



Would macroprudential regulation have prevented the last crisis?

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Would macroprudential regulation have prevented the last crisis?

- The creation of Financial Stability Committees has been one of the key responses to the crisis.
- But whether they would work is still an open question.
- Why does it make sense to study the last crisis?
 - It's a tangible example for how a build-up in risks can play out.
 - You could argue it's an artificially tough test - we assume away post-crisis structural reforms.
 - But you could also argue its an artificially easy test – we test if you win the last war.



Our approach

- 1) **Fault lines and their impact:** what made the crisis so bad?
- 2) **Required intervention:** what macroprudential policy would have been required to address fault lines?
- 3) **Institutional constraints:** are existing U.S. and U.K. macroprudential authorities equipped to take necessary steps?



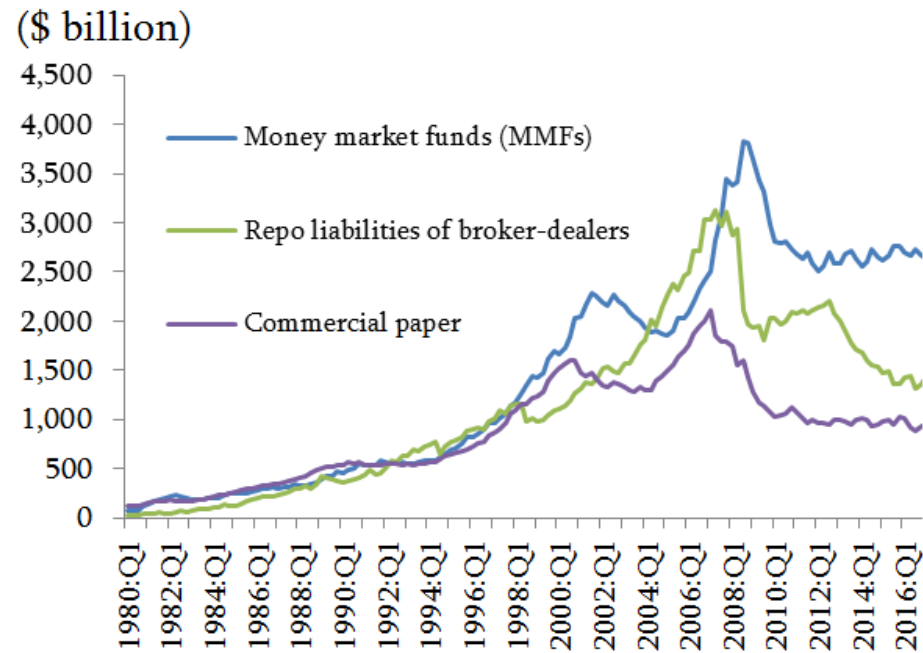
Fault lines: what made the crisis so bad?

A) The financial system was fragile

- Total assets doubled 2001-2007; 70% of credit growth in “shadow” banks;
- Highly leveraged system: assets of broker-dealer 45x equity by 2007;
- Liquidity mismatch grew: eg repo liabilities > doubled between 2001 - 2007;
- Structural vulnerabilities: eg incentives to run on MMFs;



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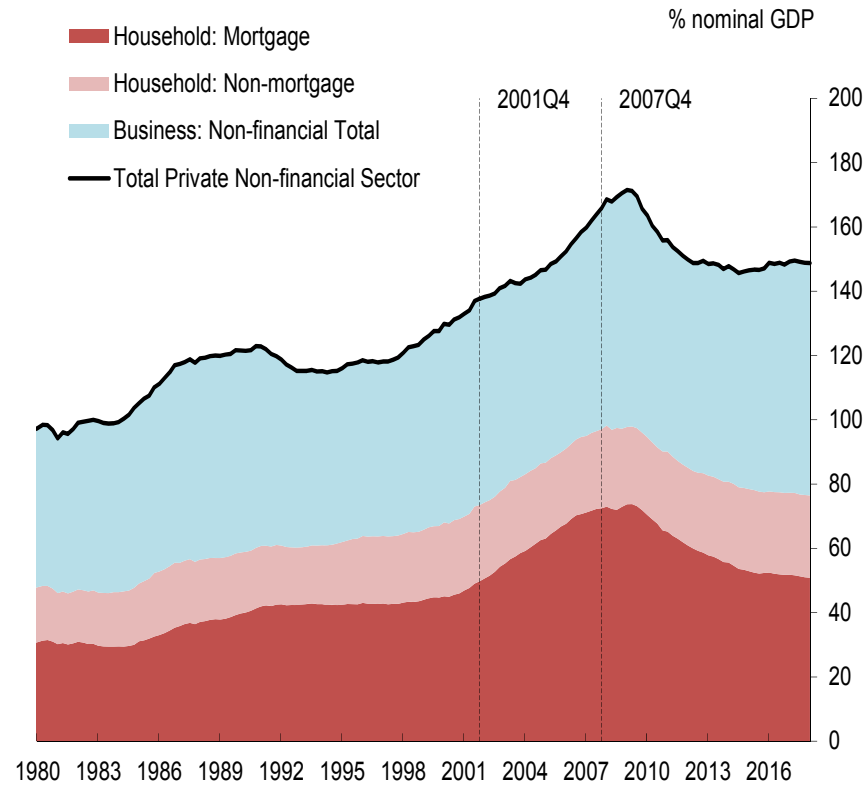
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B) Households were overly indebted

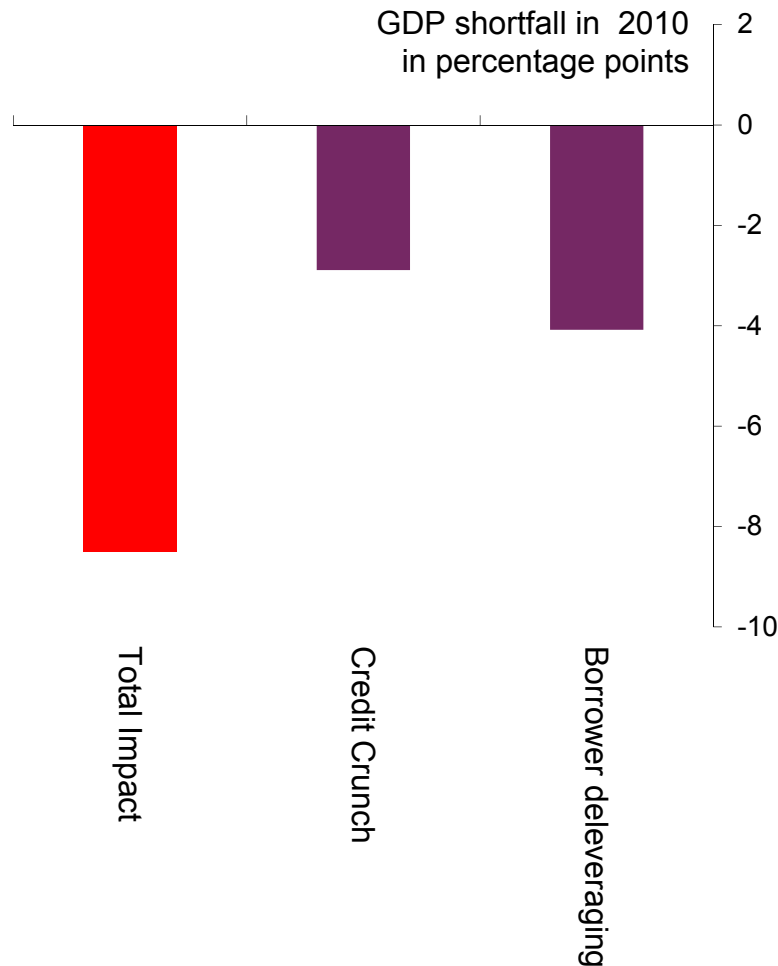
- Mortgage debt doubled to \$11trn between 2001 and 2007;
- Twin, reinforcing booms in house prices and debt: eg HELOCs tripled;
- Loose credit supply meant more marginal borrowers: eg ≈ 10 million subprime originations from 2003-2007



Fault lines: what made the crisis so bad?



Fault lines: dimensioning the fall-out



Our thesis:

- Lender fragility led to ‘credit crunch’; borrower indebtedness led to ‘aggregate demand’ externalities
- These factors materially amplified the crisis.
- Together, they can explain the majority of total GDP shortfall.
- Successful macroprudential policy would have had to address both fault lines.

What macroprudential policy would have been required to address fault lines?

Step 1: Identify the build-up of risk in real-time

Step 2: Take action to reduce leverage

Step 3: Take action to reduce funding mismatches

Step 4: Take action to reduce the build-up in household debt



Step 1: Identify the build-up of risk in real-time

Could macropru policymakers have spotted the fault-lines?

- **Overvalued House Prices:** Yes – in 2005 the FOMC was briefed that house prices were 20% overvalued
- **Household debt:** Yes in aggregate - but spotting risks from marginal borrowers would have been harder.
- **Financial fragility:** Stress testing could have revealed some of the implications for the financial system...
- ... but spotting funding flows outside the core system would still be difficult.



Step 2: Action to reduce leverage

What increase in capital requirements would have been necessary to address a resilience gap akin to 2007?

- TARP injection of \approx \$200bn of equity was transformative
- Countercyclical Capital Buffer (CCyB) would have been the obvious tool to provide that capital ex-ante
 - **3%** CCyB could have replaced TARP
 - **4.2%** could have replaced TARP+SCAP
 - **4.7%** could have replaced TARP and continued financed balance sheet growth



Step 3: Action to reduce funding mismatches

What intervention would have been needed to address maturity mismatch in pre-crisis financial system?

- Extraordinary Fed liquidity facilities provided around \$1.5trn of liquidity to banks and non-banks
- During the boom, a macroprudential regulator could have required firms to replace \$1.5trn of short-term funding with longer-term debt
 - Similar to effect of introducing Basel III Net Stable Funding Ratio
 - Funding costs would have risen - but not materially (20 bps WACC).



Step 4: Action to reduce household debt build-up

Could macroprudential policy have materially dampened the mortgage boom?

- Lender tools alone would not have been enough.
- Not clear loan-to-value limits would have done much either.
- But a loan to income (LTI) limit with accompanying affordability test could have had a material effect:
 - 4x LTI limit would have directly reduced pre-crisis debt >\$100bn.
 - Another ≈ \$200bn of piggyback loans may have been curtailed
 - The limit might also have curtailed a significant proportion of no/low documentation mortgages.



Institutional constraints

- Of 41 countries with financial stability committees, only 11 have formal powers.
- This seems to matter: countries with powerful FSCs are more likely to act than those that have to rely on others.
- We consider two polar examples:
 - The **Financial Stability Oversight Committee** (FSOC) in the US has no formal powers other than designating SIFIs.
 - The **Financial Policy Committee** (FPC) in the UK is arguably the most powerful authority in the world, with a large set of 'hard powers'.



Institutional constraints

FSOC

- **No hard legal** powers beyond power to designate systemic importance
- Case law (eg proposed reforms of money market mutual funds) suggests **other regulators are reluctant to listen** to soft recommendations.
- Nobody in the US has clear **jurisdiction over loan-to-income ratios**: whom would you direct recommendations at?

FPC

- Power to set a range of **bank capital requirements**.
- For liquidity requirements the FPC relies on **non-binding recommendations**. But these tend to be listed to.
- Power to set **loan-to-income limits** for households.
- Would **have required political backing to extend perimeter** of regulation, but process for this is in place.



Conclusion: would macroprudential regulation have prevented the last crisis?

- Not clear the FSOC would make a difference.
- The FPC stands a chance, but also faces challenges.
- This raises the important question of how much direct authority a macroprudential regulator requires...
- ...and whether the remit of a macroprudential policy should cover more than just lender resilience.
- This is non-trivial - more power makes it harder to ensure sufficient accountability.



Supporting material



BANK OF ENGLAND

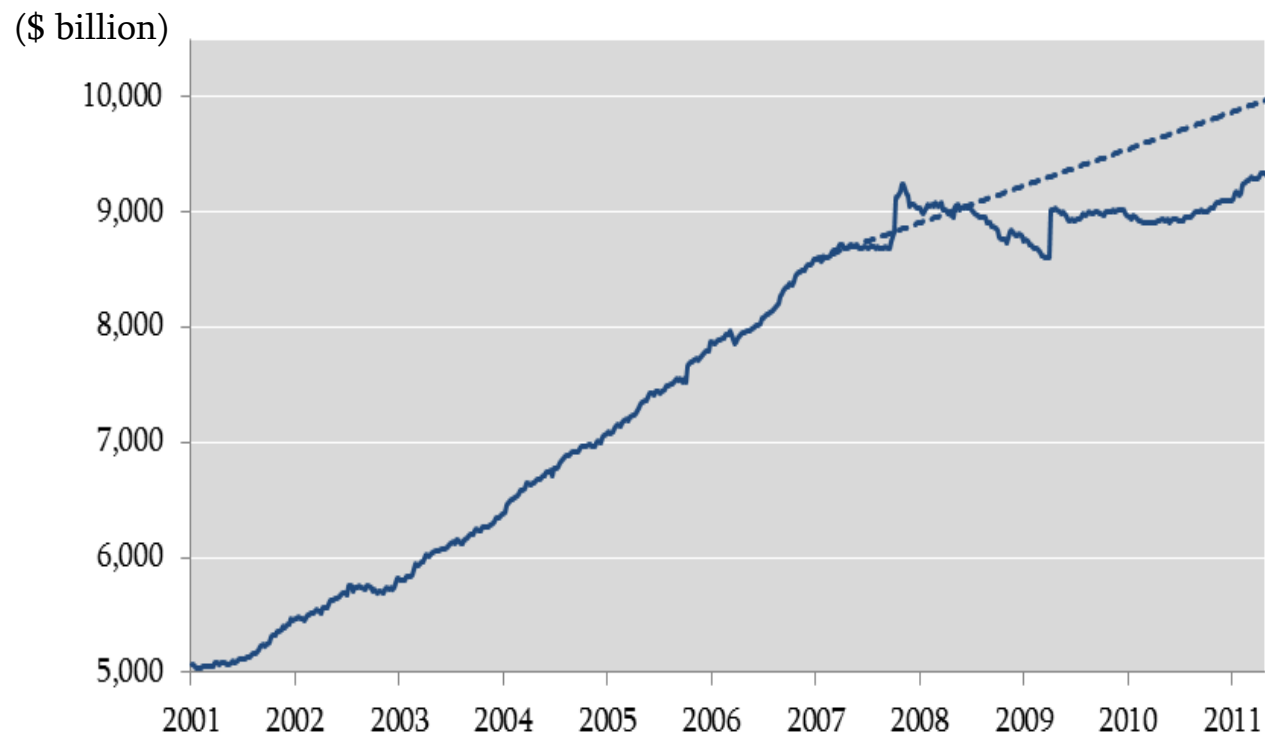
Fault lines: what made the crisis so bad?

Size, leverage, and liquidity risk of leveraged financial institutions								
	2001Q4				2007Q4			
	Assets (\$bn)	Leverage	Liquid assets	Short-term funding	Assets (\$bn)	Leverage	Liquid assets	Short-term funding
Commercial banks	6,552	11.0	6.6%	26.5%	11,182	9.8	4.6%	33.2%
<i>of which: large institutions</i>	2,291	12.2	6.7%	32.9%	5,422	11.8	4.6%	37.5%
Savings Inst.	1,317	11.6	3.0%	18.2%	1,852	9.1	2.3%	22.6%
Broker-dealers	2,376	28	2.4%	57.3%	4,686	45	0.4%	63.4%
GSEs	1,417	42.3	0.2%		1,677	23.7	0.7%	
Total	12,657				19,397			



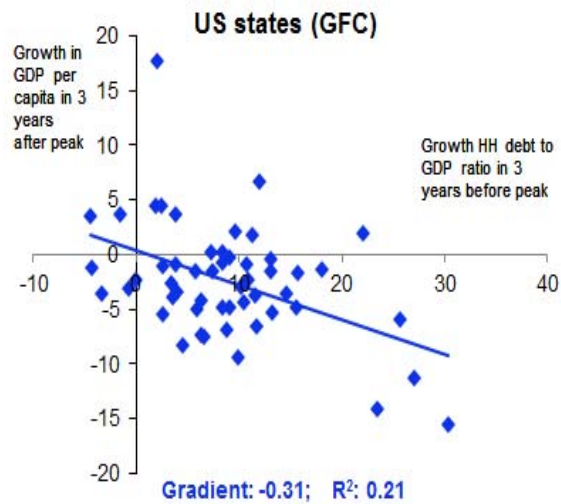
Fault lines: what made the crisis so bad?

Credit provided by US commercial banks grew significantly below trend

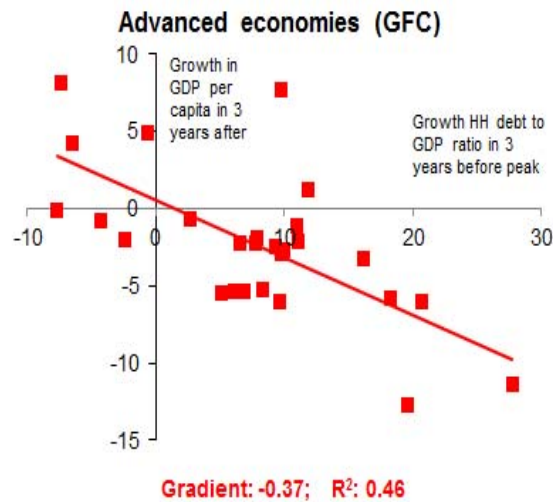


Fault lines: what made the crisis so bad?

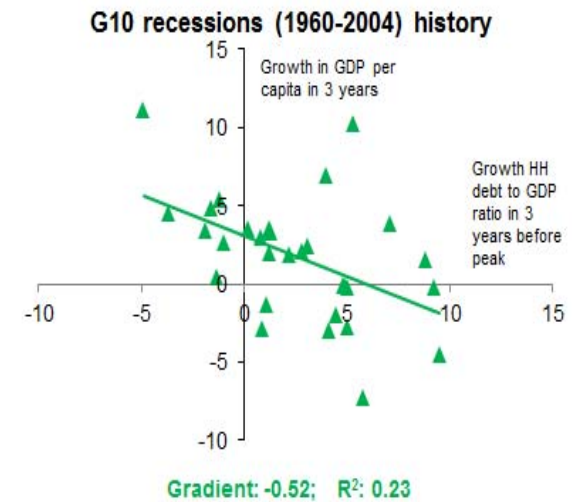
A bigger build-up in household debt is associated with a more severe bust.



Across U.S. states...



Across countries...

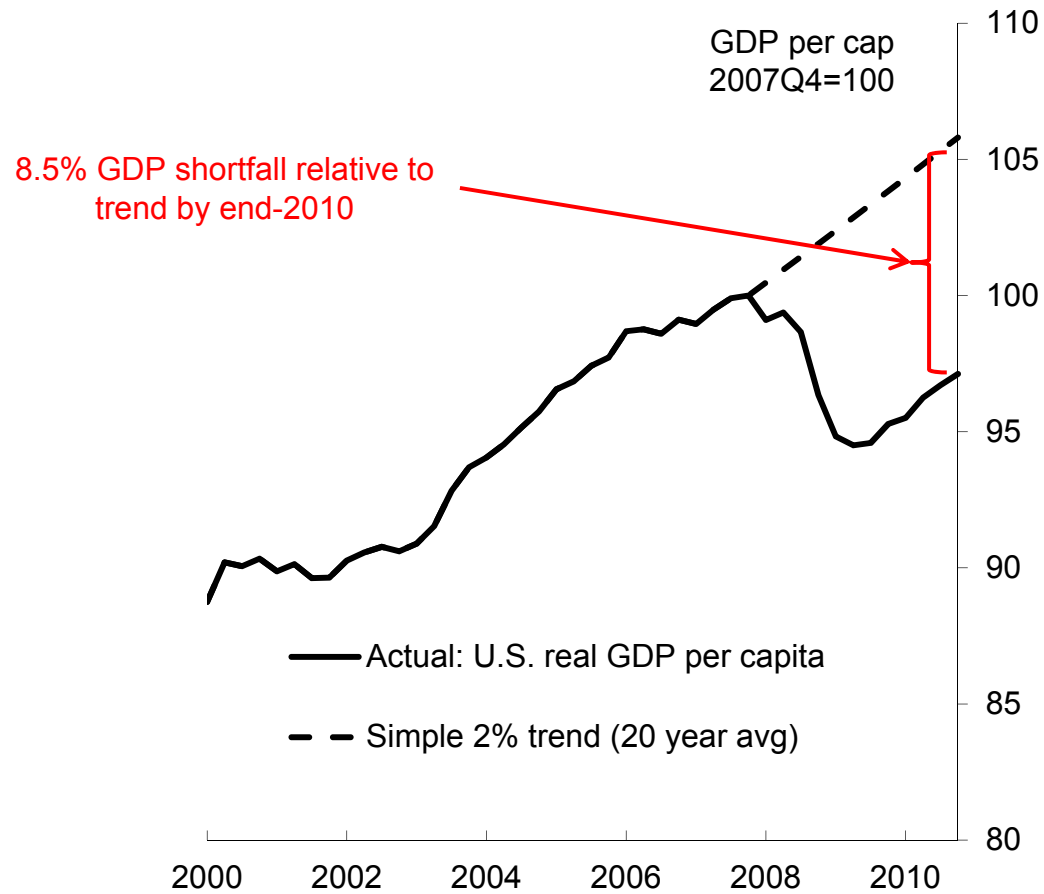


Across time...

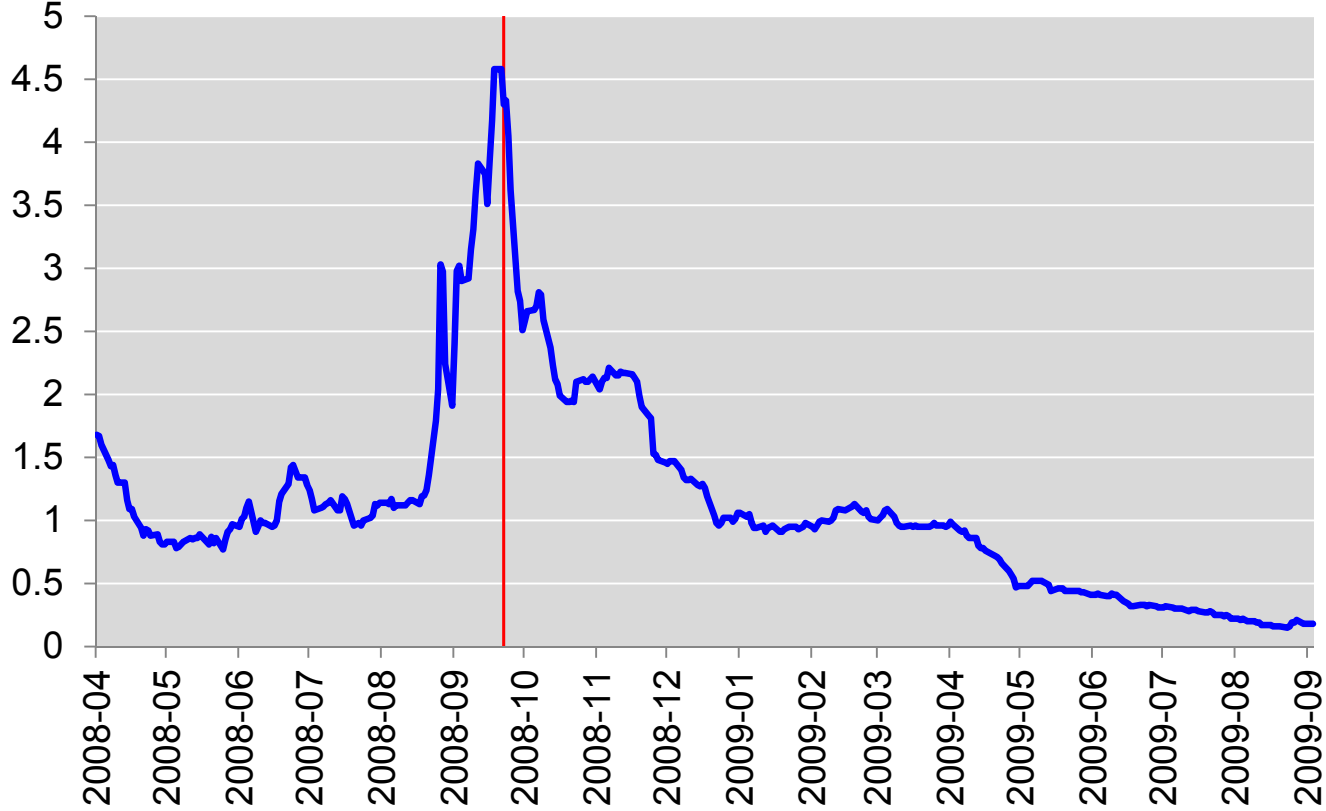


Dimensioning the fall-out

Despite few actual (big) bank failures, crisis had significant macroeconomic costs.



Spread between three-month LIBOR and Treasury bill yield



Action to reduce household debt build-up

Potential impact of 4x loan-to-income limit and accompanying affordability test on household debt boom

Mortgage debt stock	
Total mortgage debt stock (2007) ^(a)	\$10,638bn
Gross flow of new mortgages (for owner-occupier house purchase)	
Total value of loans granted (2003 to 2007) ^(b)	\$4,389bn
<u>Direct impact of 4x loan-to-income limit (2003 to 2007)^(b)</u>	
Lower-bound estimate: all loans still originated at maximum size within limit:	\$98bn
Upper-bound estimate: all loans with loan-to-income > 4x excluded altogether:	\$622bn
<u>Potential upper-bound impacts on sub-prime lending (2003 to 2007)^(c)</u>	
If income requirement excluded all low- or no- documentation sub-prime loans	\$359bn
If affordability test excluded all sub-prime originations on teaser-rates	\$366bn



Institutional constraints

Survey data on usage of macroprudential tools

	Use of bank-focused tools (positive CCyB, forward-looking provisions, caps on credit growth)	Use of household-focused tools (loan-to-income or debt-service-to-income limits)	Both
All Adv. Economies (18)	44% of countries	33% of countries	22% of countries
Adv. Economies with financial stability committee with formal powers (5)	60% of countries	40% of countries	40% of countries
Other Adv. Economies (13)	38% of countries	31% of countries	15% of countries

Notes: We consider the 19 advanced economies covered in Edge and Liang (2017), minus South Korea, for which no data on tool usage is available. Based on country classification in Edge and Liang (2017) and survey responses on tool usage in IMF (2018) that consider tools in use at the date of the survey. ‘Formal powers’ refers to powers to act unilaterally or to issue ‘comply-or-explain’ recommendations. Results for the U.K. have been adjusted to account for measures that had been agreed but were not binding yet at the date of the survey.

