THE FUTURE OF HOUSING FINANCE

Third Annual Finance Conference
Bank of England

Friday 12 September 2014

Professor Emilios Avgouleas
Chair in International Banking Law & Finance
University of Edinburgh

The Role of leverage in banking

- Fractional reserve banks are per se leveraged institutions
- This is not necessarily a bad thing at all!!
- Banks facilitate greater leverage amongst non-financial companies
- BUT
- In periods of prosperity and low loan defaults, banks' capacity to create credit, coupled with inflated collateral values, increases banks' APPARENT capital reserves and removes constraints on further credit growth.

The Leverage cycle & Financial instability (i)

- The ability to fund assets through short-term debt that operates like money can lead to incontrollable expansion of credit in the economy resulting in severe asset bubbles.
- Market participants tend to behave in a pro-cyclical fashion and the capacity to leverage balance sheets permits them to engage in greater speculation on asset prices than unleveraged investors.
- This augments both positive and negative market movements and, in the case of banks, amplifies the rapidity and transmission of shocks from one bank to another and between different economic sectors.

Leverage & Financial Instability (ii)

- Driven as they are by flawed assumptions concerning fundamental value or by competitive pressures, bubbles have the potential to cause serious economic damage once they burst.
- It is clear that leverage increases in boom years when banks finance riskier loans, and recedes during periods of economic contraction. Growth at higher rates, however, may be "incompatible with the potential for overall, real economic expansion."

Leverage &Financial Instability (iii)

- Investors are aware that the capital reserves of highly-levered institutions will be wiped out even in the event of negligible asset price falls. Thus, in a downturn, a bank with a highly-levered balance sheet will suffer loss of confidence much earlier and faster than less-leveraged institutions.
- Highly leveraged banks increase the probability of risks arising from debt contracts.
- This leaves the financial system vulnerable to episodes of market panic.
- **Thus, excessive bank leverage exacerbates the danger of contagion in the banking system and leads to fast transmission of risks from the financial system to the real economy.**

Leverage & Financial Instability (iv)

- Even where insolvency is not an immediate threat, the potential requirement for highly-levered banks to sell assets to bolster capital in the event of distress may inadvertently lead to problems in other financial institutions.
- The decision to sell assets leads to downward pressure on asset prices. Such a decision is virtually inevitable in the event of systemic disruption when the entire banking sector is forced to deleverage.
- For example, collateralized debt contracts with margin calls (ubiquitous in bank investment), if leveraged, increase fat tail distributions and clustered volatility.
- These distributions, when coupled with the effect of any re-pricing of collateral, exacerbate downward price spirals.

Leverage Cycle & the Real Economy (i)

- The damage inflicted by deleveraging phases on both the financial system and the real economy is often very significant, and where borrowing levels have risen to unsustainable levels, it may lead to GDP reduction, negating the initial growth gains made due to high leverage (Fostel & Geanakoplos.
- Another critical drawback of excessive leverage is ‘debt overhang’, which reduces the allocative efficiency of bank lending.

Leverage & the Real Economy (ii)

- Debt overhang due to excessive leverage prevents banks from financing investment, even where that investment is guaranteed to produce a return, because of the excessive borrowing and fragile capital structure built up during periods of economic growth.
- Firms with large debt to equity ratios will therefore pass up valuable investment opportunities, even where those opportunities constitute a positive net value to the firm.
- For example, where bank capital falls, for example, due to asset re-pricing necessitated by an economic downturn, it will prove extremely difficult for a bank to escape debt overhang and worthwhile investments will be sacrificed in favour of asset sales and deleveraging.

Leverage & the Real Economy (iii)

- Highly-levered banks eventually make less efficient investment decisions resulting in both underinvestment due to the debt overhang and misallocation of resources. Unmerited over-investment during boom times is followed by a serious halt on new investment during a downturn triggering liquidity asphyxia and, of course, a sharp correction/downfall on asset prices. Both developments tend to have chain effects on economic activity and employment rates, as well on savings ratios.
- **Replenishment of banks' capital base is required in the circumstances to enable banks to extend credit to worthwhile borrowers.**

- **PACE CAPITAL RATIOS**

Leverage & the Real Economy (iv)

- asset prices have a significant effect on economic activity: leverage increases asset price volatility and thus economic activity may become stunted or overheat
- the effect of extreme leverage levels on asset prices leads to huge wealth transfers between investors and increases income inequality (**pace the US sub-prime crisis**)
- excess leverage often leads to insolvency, and the economic dis-utilities of mass insolvencies may exceed the benefits of leveraged activities.
- Therefore, excessive leverage contributes to macroeconomic booms and busts.

Drivers of Excessive Leverage in banking (i)

- Banks' decision to leverage is inevitably influenced by three considerations: (i) owners' (shareholders' preferences); (ii) managerial rent-seeking; and (iii) ability to engage in asset substitution, or risk-shifting.
- Of course, if regulators allow asset substitution, as a means for regulatory arbitrage, the firm will not just be over-leveraged but also under-capitalized as risky assets will be pushed off-balance sheet

Drivers of Excessive Leverage (ii)

- Bank capital structure is a function of the relative costs of capital financing. The costs of raising equity capital exceed those in relation to raising debt finance, as equity capital is perceived to be riskier than debt.
- Banks pool risks from individual products and tranche them, with some investors purchasing bank equity, some purchasing bank subordinated debt, some purchasing senior debt, and some making deposits.
- Depositors and senior debt holders are exposed to much lower risk than the aggregate risk level of the pool of bank assets, and thereby receive much lower returns.
- In contrast, bank equity holders are exposed to much greater risk and therefore receive higher returns on investment. Increased equity requirements will, in general, therefore increase the costs of capital.

Drivers of Excessive Leverage (iii) – The governance aspect

- When adjusted for the (unincorporated) value of the deposit protection option, an increase in bank capital is positively associated with a reduction in asset risk, notwithstanding that in these circumstances portfolio diversification declines.
- Moreover, the relative riskiness of bank asset portfolios is driven largely by the preferences of the category of each agent class (deposit guarantor; shareholder; or manager) that dominates bank decision-making.

The governance aspect

- **Banks that are dominated by shareholder decision-making, favour the highest level of risk, followed by manager-dominated banks and, lastly, by banks dominated by deposit-guarantors.**
- To the extent therefore that capital requirements may affect bank behaviour, governance arrangements in those institutions will inevitably be affected by altering the balance if capital requirements in favour of leverage ratios. (Avgouleas & Cullen, 2014a)

Drivers of Excessive Leverage (iii) – building up size

- Size did not just shielded banks from the risk of failure but also has ensured cheaper funding for years by creditors who charged banks interest rates lower than their risky business would warrant."
- Financial innovation and the ability to 'optimize' capital structure through leverage have been the key factors behind the growth of bank business over the last twenty years (Boot, 2011).
- Unsurprisingly they are tightly connected. While building size in the traditional relationship banking business is a long-drawn exercise, in the case of transactional banking leverage can be the catalyst for rapid building of bank asset size.

Leverage Ratios

- They capture what? Normally un-weighted assets to equity
- What's their reach? They must extend to off-balance sheet items to prevent asset substitution - the US example is indicative
- Normally they supplement RWA ratios and may be asymmetrical, e.g. US vs Switzerland
- Switzerland initially excluded the domestic asset book
- In the US it's 5% for any U.S. top-tier bank holding company (BHC) with at least $700 billion in total consolidated assets or at least $10 trillion in assets under custody (covered BHC) and any insured depository institution subsidiary of these BHCs and 6% for international subsidiaries of BHCs

For strict leverage ratios

- They are simple ratios and thus they reduce complexity and prevent gaming of capital requirements, esp. though asset substitution
- Apart from a micro-prudential (bank stability) measure they are also a strong macro-prudential measure
- They reduce reliance on risk models and credit ratings which are both procyclical
- Thus leverage ratios reduce overall levels of leverage in a given economy and counter procyclicality which is hard wired into Basel ratios

Against strict leverage ratios

- If leverage ratios are not uniform, they create an un-even playing field
- They account for social risks but they do not specifically target Haldane's super-spreaders
- They increase cost of capital which means less credit expansion
- **They push banks to acquire riskier assets making the banking system more and not less fragile -** a classic Goodhart's Law outcome
- They are unnecessary if RWA ratios are properly calibrated
- If they are not cycle adjusted they can restrict economic growth

Capital Discrepancies: UK Banks(i)
(source PRA, Jun. 20, 2013)

- Standard Chartered had the strongest Core Equity Tier One capital to RWAs ratio at 9.8 percent. Stripping away risk-weighting left it with an un-weighted leverage ratio of 4.3 percent.
- However, many UK banks are not so well-capitalized. Barclays, for example, reported Core Equity Tier One capital of 8.5 percent. but, its un-weighted leverage ratio was 2.9 percent. Lloyds Banking Group and RBS each had un-weighted leverage ratios of 3.1 percent, against Core Equity Tier One capital to RWAs ratios of 8.2 percent and 6.5 percent, respectively.

Capital Discrepancies: UK Banks(ii)

- "The UK's five biggest banks are considered among the best capitalised in Europe on the traditional measure of core tier one equity divided by risk-weighted assets . . . The ratios range from 12.3 per cent at HSBC down to 10.3 per cent at Royal Bank of Scotland…The disclosed leverage ratios strip out the effect of risk modelling, which has the effect of more than doubling the size of every bank's balance sheet and more than tripling that of Barclays . . .[The] unvarnished look at each bank's borrowing produces far different results. As of December 31, Standard Chartered had the strongest ratio at 4.5 per cent, meaning that it has assets equal to 22 times its capital. Barclays has the weakest, with 2.8 per cent. That means Barclays had assets worth more than 35 times its capital base." **(source FT, 8 April 2013).**

Conclusions so far

- Leverage ratios will make banks and the financial system safer and will dampen the financial cycle with clear benefits for the economic cycle

BUT

- Bank RoE will be hit by leverage ratios as leverage ratios will limit bank asset expansion
- They might create a border problem with credit flowing from the unregulated sector
- They might incentivize banks to acquire riskier assets but the Swiss experience so far indicates the OPPOSITE
- So it's a draw! Any other arguments?
- How about bank governance benefits?

The governance debate

Executive greed has been a major factor behind bank short-termism and excessive risk-taking, but this view does not consider the counter-factual.

- High leverage maximized shareholder returns, so-called Return on Equity (ROE) and thus executive bonuses mostly pegged on the share prices
- BUT ALSO
- In the short to medium term the best career strategy for senior bank managers, was to imitate competitor business strategies and herd (Avgouleas & Cullen, 2015).

Shareholder managed banks (i)

- A convincing line of research, which indicates that even properly designed corporate governance systems, which seek to align principal-agent interests, could prove ineffective as risk-reducing mechanisms.
- Fahlenbrach and Stulz contend that the incentive arrangements at large financial institutions were not responsible for bank failures or the creation of excess risk within the financial system.
- Senior management at financial institutions held significant equity positions and suffered substantial paper losses once stock prices began to fall sharply.

Shareholder managed banks(ii)

- Banks whose CEO interests were most aligned with the interests of shareholders performed worst. The median value of stock and options in the average bank CEO's portfolio was more than ten times the value of the CEO's salary in 2006 and CEO's on average owned 1.6% of the outstanding stock of their bank.
- Disproportionately large equity holdings ought to have incentivised senior bankers to act in the long-term interests of their firms; certainly they had substantial incentives to prevent the assumption of excess risk.
- It is highly improbable that CEOs with significant equity positions would risk shareholder equity.
- This is supported by the fact that executives did not substantially reduce their equity positions prior to the GFC.

How about bank management? (i)

- There is strong evidence for example, that the highly-leveraged buyout of ABN AMRO by RBS in 2007, which reduced RBS's reported Tier One capital ratio to 4 percent, was mostly driven by the career concerns of its most senior executive rather than pay targets.
- Moreover, the career concerns rationale is the only possible way to reconcile the narrative of 'greed', which is, arguably, based on sound empirical research with the equally methodologically flawless line of research that shows that CEOs in most of the banks that failed in 2008 were major shareholders and their compensation incentives were perfectly aligned with the banks' long-term objectives.

How about bank management? (ii)

- Career concerns and other behavioural explanations of bankers' behaviour complement the greed narrative and provide a more complete picture of what motivated bankers' conduct, given shareholder short-termism and industry peer-pressure, which pushed bankers at all levels - but especially senior management - to adopt herding strategies.

The UK Housing Market

- Interest rates are low
- The prime market is dominated by investors
- Lots of investment comes from overseas investors
- Banks frequently resort to securitisations inspite the new Basel charges
- Supply of housing stock is limited due interest group pressures & geographic limitations

Chart 1 - Annual Reports (Barclays, Lloyds Banking Group, HSBC, RBS)

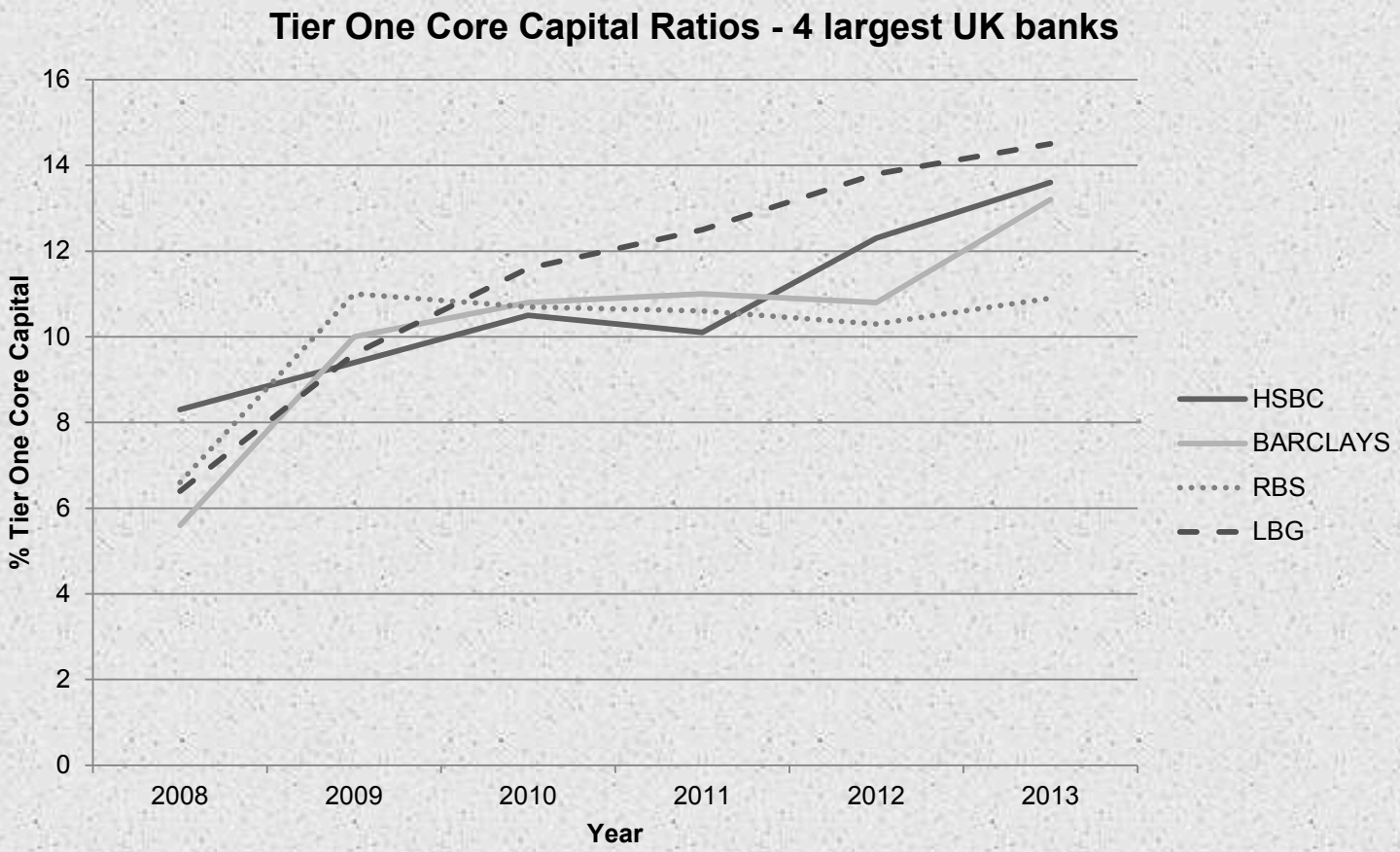

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Chart 2 - Council of Mortgage Lenders (figures, derived from Bank of England, National Statistics, HM Revenue and Customs, CML, 2014).

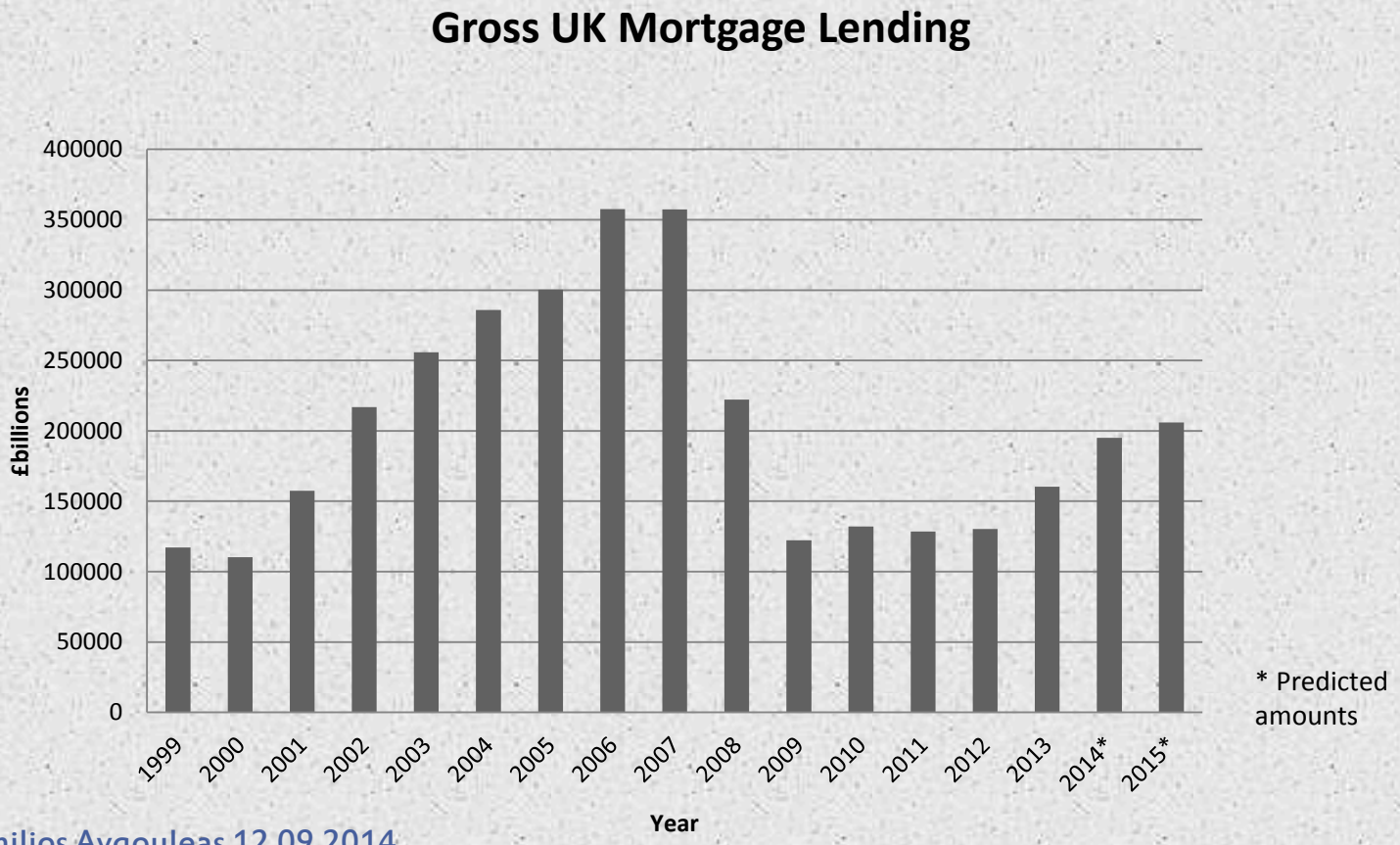

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Chart 3 - Annual Reports (Barclays, Lloyds Banking Group, HSBC, RBS)

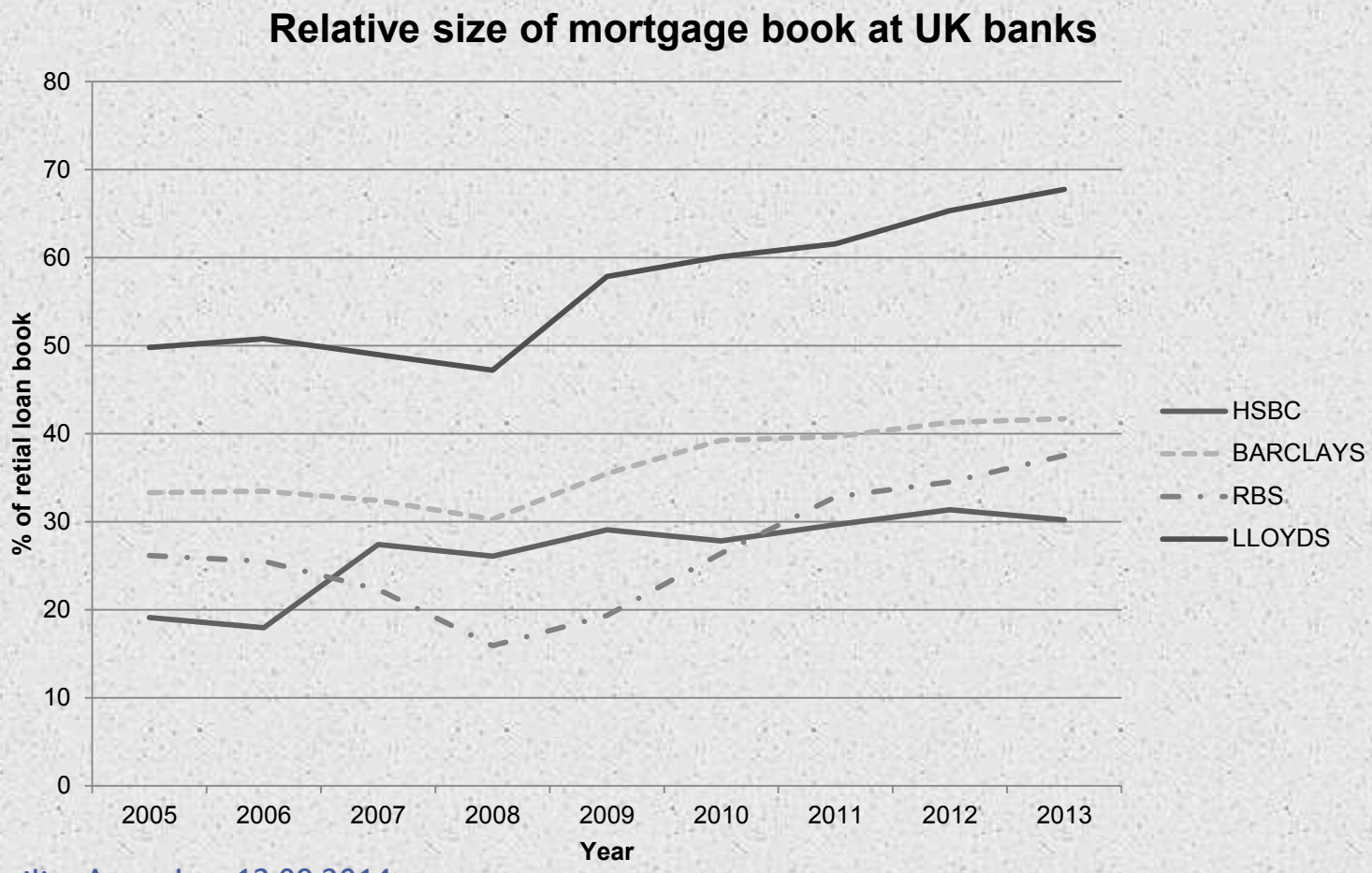

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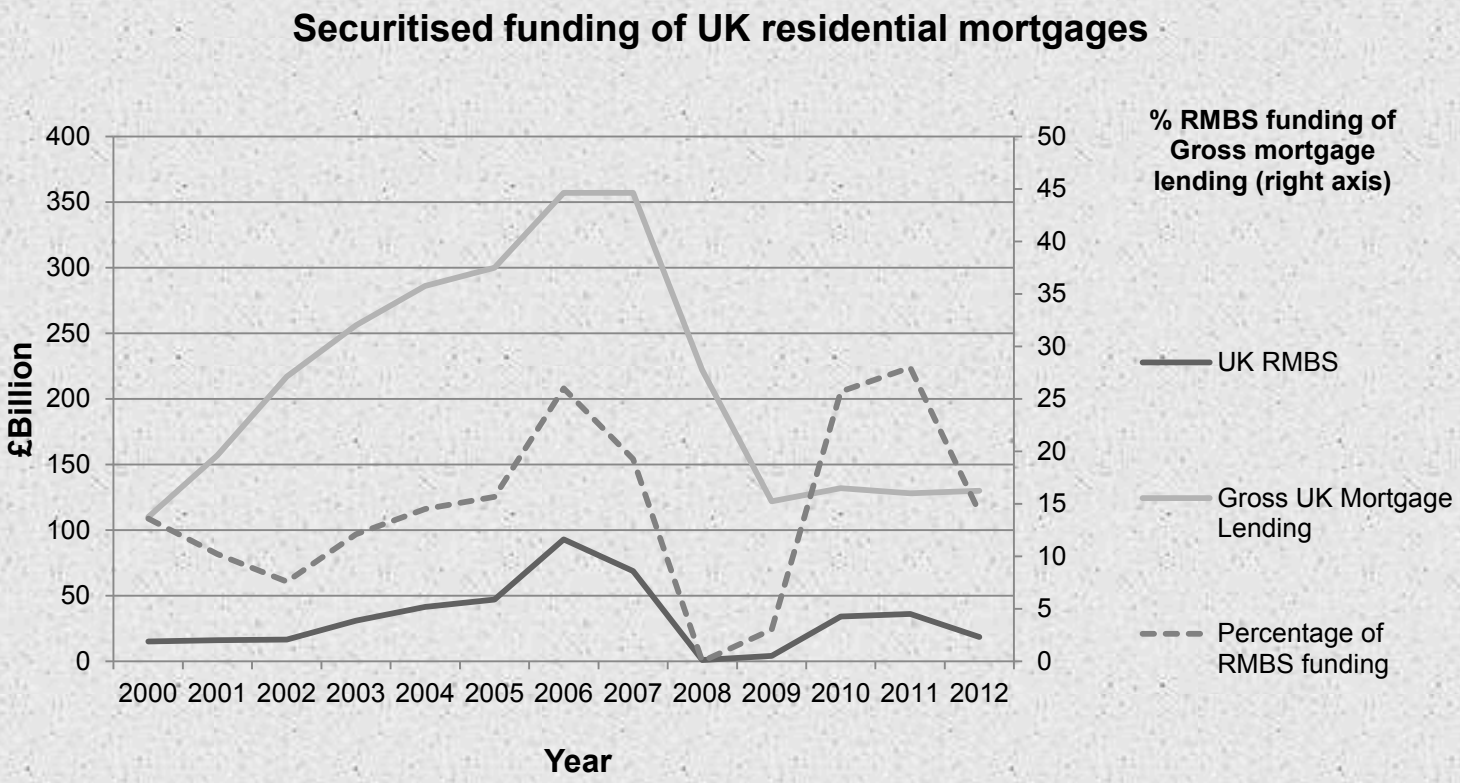
Chart 4 - Annual Reports (Barclays, Lloyds Banking Group, HSBC, RBS); Standard & Poors, Update on the Securitization Market, October 2012



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Who bought new homes in London in 2013:

- **Investors - 61%**
- Buy to Let investors: 48%
- Buy to Sell investors (speculators): 5%
- Build to Let investors: 8%
- **Owner occupiers – 39%**
- outright purchase: 32%
- 7% of units are those homes that were originally permitted as market sale units, but end up as affordable units usually to be delivered as shared ownership homes.
- Overseas buyers: those who normally reside overseas, not buyers who were born overseas but normally reside in the UK – as is the case for 37% of people who normally live in London according to the 2011 census.
- **Source: 'Who Buys New Homes in London and Why?', Report prepared for the British Property Federation (BPF), February 2014**

Investors dominate the prime market but not sub-prime or super-prime

- This split between investor and owner occupier varies with price band, and therefore location:
  - The sub £450 per square foot price band contains the greatest proportion of owner occupier purchases – 80%. Relevant developments can be found in Outer London.
  - The £1,000 to £1,500 per square foot band contains the greatest proportion of investor purchases – 70%. Relevant developments can be found in Inner and Prime Central London.
  - Owner occupiers dominate again in the £2,000+ per square foot band where 70% of buyers are classified as owner occupiers –in many cases the homes will be held as one of several pied-à-terres around the world.

Source: BPF Report, Feb. 2014

Importance of foreign buyers

- Detailed research by Knight Frank's research team indicates that overseas buyer activity varies with location as follows:
  - In Prime Central London 49% of sales go to overseas buyers.
  - In Inner London the figure is 20%.
  - Outer London trails with 7%.
  - Following the 2008 recession, weaknesses in the domestic market combined with funding restrictions mean that these overseas investors have been instrumental in maintaining a level of housing development in London, together with the employment that this generates.
  - Without a high level of overseas purchases secured prior to construction start, financiers would simply not have released the cash needed for development to go ahead, and the associated developments would have been stalled.

Source: BPF Report 2014.

Ring-fenced banks & macropru- limits

- Ring-fenced banks have little room to increase RoE and booming housing markets provide an opportunity that shareholders and managers of ring-fenced banks will find very hard to resist
- Macroprudential measures very effective, in principle, but not difficult to game by sophisticated buy-to-let and more importantly wealthy overseas investors who can structure their purchases in ways that comply with them They might restrain buy-to-sell-on
- Schembri paper: LTV &LTI no effect on prices in Canada

Conclusion

- The credit channel matters a great deal!
- Front-stop leverage ratios obliterate ring-fenced banks' incentives to over-lend in booming housing markets when interest rates are low and the market is open to foreign investors (Avgouleas & Cullen, 2014b)
- Thus, no need to redirect monetary policy towards financial stability
- But leverage ratios must be cycle-adjusted to allow credit to flow freely during a downturn