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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
  - Need evidence base on tool impact; accountability via cost-benefit analysis

- 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 and assume a similar risk-resilience gap in the future
  - But you could also argue its an artificially easy test – we test if we've designed frameworks that can win the last war.

Our approach: narrative / eclectic approach

1) **Fault lines and their impact:** what made the crisis so bad – what were the key channels?

2) **Required intervention:** what macroprudential policy would have been required to address those fault lines?

3) **Institutional constraints:** are existing U.S. and U.K. macroprudential authorities equipped to take the necessary steps?

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Fault lines: what made the crisis so bad?

A) The financial system was fragile

- Total assets doubled 2001-2007; 70% of 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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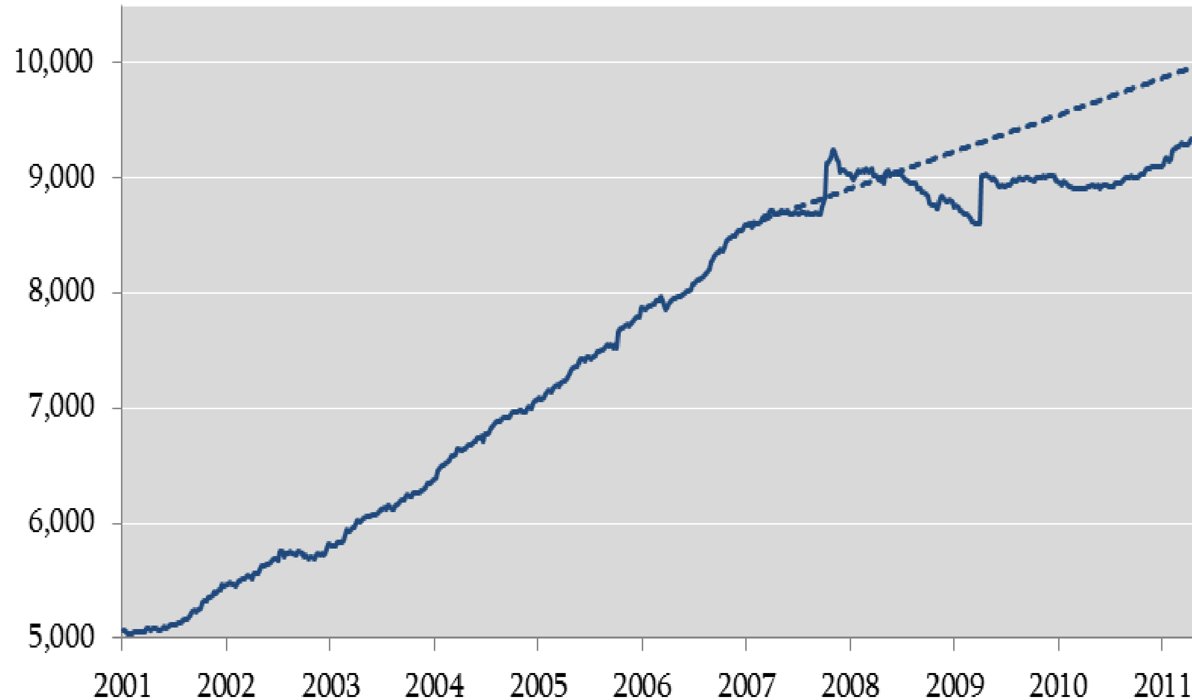
Credit provided by US commercial banks in



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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

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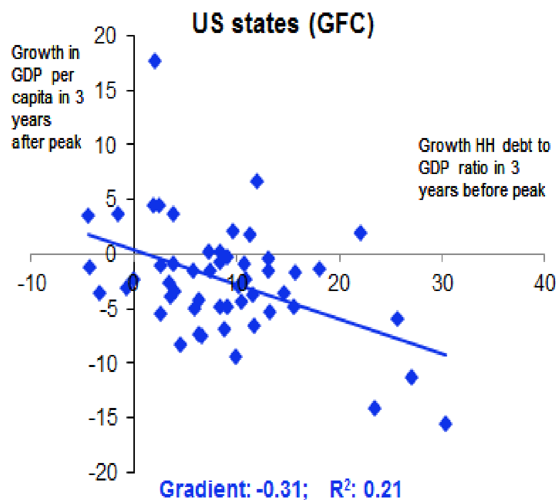
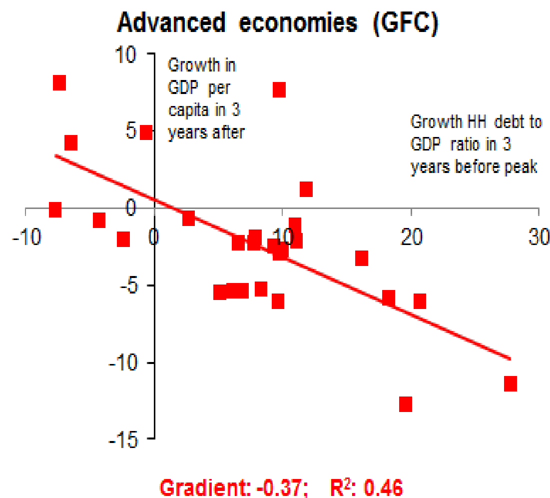
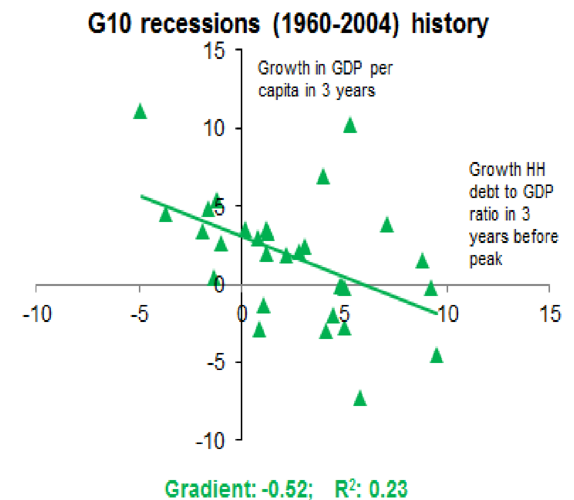
Fault lines: what made the crisis so bad?

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

Across U.S. states… **Across countries…** **Across time…**







- When **household debt fault line** exposed: <u>debt-deleveraging</u> and <u>AD-externality</u> ensued, with severe real effects

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Dimensioning the fall-out:
How much did these fault lines matter?

– U.S. GDP per capita 8.5% below trend by 2010:

GDP per cap 2007Q4=100

8.5% GDP shortfall relative to trend by end-2010

Actual: U.S. real GDP per capita

Simple 2% trend (20 year avg)

110
105
100
95
90
85
80

2000 2002 2004 2006 2008 2010

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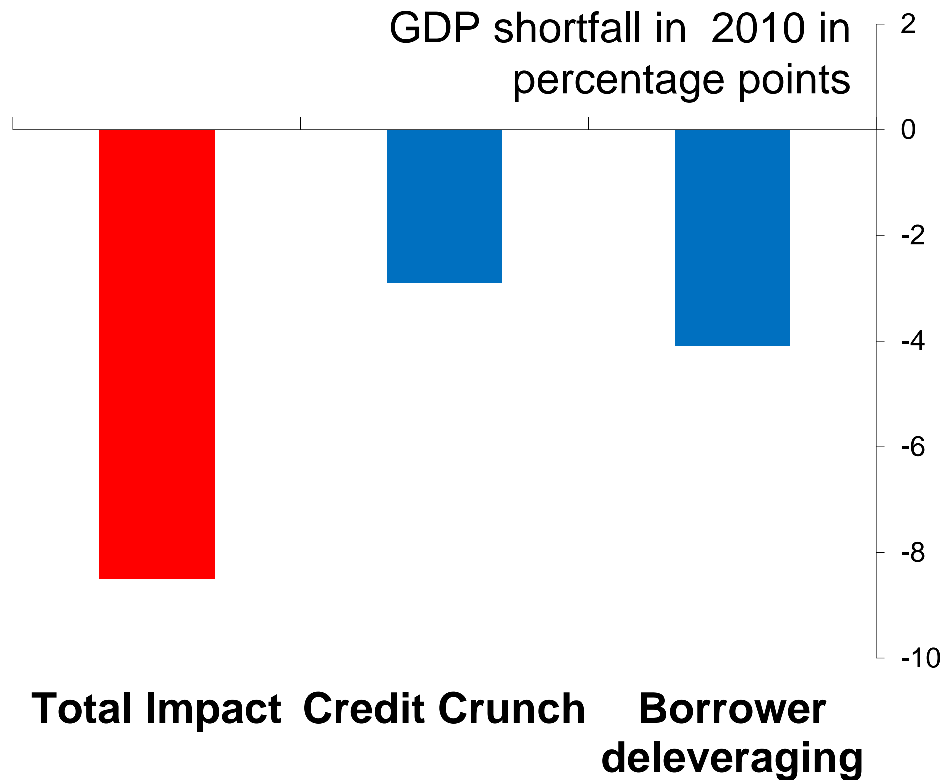
Dimensioning the fall-out



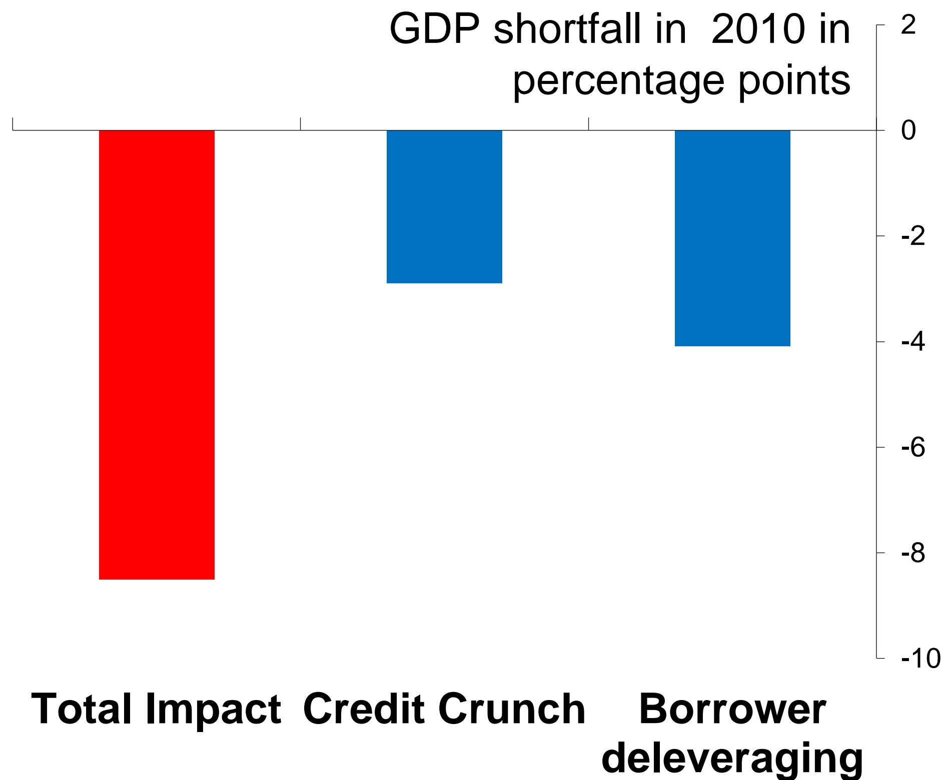
Credit crunch estimate draws on:

- Chodorow-Reich (2014); Greenlaw et al. (2008); Basset et al. (2014); Guerrieri et al. (2015); Hall (2012)

HH deleveraging estimate draws on:

- Reduced form; Jorda et al. (2013, 2016); Bridges et a. (2017); Mian & Sufi (2010, 2012)

Dimensioning the fall-out



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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 financial system 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 harder (e.g. FOMC transcripts)
- 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.

➔ Implications:

- Systematic risk monitoring framework needed (e.g. GDP-at-risk)
- Macropru needs to be humble: built-in slack / buffers needed

Step 2: Take action to reduce leverage

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

- TARP injection of ≈$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

➔ Implications:

- Need CCyB strategy that could get to 3-5% range by peak cycle
- Gradualism would imply early lift-off and/or positive resting rate

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 so (20bps WACC)

➔ **Implications:**

- Importance of maintaining / testing funding & liquidity standards.
- Monitoring new illiquid assets & mapping their funding (e.g. lev. loans)

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: leaning impact of raising capital likely to be state-contingent
- Not clear loan-to-value limits would have addressed the fault line, given twin booms in HH debt & house prices.
- But a loan to income (LTI) limit with accompanying affordability test could have had a material effect:
  - 2007: 13% of mortgagors had DTI > 4x; 20% had DSR > 40%
  - 4x LTI limit would have directly reduced pre-crisis debt >$100bn.
  - Another ≈ $200bn of piggyback loans may have been curtailed
  - Tests would have significantly moderated sub-prime boom.

Step 4: 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
Direct impact of 4x loan-to-income limit (2003 to 2007)[b]	
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
Potential upper-bound impacts on sub-prime lending (2003 to 2007)[c]	
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: could the necessary steps have been taken?

- 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 that 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'.

What could the FSOC and FPC have done

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**: to whom would recommendations to moderate the housing boom be directed?

FPC

- Power to set a range of **(bank) capital requirements** (CCyB,CCLB,SCRs)
- 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 & **affordability tests**
- Would **have required political backing to extend perimeter** of regulation, but process for this is in place.
- Would have had to use tools **actively and fairly aggressively**: 5 years of case law give some precedent: CCyB at 1%; 4.5x LTI; 3pp affordability test

Conclusion: would macroprudential regulation have prevented the last crisis?

- Not clear the FSOC designed to make a difference.
- The FPC stands a chance, but faces challenges.
- This raises important questions:
  - How much direct authority does a macroprudential regulator require?
  - How wide in scope should the macroprudential mandate be?
  - How interventionist (active / aggressive) should macropru policy be?
  - How should cost-benefit analysis be calibrated?
  - How should accountability be retained given the challenge of horizons?
- Need to build systematic, transparent frameworks for macropru tools, grounded in the evidence emerging from the growing macropru case law