119 countries over the 2000–2013 period
- Emerging economies use macroprudential policies more frequently
- Usage is generally associated with lower growth in credit, notably in household credit
- Borrower-based policies, such as limits on LTVs and DTIs, and financial institutions-based policies, such as limits on leverage and dynamic provisioning, appear to be especially effective
- Effects are less in financially more developed and open economies, however, and usage comes with greater cross-border borrowing, suggesting some avoidance

Is the financial system safer? YES

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- **We have strengthened supervision**

Supervision has been strengthened

- Stress tests
- Supranational supervision: SSM

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Is the financial system safer? NOT SURE

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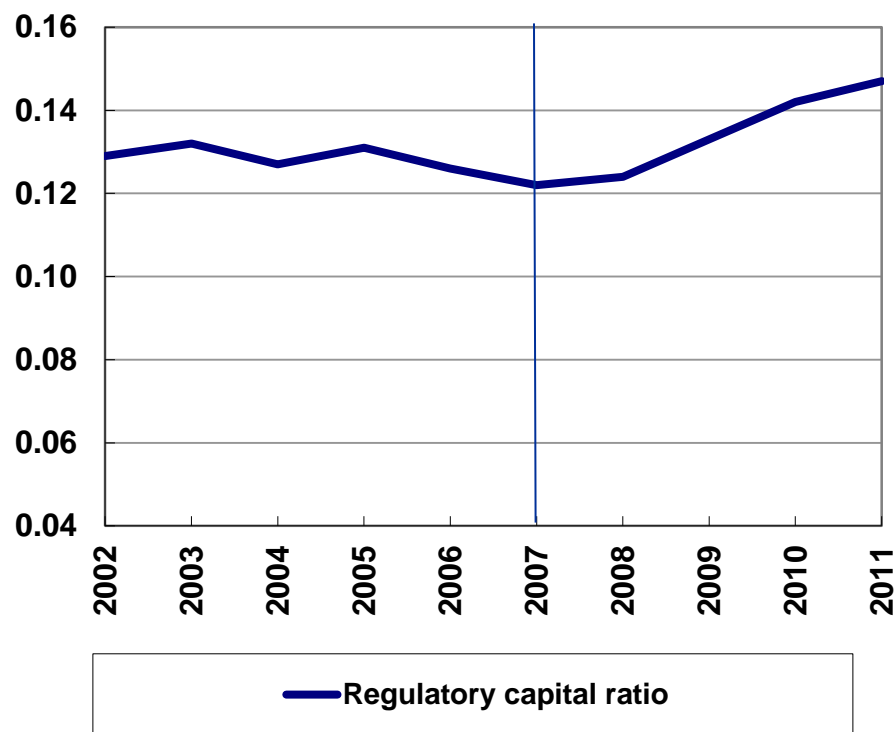
- Continued reliance on book values and internal risk models
- No source of strength doctrine
- Regulation remains procyclical
- Some reform agendas stalled
- Risk of excessive regulation
- Rise of shadow banking
- Banks are international but regulation is largely national

Reliance on book values

- Continued reliance of book values

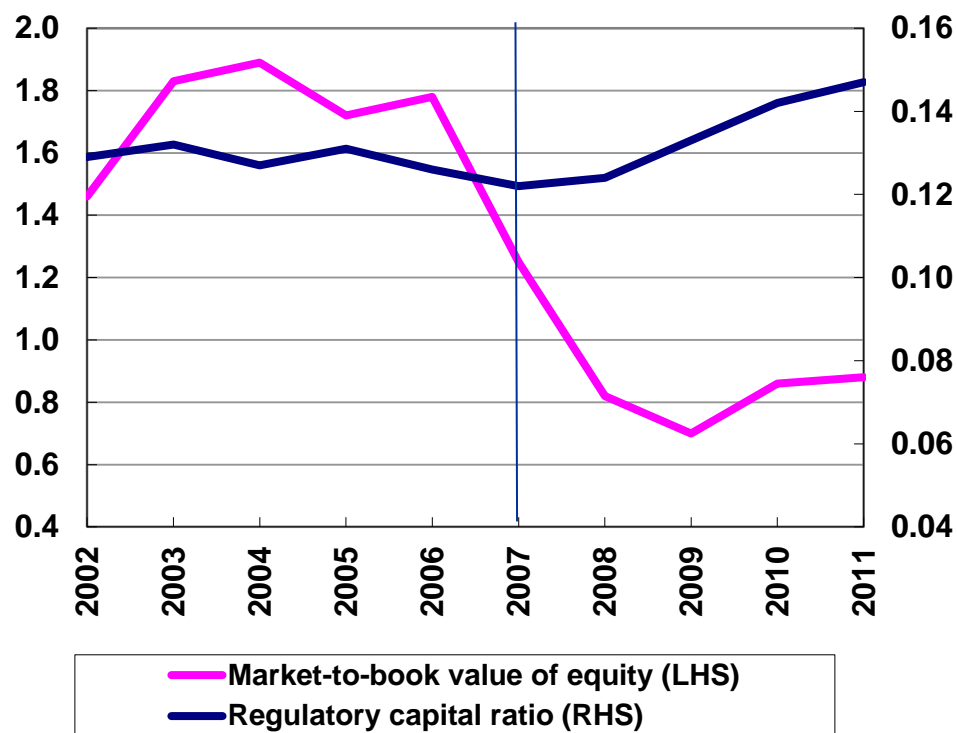
Regulatory view of bank capital

Where is the crisis?



Notes: Median values for U.S. bank holding companies
Source: Huizinga, Harry and Luc Laeven (2012),
Bank valuation and accounting discretion during a financial crisis,
Journal of Financial Economics 106(3), 614-634.

Market view of bank capital



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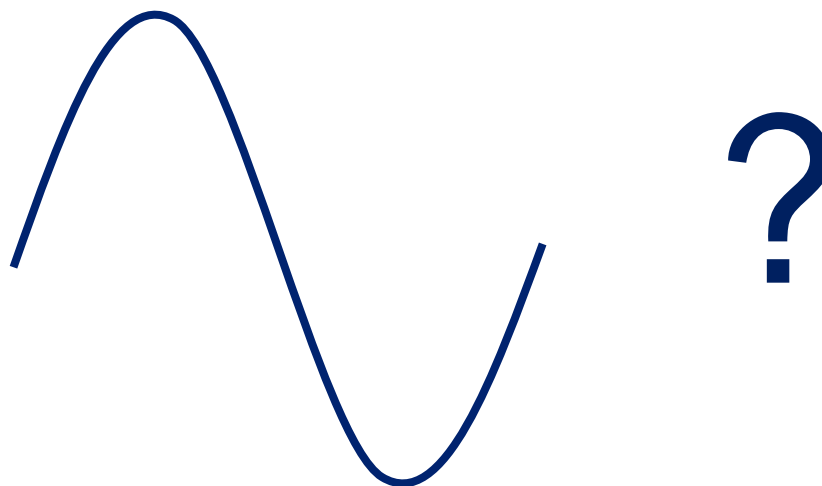
Quality of capital

- Definition of capital more stringent
- No **source of strength** doctrine
 - “The ability of a shareholder that directly or indirectly owns or controls the bank to provide financial assistance to the bank in the event of financial distress”
- Deep pocket investors
- Ownership structure, corporate governance and incentives

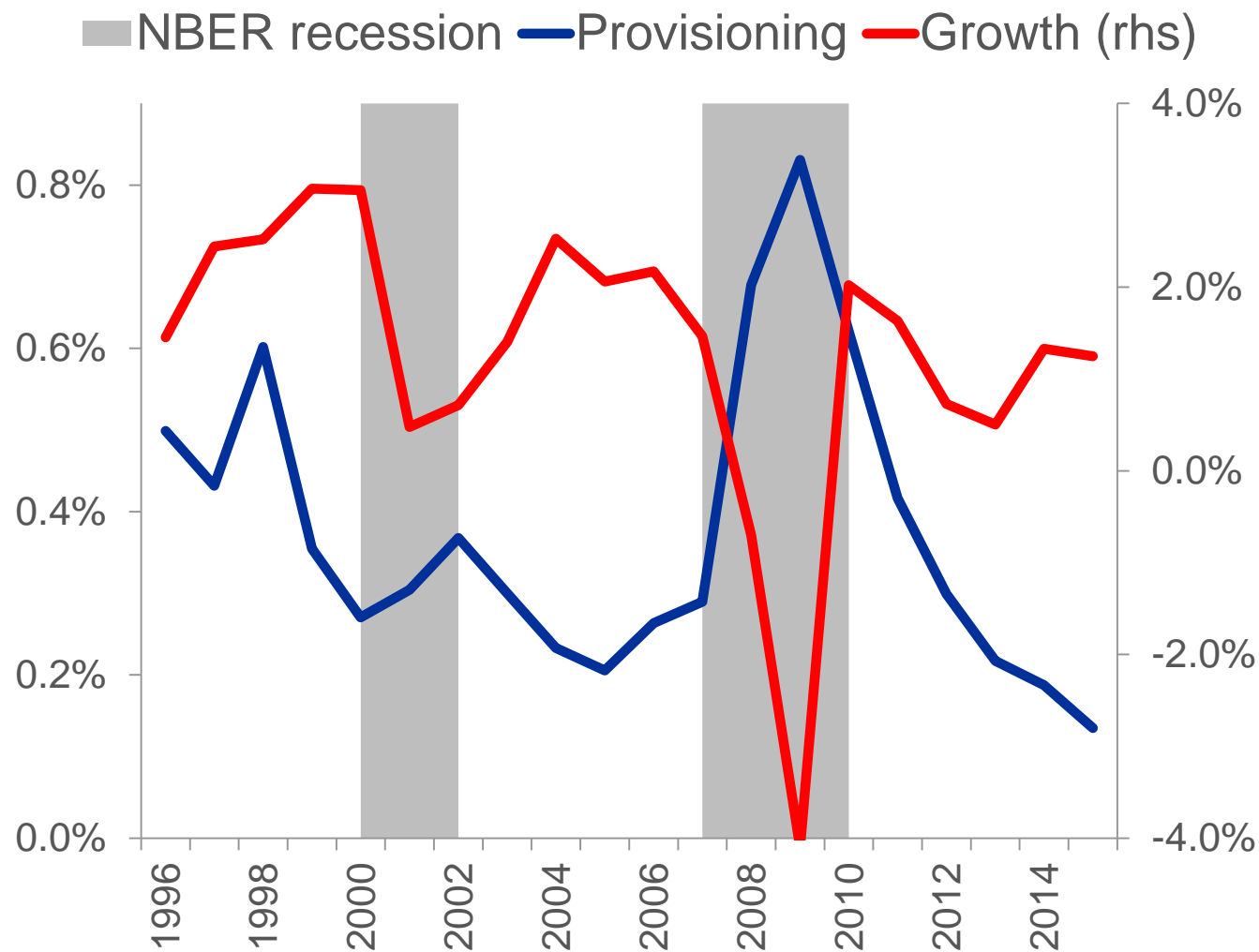
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Reduced procyclicality?

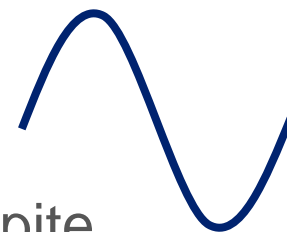


Loan loss provisioning around the world



Source: Huizinga and Laeven (2018). Global sample of banks in Bankscope.

Reduced procyclicality?



- Regulation and bank leverage remains procyclical, despite regulatory and accounting changes (Basel III, IFRS 9)
- Threatens financial stability because impacts when financial conditions are weakest
- Capital management and supervisory actions since the crisis have contributed to procyclical behavior
- Provisioning remains procyclical despite IFRS 9 (Huizinga and Laeven 2018)
- No release of capital buffers/Raising capital buffers in downturns
- Limited use of macroprudential policy during upswing

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Reform agenda losing steam

- Regulation of sovereign exposures
- Cross-border resolution
- Uneven implementation (e.g. bail-in)
- Vested interests and strong lobby

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Risk of excessive regulation

- Lack of **coordination** across regulatory work streams: complements, substitutes, and interactions (e.g. capital and liquidity regulation)
- Danger of regulating the last crisis
- **Efficiency** vs effectiveness: countercyclical capital buffers based on credit gaps as an example

In macroprudential policy we trust

- The now standard remedy to managing credit boom-bust cycles is **macroprudential** regulation
- In particular, **countercyclical capital regulations** propose to tame credit cycles by imposing a Pigouvian tax on credit gaps (deviations from trend in credit-to-GDP ratios)
- Credit gaps do not consider structural breaks
- As with any Pigouvian tax, challenge is to set tax exactly equal to social cost of negative externalities

How realistic are pre-crisis trends in credit?

Country	Credit-to-GDP gaps (actual-trend, Q1 18)	Credit-to-GDP levels (Q1 18)
United States	-7.6	150.9
Euro area	-13.2	161.6
Spain	-50.6	156.3
Denmark	-31.6	225

Source: BIS

Credit booms: Tradeoffs

- Fluctuations in credit are common, and more so in recent decades (Claessens et al. 2011; Bakker et al. 2012)
- **Good** things happen during credit booms...
 - Asset prices, investment and GDP growth higher than in normal times
- But they also raise **concerns**...
 - Relaxation of lending standards : "bad loans are made in good times" (old banker's maxim)
 - Depletion of information on borrowers, as lending shifts to unscreened borrowers during collateral booms (Asryan, Laeven and Martin 2018)
 - Often followed by banking crises and low growth (Schularick and Taylor 2012)
- **Banking crises are costly:** they result in high output losses and are associated with high fiscal costs that contribute to large increases in public debt (Laeven and Valencia 2018)

Good and bad credit booms

- For 170 countries over the period 1970-2010, Dell’Ariccia, Igan, Laeven, and Tong (2015) show that only about **1-in-3** credit booms end up in financial crisis or below-trend economic performance
- But these financial crises tend to be excessively costly
- The cost of intervening too early and running the risk of stopping a good boom have to be carefully **weighted** against the desire to prevent financial crises
- Macroprudential policies are “costly” in the short run by reducing credit and growth (Richter et al. 2018)
- But benefits of macropru are non-linear: Macropru policies affect risk of sharp contractions

Credit dynamics and recessions

- Quantile regressions point to **nonlinear** relationship between past credit dynamics and output losses during recessions

	QUARTIL 1		QUARTIL 2		QUARTIL 3		QUARTIL 4	
	Mixture 1	Mixture 2	Mixture 1	Mixture 2	Mixture 1	Mixture 2	Mixture 1	Mixture 2
μ	-0.03	-0.20	-0.03	-0.18	-0.04	-0.27	-0.14	-3.33
σ	0.00	0.00	0.00	0.01	0.00	0.03	0.02	0.86
prob.	0.80	0.20	0.67	0.33	0.66	0.34	0.89	0.11

Source: Gadea, Laeven and Perez-Quiros (2018)

- Mixture of distributions of output loss during recession, by quartiles of variation in credit to GDP ratio in two years prior to recession

Designing countercyclical macroprudential policy

- Optimal design of macroprudential policy requires distinguishing good and bad credit booms
- Booms that tend to **grow faster** and **last longer** tend to be more dangerous (Dell’Ariccia, Igan, Laeven and Tong 2015)
- Merit of macroprudential regulation depends on the underlying **source** of boom
- For instance, **productivity-driven** booms are generally beneficial (Gopinath et al. 2017; Asriyan, Laeven and Martin 2018)
- **Widening credit gaps** not necessarily a sign of a bad credit boom
- Risk of excessive regulation: A tax on positive credit gaps may tax away good booms
- Need to consider trade-offs with growth and financial deepening

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- **Rise of shadow banking**
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Rise of shadow banking

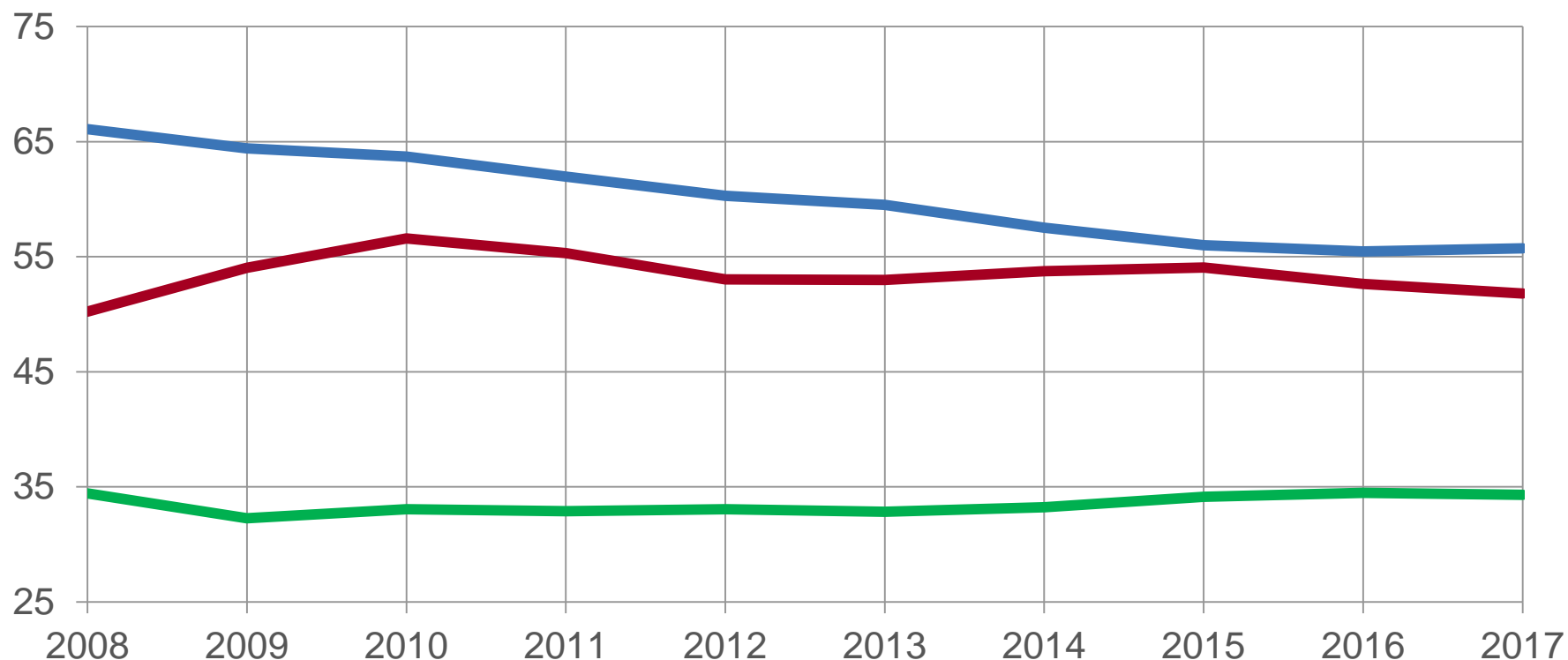
- Competition from fintech and markets
- Financial disintermediation
- Shift of activity to shadow
- Increase in banking concentration

- How much induced by banking regulations? How much a consequence of negative wealth shocks to banks?

Financial disintermediation: Rise of nonbanks

Share of bank credit in total credit (%)

— Euro area — United Kingdom — United States



Source: BIS. Credit to the non-financial private sector.

Future of banks

- Will banks be able to invest in fintech and retain talent ?
- Will banks survive a crisis in nonbanks (data gaps) ?
- What is special about banks? (e.g. screening)

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International banking

- Size of international banking markets broadly **stable** since the global financial crisis: consolidated foreign claims about US\$30 trillion both at year-end 2007 and in mid-2018, according to BIS consolidated banking statistics
- But **composition** of bank nationalities has altered

Decline of Europe as banker of the world

Ranking	End-2007	Share of foreign claims (%)		
1	Euro area	53.6		
2	UK	12.8		
3	Japan	12.3		
4	Switzerland	8.5		
5	USA	5.7		

Source: BIS consolidated banking statistics, amounts outstanding by nationality of reporting bank, foreign claims on immediate counterparty basis

Decline of Europe as banker of the world

Ranking	End-2007	Share of foreign claims (%)	Mid-2018	Share of foreign claims (%)
1	Euro area	53.6	Euro area	34.7
2	UK	12.8	UK	11.7
3	Japan	12.3	Japan	10.5
4	Switzerland	8.5	USA	11.7
5	USA	5.7	Canada	5.7

Source: BIS consolidated banking statistics, amounts outstanding by nationality of reporting bank, foreign claims on immediate counterparty basis

Risk of risk sharing

- Are international banks shock absorbers or amplifiers?
- Risk sharing through credit markets allows to better diversify borrower's idiosyncratic risks (Cetorelli and Goldberg 2012)...but need not reduce systemic risk (Demsetz and Strahan 1997)
- Increases in risk sharing in credit markets often associated with financial deregulation and dangerous booms (Khorrami 2018)
- Much of financial integration through unstable short-term debt flows, not equity/physical presence
- International banks tend to amplify international credit cycles (“flight home effect”—Giannetti and Laeven 2012)

Regulation of international banks

- National implementation of banking regulation: macroprudential, resolution (“International banks die nationally”), etc.
- Lack of coordination
- Lack of global perspective
- Regulatory arbitrage
- Fiscal backstops may be limited by high public debt levels
- Not all countries may benefit from financial integration

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Conclusions

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- Banks appears safer but financial system **as a whole** not sure
- Financial system remains **procyclical**
- Optimal **regulation** requires understanding the **source** of booms
- Using simple credit gaps to design countercyclical macroprudential regulation is **suboptimal**
- **Interactions** between regulations should be considered
- Regulation of banks and nonbanks should be more **even-handed**
- Regulators need to take a **global and systemic perspective** to balance the benefits and risks of international banking
- **Cross-border resolution** frameworks need to be improved
- Need to place global **public debt** firmly on a downward path

THANK YOU!

BACKGROUND SLIDES

Credit booms gone wrong

Table 3. Credit Booms Gone Wrong

Table 3. Credit Booms Gone Wrong							
Followed by economic underperformance?							
Followed by financial crisis?	No		Yes		Total		
	Number	Percent	Number	Percent	Number	Percent	
No	54	31%	64	37%	118	67%	
Yes	16	9%	41	23%	57	33%	
Total	70	40%	105	60%	175		

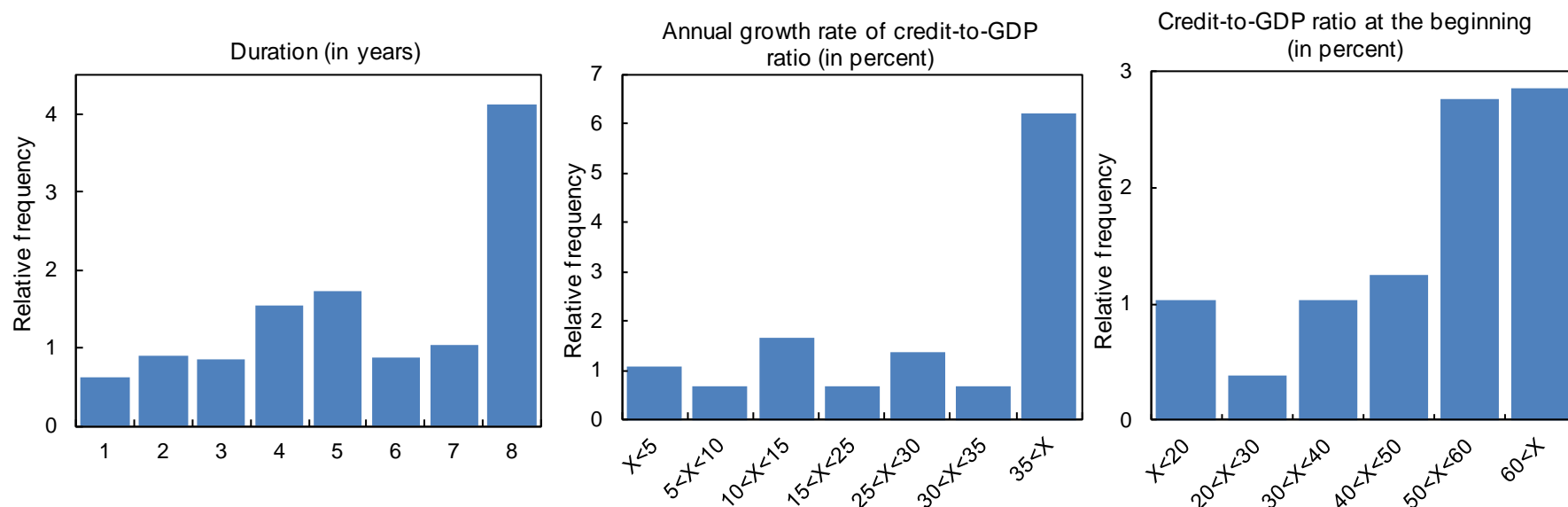
Notes: Number and proportion of credit boom episodes are shown. A boom is followed by a financial crisis if a banking crisis happened within the three-year period after the end of the boom and is followed by economic underperformance if real GDP growth was below its trend, calculated by applying a moving-average filter, within the six-year period after the end of the boom.

Source: Table 3 in Dell’Ariccia, Igan, Laeven, and Tong (2015)

Good and bad booms in international comparison

Figure 7. Bad versus Good Booms

Booms that last longer and that develop faster are more likely to end up badly. Booms that start at a high level of credit-to-GDP also tend to be bad.

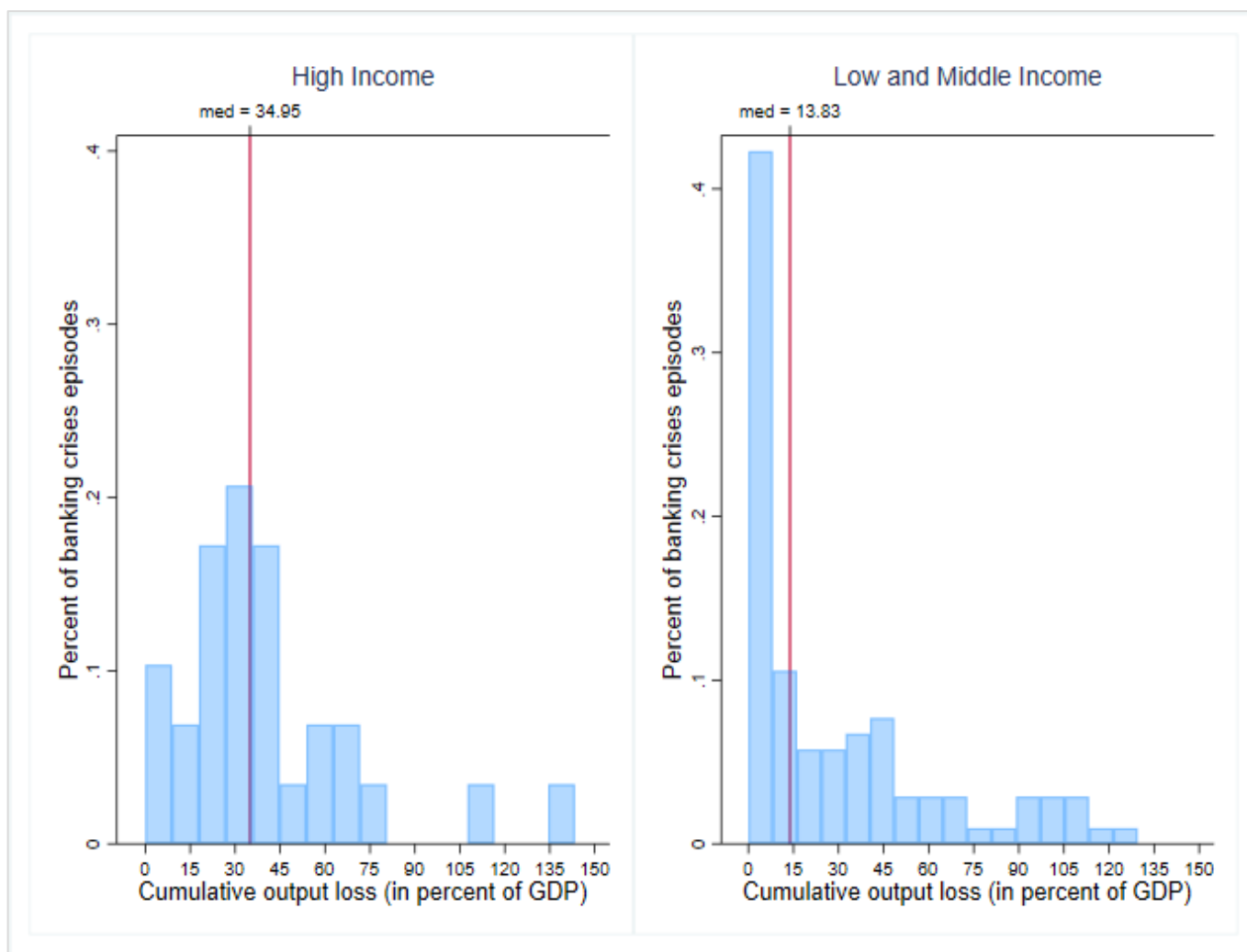


Sources: IMF *International Financial Statistics*; staff calculations.

Notes: Relative frequency is the frequency of a given attribute in bad booms divided by the frequency in good booms. Credit booms are identified as episodes during which the growth rate of credit-to-GDP ratio exceeds the growth rate implied by this ratio's backward-looking, country-specific trend by a certain threshold. Bad booms are those that are followed by a banking crisis within three years of their end.

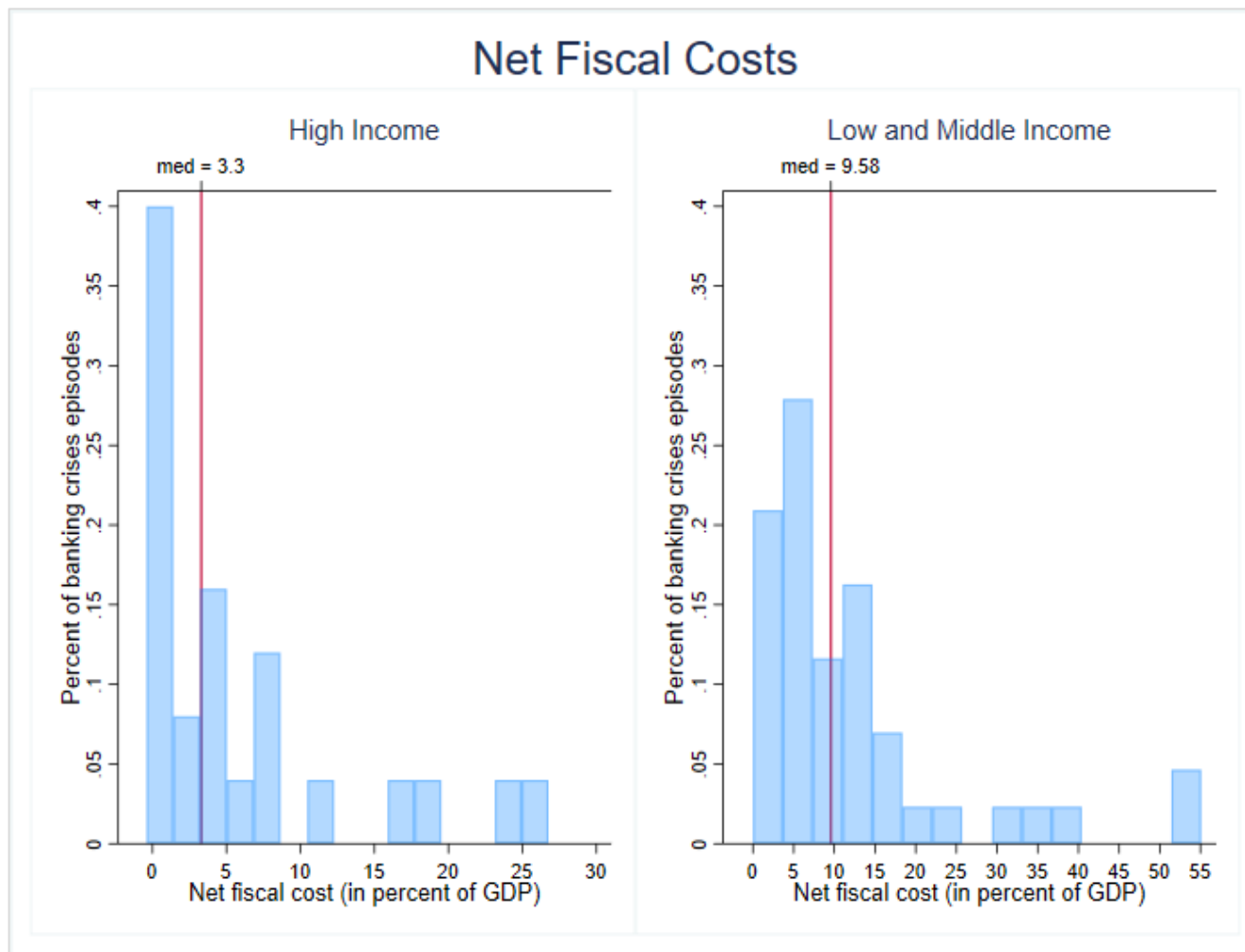
Source: Dell'Araccia, Igan, Laeven, and Tong (2015)

Banking crises result in high output losses ...



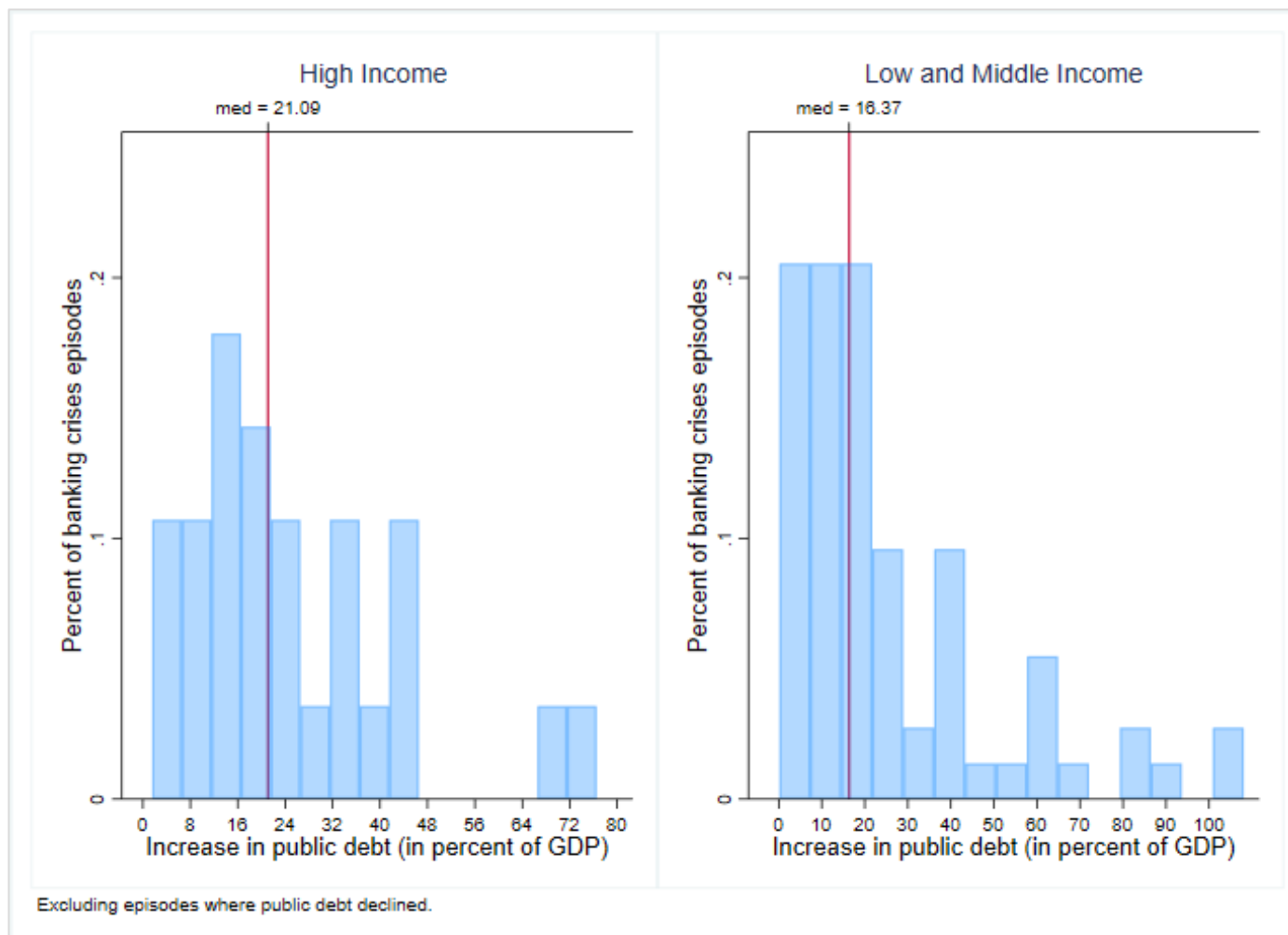
Source: Laeven and Valencia (2018)

... and are associated with high fiscal costs ...



Source: Laeven and Valencia (2018)

... that contribute to large increases in public debt



Source: Laeven and Valencia (2018)