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Abstract

Declines in property markets played a central role in the Great Financial Crisis. Off-balance sheet financing activities, particularly securitisations, were used to fund higher volumes of bank lending, concentrated in real estate. In response to the current low appetite for securitisations, the European Union has proposed a new Securitisation Regulation, with the aim of restarting EU securitisation markets. This article explores the possible legal and economic significance of this Regulation and argues that the proposed approach to regulating securitisation is likely to be deficient. Instead of addressing flaws in the securitisation process through improved incentives – *which I term 'process-focused' regulation* – regulation ought to concentrate on the excessive credit-origination which securitisation may facilitate. This is particularly relevant to housing bubbles, which in general are driven by over-optimistic expectations about future house prices, shared amongst lenders, borrowers and investors. Improving incentives in credit-channel widening structured finance when all parties are over-optimistic is unlikely to guard against future bubble formation. This is particularly relevant to the UK market in light of structural reforms to the UK banking sector (so-*called "ring-fencing")*, which is likely to *result in today's large universal banks being converted int*o monoline mortgage lenders.

1. Introduction

Real estate bubbles were at the heart of the 2007-2009 financial collapse.[1] As the housing bubble burst – first in the United States and then in Europe – the losses that eventual falls in property values inflicted upon large banking groups resulted in enormous macroeconomic effects. In the U.S., property prices fell on average by 40 percent[2]; in the U.K., the figure was over 20 percent.[3] Many households suffered extreme financial distress, including severe contractions in income and unemployment. Real estate assets comprise the largest part of the wealth of the household sector. Housing values are therefore key determinants of long-term economic performance and property booms are central to boom-and-bust cycles.[4] As a result, turbulence in housing markets generally exerts significant macroeconomic effects.

Assuming that rapid increases in asset prices (and especially real estate values) present a financial stability risk, the present low interest rate environment appears likely to produce further expansion of mortgage lending, fuelling what seems like an evolving asset bubble. It is therefore not surprising that the housing market has been at the heart of recent financial stability concerns.[5]

The author would like to thank participants at conferences and workshops at the University of Oxford, the Institute for New Economic Thinking, and the University of Manchester for valuable feedback.

[1] Real estate prices had doubled in real terms in most Western jurisdictions in the years leading up to 2007. The S&P/Case-Shiller Home Index provides data points (collected monthly by Standard & Poor's) on repeat-sales house price for the United States. According to this index, between 1996 and 2007, real estate values increased by 135% in real terms. See http://us.spindices.com/index-family/real-estate/sp-corelogic-case-shiller. UK house prices also doubled during the 2000s, as noted by Halifax: "Despite a fall of more than one-fifth between mid-2007 and mid-2009, house prices increased by more in real (i.e. inflation adjusted) terms than in any other decade over the last 50 years… House prices increased by 105% during the past decade." See HBOS, UK house prices doubled during the 2000s, HALIFAX PRESS RELEASE, (Jan. 27, 2010) < https://static.halifax.co.uk/assets/pdf/mortgages/pdf/Halifax-UK-House-Prices-Doubled-During-The-2000s-27th-January-2010-Housing-Release.pdf>.

[2] S&P CASE/SHILLER HOME INDEX, id.

[3] NATIONWIDE BUILDING SOCIETY HOUSE PRICE INDEX, <http://www.nationwide.co.uk/about/house-price-index/headlines>.

[4] Carmen M. Reinhart & Kenneth S. Rogoff, Banking Crises: An Equal Opportunity Menace (NBER Working Paper 14587, 2008).

[5] In November 2016, the European Systemic Risk Board wrote to eight countries' finance ministries (including the UK), to warn of "vulnerabilities related to the [Residential Real Estate] sector in EU countries that may be a direct or indirect source of systemic risk to financial stability, and may also have the potential for serious negative consequences for the real economy." See EUR. SYS'MIC RISK BD., VULNERABILITIES IN THE EU RESIDENTIAL REAL ESTATE SECTOR (2016) 2. This followed a statement in 2014 from the Bank of England Governor, Mark Carney, warning of excessive UK price rises. See Hilary Osborne and Angela Monaghan, Bank of England governor warns of a bubble as UK house prices rise 10.5%, GUARDIAN (Jul. 15, 2014) <https://www.theguardian.com/money/2014/jul/15/ons-uk-house-prices-may-london>. See also Kate Allen and

Because property booms are financed generally through bank lending, regulatory efforts since the crisis to safeguard financial stability have focused on increasing bank capital levels to reduce the impact of losses on assets. In the EU[6], these capital increases have been implemented through the Fourth Capital Requirements Directive (CRD IV),[7] based largely upon the Basel III Capital Accord.[8] CRD IV mandates, inter alia, higher levels of high-quality capital, new bank liquidity provisions, a leverage restriction, and significant corporate governance reforms. Regulators in the U.K have supplemented these reforms with further restrictions, including tighter leverage requirements[9] as well as a wholesale review of the U.K financial regulatory structure.[10] Moreover, in 2013, the UK Parliament passed legislation mandating structural reform of the banking sector.[11] This legislation requires certain large universal banks which offer retail, commercial and investment banking services, to separate their UK retail operations from wholesale or investment banking activities. This so-called 'ring-fencing' is designed to promote financial stability by "mak[ing] it easier and less costly to resolve banks that get into trouble…[and]…insulat[ing] retail banking from external financial shocks, including by diminishing problems arising from global interconnectedness."[12] Newly ring-fenced banks will be restricted in the range of activities they may engage in and the sorts of products they may offer to customers.

Anna Nicolaou, Global property bubble fears mount as prices and yields spike, FIN. TIMES (Apr. 16, 2015) <https://www.ft.com/content/7ba6556e-e28d-11e4-ba33-00144feab7de>; Merryn Somerset Webb, London property and the madness of the crowd, FIN. TIMES (Feb. 26, 2016) <https://www.ft.com/content/80e61830-dbd8-11e5-98fd-06d75973fe09>.

[6] Whilst acknowledging the referendum vote on UK membership of the EU has produced considerable uncertainty in the context of the UK's continued adherence to EU law, this article proceeds on the basis that the UK remains compliant with EU law until the process of leaving the EU is complete. Moreover, it is almost inconceivable that, even if it chooses not to adopt the SR, the UK will not adopt legislation of its own which mandates simple securitisation in some form. To do so would place its financial institutions at a significant competitive disadvantage.

[7] Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC [2013] OJ L176/338.

[8] BANK FOR INT'N'TL SETTL'M'TS, BASEL III: INTERNATIONAL REGULATORY FRAMEWORK FOR BANKS (2011).

[9] BANK OF ENGLAND, THE FINANCIAL POLICY COMMITTEE'S REVIEW OF THE LEVERAGE RATIO (2014).

[10] The Financial Services Authority was abolished by the Financial Services Act (2012) CH. 21.

[11] See Financial Services (Banking Reform) Act (2013) CH. 33. Ring-fencing initiatives are also being pursued at the EU-level, although no substantive laws have yet been agreed upon – see EUR. COMM., HIGH-LEVEL EXPERT GROUP ON REFORMING THE STRUCTURE OF THE EU BANKING SECTOR: FINAL REPORT, chaired by Erkki Liikanen (2012).

[12] JOHN VICKERS, THE INDEP. COMM'N ON BANKING: FINAL RECOMMENDATIONS (2011) [hereinafter ICB] at 10-11.

These manoeuvres have coincided with efforts underway in the EU to promote the integration of EU capital markets. The centrepiece of this Capital Markets Union (CMU) project is a proposal for a new EU Regulation on Securitisation ("SR").[13] In theory, by broadening the funding channels available to financial institutions, the SR will allow borrowers to gain access to a more diverse group of potential lenders and reduce investor dependency on local banks. In the case of Europe, prior to 2008 EU securitisation supported approximately one fifth of total bank loans granted to households and non-financial corporations in the euro area. According to one estimate, the re-booting of EU securitisation markets could generate between €100-150bn extra credit for firms and households, representing a 1.6% increase on current levels.[14] Yet, despite its relatively strong performance, its reputation was severely tarnished by the crisis, and EU securitisation markets remain dysfunctional.[15] To tackle this, regulators intend to mandate strict qualifying criteria to act as control mechanisms over the securitisation process. The most significant aspect of the SR is that will provide for lower capital charges for 'simple, transparent and standardised' (STS) securitisation instruments. Only securitisations which comply with these criteria will be eligible for the STS label.

As this article will explain, these regulatory developments may have significant financial stability implications. Securitisation technology was certainly a key supply-side change in the provision of credit preceding the real-estate bubble, as many banks, property companies and other financial intermediaries packaged up and converted their mortgage loans into tradable mortgage-backed securities (MBS). In particular, as I shall outline, there is a dominant "standard narrative" in relation to the pre-crisis practice of securitisation which suggests that it introduced distortions into the mortgage origination process, resulting in the origination of excessive levels of mortgage loans. Specifically, the charge goes that many of the loans underpinning MBS suffered a gradual deterioration in quality and creditworthiness, as incentives in the securitisation process – essentially

[13] European Commission, Proposal for a Regulation of The European Parliament and of The Council laying down common rules on securitisation and creating a European framework for simple, transparent and standardised securitisation, Brussels, 30.9.2015 COM(2015) 472 final 2015/0226 (COD) [hereinafter SR PROPOSAL]

[14] ICB, supra note 12, at 11.

[15] According to the Proposal, just 0.1% of EU AAA-rated MBS defaulted in contrast to 16% of US sub-prime MBS and 3% prime MBS. The figures for lower-rated MBS are even more divergent; just 0.2% of EU BBB-rated MBS defaulted in contrast to 62% of US subprime MBS and 46% prime MBS. See SR PROPOSAL, supra note 13, at 3.

the originate-to-distribute model – led mortgage lenders to discount potential losses from mortgage defaults because they would no longer be holding the relevant assets. Indicatively, for example, the U.S Financial Inquiry Commission concluded that:

> "When originators made loans to hold through maturity – an approach known as originate-to-hold – they had a clear incentive to underwrite carefully and consider the risks. However, when they originated mortgages to sell, for securitization – known as originate-to-distribute – they no longer risked losses if the loan defaulted."[16]

According to the standard narrative, the incentives to originate poor quality loans were also exacerbated by excessive complexity in securitisation design which prevented adequate analysis of the underlying risks. In combination, these features of securitisation reduced market discipline considerably. On the basis of this diagnosis, future securitisation regulation should seek inter alia to reduce the incentives for poor loan origination, increase transparency along the securitisation chain and reduce complexity. Process design and regulation are crucial to this endeavour and as shall be demonstrated, it is evident that the SR has been drawn up in this way. I term this approach to securitisation regulatory design process-focused regulation. Process-focused regulation in this context is founded upon setting up rules and structures to maximise intra-party information exchange, and to ensure that risks are allocated at the outset of the relevant transaction(s). In theory, this will produce the most efficient outcomes possible.

In this article, I argue that the approach to regulation in the SR is likely to be deficient in preserving financial stability. It assumes that provided market actors' incentives are properly aligned and information asymmetries minimised, the securitisation practice will deliver superior resource allocation with minimal risks to financial stability. Yet, as I shall explain, focusing on the process of securitisation ignores arguably its most significant dimension, which lies in its capacity to widen the

[16] FIN. CRISIS INQUIRY COMM'N, FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL CRISIS IN THE UNITED STATES, (2011) at 89; see also De Larosiere: "The originate-to-distribute model as it developed, created perverse incentives. Not only did it blur the relationship between borrower and lender but also it diverted attention away from the ability of the borrower to pay towards lending – often without recourse – against collateral. A mortgage lender knowing beforehand that he would transfer (sell) his entire default risks through MBS or CDOs had no incentive to ensure high lending standards." See DE LAROSIÈRE GRP., THE HIGH LEVEL GROUP ON FINANCIAL SUPERVISION IN THE EU (2009), at 9.

credit channel during financial booms. Of course, these booms almost invariably turn to busts, particularly in property markets. Numerous systemic banking crises have originated from excessive lending in real estate markets and, given appropriate circumstances, securitisation may be a significant contributory because of the way in which it loosens credit and funding constraints. In light of the role of securitisation in amplifying the bank credit channel in mortgage lending, a better way of restricting the potential for housing bubbles would be to address the capacity of the credit channel to expand in boom times, rather than simply focusing on protecting investors in mortgage-related products. Indeed, the behavioural aspect of bubbles – which the current approach to the regulation of securitised mortgage-finance largely ignores – instead places the endogeneity of credit supply at the centre of the analysis.

This article makes several novel contributions to the debate on mortgages and securitisation. First, it challenges the orthodoxy that the safeguards inbuilt to the process via the STS label will be sufficient to mitigate real estate-linked instability in the banking system. As shall be highlighted, the existing literature on the proposed SR approaches the issues on these terms, even where critiques are made of the instrument itself. I do not claim there are no flawed incentives in the securitisation process; there is compelling evidence that securitisation results in banks paying less regard to credit standards when making lending decisions.[17] Naturally, lower credit standards can contribute to lending booms. Yet, as I shall explain, lower mortgage underwriting standards are not necessarily the product of moral hazard; indeed, the lending boom which prefaced the GFC was not entirely subprime-driven and banks suffered huge losses on both retained securitisations and their non-securitised mortgage portfolios. So, whilst incentives may play a significant role in determining lender behaviour, real estate values are affected by forces on both the supply-side and demand-side of finance which – almost invariably – are linked to overconfident expectations of future house price rises. Crucially, these expectations afflict both borrowers and lenders. As I shall outline, this not only reduces the utility of the SR by framing it in terms of the protection extended to borrowers, but also means that reforming incentives along the securitisation chain does little to address financial stability

[17] Giovanni Dell'Ariccia, Deniz Igan & Luc Laeven, Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market 44 J. OF MON CRED. & BANK. 367 (2012).

concerns. Given the implications for financial stability from the collapse of real estate bubbles, the major challenge in regulating these booms is therefore in reducing the propensity of the banking system to allow these expectations to become self-fulfilling.

Second, the article will highlight how, by limiting the activities that retail banks may engage in, measures such as ring-fencing may encourage excessive focus on particular areas of lending; particularly mortgage markets which are not capital intensive and, in some cases, benefit from explicit government guarantees.[18] The forced conversion of large banks by the ring-fence, I argue, will likely result in a market dominated by monoline mortgage lenders. For reasons which shall be explained, this may not only contribute to future real estate booms but it will also leave banks even more exposed to the real estate cycle, the source of most recent banking crises in the UK (1973-75; 1991-92; and 2007-09). As a consequence, there may be significant financial stability implications from ring-fencing; indeed, as Goodhart notes, "[t]he likely concentration of such ring-fenced banks on residential mortgages … would leave them even more exposed to the housing cycle, without diversification potentiality."[19] I use empirical data on the UK banking system – in particular on mortgage lending trends and the evolution of U.K. bank balance sheets since the GFC – to demonstrate that U.K. banks have already begun to reposition their balance sheets in anticipation of the activity restrictions introduced under the ring-fence. Whilst this transition has been thus far gradual, the trend is clear. As will be explained, this will likely make ring-fenced institutions banks more predisposed to lending to property markets, and heighten their vulnerability to downturns in house prices. In light of the sectoral structural reforms on their way in the UK, the SR has the potential to widen this channel at precisely the time that large banks will become even more concentrated in property lending, by virtue of ring-fencing. Of course, securitising mortgage loans will reduce banks' exposure to property markets. However, a key feature of the new SR is its risk retention requirement, meaning mortgage risk will remain on their balance sheets. Moreover, as I shall

[18] The UK government offers explicit support to home buyers, providing a government guarantee for up to 20% of the value of a property by means of a five-year interest free equity loan. From 1st January 2017, the scheme is to be amended in two significant ways: (i) it will be available only to purchasers of new-build homes; and (ii) the equity loan amount that the government will guarantee for new build homes in London will rise to 40%. For further details, see <http://www.helptobuy.gov.uk>.

[19] Charles A.E. Goodhart, The Vickers Report: an assessment, 6 LAW & FIN. MARK. REV. 32, at 33 (2012).

explain, rather than focusing on risk retention requirements – which did little to prevent the concentration of mortgage risk during the GFC – a better approach to regulation in the context of securitisation and housing bubbles is likely to be to limit MBS volumes to some degree.

Third, the article shall also demonstrate how the securitisation of mortgages under the STS label will in theory allow banks to arbitrage new capital regulations which apply to higher-risk mortgage loans. Existing mortgage regulations, under Basel III, treat mortgage assets differentially, applying progressively higher capital requirements according to the level of equity in the secured property. Securitisation allows assets of different risk profiles to be pooled and subsequently tranched into levels of varying credit risk. By converting lower grade assets into higher-grade securities of commensurately lower capital intensity, securitisation – even in STS form – will thereby contribute to higher lending capacity at banks and likely increased financial flows to property markets. As will be explained, there is a further potential loophole in the STS design which banks may arbitrage to reduce the capital charges which would normally apply to some of their riskier mortgage assets, further increasing those financial flows.

On the basis of the analysis, the principal argument put forward is that the combination of securitisation with retail ring-fencing will likely increase rather than diminish risks to the U.K.'s financial stability. The subject of mortgage securitisation has been discussed exhaustively in the academic literature. The possible consequences of ring-fencing in the context of mortgage markets have also been analysed, albeit in much less depth. To my knowledge, this article is the first that considers the possible consequences from each in combination. The core message of the article is not that asset securitisation is in of itself undesirable; indeed, rehabilitating securitisation markets is likely to be welfare-enhancing.[20] I do not claim (unlike many other analyses) that securitisation of mortgages was a priori a cause of the financial crisis; instead, in the words of Foote et al., "securiti[s]ation merely facilitated transactions that borrowers and investors wanted to undertake

[20] Indicatively, researchers at the International Monetary Fund argued in 2015 that: ""Placing private securitization markets back on a firm and sustainable footing has never been more important…The time has never been more right to complete the task of [restarting] securitization." Miguel Segoviano, et al., Securitization – The Road Ahead (IMF Staff Discussion Note, SDN15/01, Jan. 2015), at 4.

anyway."[21] However, it does not follow from this that securitisation played no role in the mortgage boom; it is clear that securitisation facilitated lending and helped drive real estate prices up. Its future use – even in STS form – therefore needs to be controlled if financial stability is to be preserved.

The article proceeds as follows. The first section analyses the relationship between bank credit and the real estate cycle. The second section discusses securitisation as a funding technique and considers the recently proposed SR in the EU. This leads to the third section, which analyses the main drivers of housing bubbles, before highlighting arbitrage opportunities in the SR which may exacerbate these drivers. The fourth section outlines the UK's ring-fencing proposals, before presenting novel data on U.K. bank lending and balance sheet composition to demonstrate that banks are already beginning to shift into mortgage lending in anticipation of the ring-fencing restrictions. The penultimate section discusses the existing macroprudential regulatory toolkit in the UK and discusses potential improvements in light of the preceding analysis. The final section concludes.

2. Bank Credit & Real Estate Bubbles

A consensus has developed that the lending behaviour of financial institutions, in particular banks, is a key driver of real estate booms. Important contributions to this debate suggest a link between bank lending policies and house prices. Most early analyses found this link was a reciprocal, mutually reinforcing relationship through which credit influences house prices, and house prices influence credit.[22] For example, if property values increase thanks to demographic changes or monetary policy, homeowner equity in houses will be generated even in the absence of additional mortgage credit. These new higher collateral valuation may in turn be used to justify further borrowing, or to withdraw

[21] Christopher L. Foote, et al., Why Did So Many People Make So Many Ex Post Bad Decisions? The Causes of the Foreclosure Crisis (Federal Reserve Bank of Boston Public Policy Discussion Paper No.12-2, 2012) at 2.
[22] Charles A.E. Goodhart & Boris Hofmann, House prices, money, credit, and the macroeconomy 24 OXF REV ECON POL 180, (2008) at 202.

home equity and increase borrower leverage.[23] The concurrent increases in both house prices and mortgage credit amplify cyclical effects of lending.

In recent years, a considerable number of papers have focused on the explicit impact of looser bank credit on house prices. In sum, these papers confirm that the effects are often unidirectional: aggressive credit pricing significantly increases real estate values. Researchers at the New York Federal Reserve, for example, show that the pre-GFC housing boom was the result of an increase in credit supply driven by looser lending constraints in the mortgage market. They base this conclusion on four empirical facts: (i) an unprecedented rise in home prices; (ii) the surge in household debt; (iii) the stability of debt relative to home values; and (iv) the fall in mortgage rates.[24] Another, now-classic, paper shows that over the period 2002 to 2005, metropolitan US subprime markets witnessed an unprecedented relative growth in mortgage credit despite falling real incomes and productivity. They show that house price growth was negatively correlated with income growth over the same period, implying that the positive change in house prices could result only from changes in credit supply.[25] The authors attribute this to (i) supply-side changes in the provision of mortgage credit, particularly securitisation of mortgages; and (ii) expectations of higher house prices, which increased disproportionately in subprime localities. Other analyses show, inter alia, that: in areas of the U.S. where post-GFC mortgage loans had higher limits, house prices were higher relative to those areas where loan limits were lower, suggesting that the supply of credit increased house prices independent of other factors;[26] easier access to credit through lower financing costs significantly increases house prices;[27] relatively more liberalised bank mortgage lending regulations[28] and removal of restrictions

[23] Kosuke Aoki et al. House prices, consumption and monetary policy: a financial accelerator approach, mimeograph (2014).
[24] Alejandro Justiniano et al., Credit Supply and the Housing Boom (Federal Reserve Bank of New York Staff Report 709, 2015).
[25] Atif Mian & Amir Sufi, The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis 124 Q. J. ECON. 1449 (2009).
[26] Edward Kung, The Effect of Credit Availability on House Prices: Evidence from the Economic Stimulus Act of 2008 (unpublished manuscript) available at <https://www.aeaweb.org/conference/2015/retrieve.php?pdfid=412>
[27] Manuel Adelino et al., Credit Supply and House Prices: Evidence from Mortgage Market Segmentation (NBER Working Paper No. 17832, 2012).
[28] Giovanni Favara & Jean Imbs, Credit Supply and the Price of Housing, 105 AM. ECON. REV. 958 (2015).

on lending[29] lead to larger house price increases; and increased elasticity in credit supply terms leads to higher real estate values.[30] In sum, these contributions suggest that the lending activities of banks may exert significant effects on the value of real estate.

Banking has also become progressively more focused on real estate lending, which of course amplifies the financial stability consequences of real estate crashes. Arguably the most significant paper in recent years in the context of bank lending composition and real estate is by Jorda, Schularick and Taylor.[31] They disaggregate bank credit for seventeen advanced economies since 1870. Their analysis produces three particularly important findings: (i) the sharp increase of credit-to-GDP ratios in advanced economies since the 19th century is largely a result of rapid growth in mortgage loans to the household sector, which also explains the marked change in bank balance sheet composition; (ii) real estate credit is a particularly significant factor in predicting financial fragility; and (iii) "financial crisis recessions" are significantly worse than other forms of recession and these recessions are heavily influenced by mortgage credit. These findings confirm those in the study by Reinhart and Rogoff, who show that in advanced economies there is always a significant run-up in housing prices prior to a financial crisis, and that the fallout from housing crises causes relatively more economic damage than other forms of crisis.[32] Mian and Sufi find similar conclusions: that the expansion and bursting of private credit booms concentrated in aggressive mortgage lending growth may create significant financial instability.[33] House price upswings associated with higher household indebtedness produce costlier recessions.[34] The additional leveraging that accompanies housing booms of course exacerbates financial dislocations and makes recovery more difficult.[35] Considering the importance of property lending to contemporary retail and commercial banking, efforts to

[29] Marco Di Maggio & Amir Kermani, Credit-Induced Boom and Bust (Col. Bus. School Research Paper No. 14-23, 2015).
[30] Elliot Anenberg et al., The Effect of Mortgage Credit Availability on House Prices and Construction: Evidence from a Frontier Estimation Approach (Nov. 2015) available at <http://people.stern.nyu.edu/ahizmo/ahkm.pdf>
[31] Òscar Jordà et al., The Great Mortgaging: Housing Finance, Crises, and Business Cycles (NBER Working Paper No. 20501, 2014).
[32] Carmen M. Reinhart & Kenneth S. Rogoff, Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison, 98 AM. ECON. REV. 339 (2008).
[33] ATIF MIAN & AMIR SUFI, HOUSE OF DEBT (2014).
[34] Mathias Drehmann, et al., Anchoring countercyclical capital buffers: the role of credit aggregates (Bank for Internat'l Settlem'ts Working Paper No. 355, Nov. 2011).
[35] J.V. Duca et al. Housing markets and the financial crisis of 2007–2009: Lessons for the future 6 J. FIN. STAB. 203 (2010).

ameliorate the instability characteristic of the banking system must take into account both the property cycle and the contribution of banks to the phases of that cycle.

3. Securitisation and Mortgage Markets

The securitisation of mortgage loans played a particularly prominent role in developments in mortgage finance markets in the run-up to the crisis.[36] As noted in the introduction, its role has been analysed extensively. The process involved in basic securitisation is straightforward (although at more esoteric levels, the process may become extremely complex). Once issued, loan assets (known as the 'reference portfolio') are pooled and transferred to a bankruptcy-remote special-purpose vehicle (SPV), legally organized as a trust, which finances its purchase of the assets through the issuance of securities. The investors receive fixed or floating rate payments funded by the cashflows due from the reference portfolio, which are generally collected and transferred by the originator, for a servicing fee.[37] The creditworthiness of the securities is rated by external agencies, whilst credit enhancements and/or guarantees from the sponsor may also be granted to the SPV. The securitisation is often sliced into segments, or tranched, which allows issuers to create securities with a subordinated structure. This results in security classes with different orders of priority for payment, each of which has a sliding scale of associated risk. The least risky tranche (the senior level) has first call on the income generated by the underlying assets. The lower levels (mezzanine, junior and equity) are riskier, and suffer losses first. The equity slice is normally the smallest tranche but bears the highest risk.

The securitisation process thereby allows the conversion of lower-grade individual financial products into higher-grade securities. For example, structured finance products may convert a portfolio of BBB-rated products into a security with AAA-rated senior tranches.[38] This facilitates the redistribution of risk amongst different classes of investor; in particular, it allows institutional investors to hold assets indirectly which regulations would ordinarily deem too risky. From the

[36] Daniel Awrey, Toward a supply-side theory of financial innovation 41 J. COMPARAT'VE ECON. 401 (2013).
[37] Andeas A. Jobst, What is Securitization? 45 J. FIN. & DEVEL'P'M'NT 48 (2008).
38 During the period 1990 to 2006, the average percentage of corporate bond issues with AAA-rating was 9%. For securitisations, it was 75%. Asset-backed securities (including MBS) accounted for 64% of the growth of long-term bonds over the same period. See BASEL COMM. ON BANKING SUPERVISION, THE JOINT FORUM REPORT ON ASSET SECURITISATION INCENTIVES (2011).

perspective of originators, securitisation fulfils four purposes: funding diversification, regulatory capital and accounting benefits, risk transfer, and revenue generation.[39] The empirical literature suggests that banks place most stock in the first two of these benefits.[40] Securitisation facilitates low-cost financing as it allows financial institutions to raise cash against illiquid assets. Securitising assets also allows financial institutions to reduce their capital requirements.[41] In the case of mortgage assets with identical capital requirements but different risk profiles, for example, the originator could raise its risk level without facing any increase in its capital charge by holding the riskier asset on balance sheet and removing the assets with lower risk. This allows banks to fund new or existing loans by securitizing them rather than holding them to maturity.

Although mortgage securitisation was not new (dating back to the 1970s), the scale it reached prior to the GFC was unprecedented. For example, the private market for MBS stood at $1.2 trillion in 2006 in the US alone (this excludes agency-sponsored securitisations, the largest source). Some 80 percent of mortgages which were issued over the five-year period prior to the GFC were pooled and securitised or combined with other asset-backed securities to form collateralised debt obligations ('CDOs') and sold on in secondary markets to other financial institutions.[42] Mortgage securitisation volumes in the U.K were smaller, although they experienced significant annual growth in the years leading up to 2007, expanding from virtually zero issuance in 2000 to over €165 billion in 2006, representing 54% of all European MBS issuance.[43] Indeed, securitised funding of mortgages in the U.K. reached 18% of UK mortgage credit by 2007.[44]

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[39] See Id.

[40] For discussion of this literature, see id. Appendix I.

[41] Securitized assets are funded by outside investors (investors in the SPV) rather than the bank itself. The SPV is financed through investors buying securities in the SPV who are then entitled to the receivables (contractual payments) due from the SPV's assets. The SPV transfers the proceeds from the sale of its securities to the parent institution. The SPV is therefore, in effect, borrowing from capital markets on behalf of the originator. However because the receivables it sells are of superior creditworthiness, the costs of funds is lower. Further, by removing loan assets from a bank's balance sheet, a bank's capital may support additional lending which could not have occurred had those assets remained on-balance sheet. Securitisation may therefore also be used for capital arbitrage and to improve return-on-equity.

[42] See Jeremy C. Stein, Securitization, shadow banking & financial fragility, 139 DAEDALUS 41 (2010).

[43] FIN. SERV. AUTHORITY, THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS (2009) at 14.

[44] John Kiff et al., 'European securitisation and the possible revival of financial innovation' in THE FIRST GLOBAL FINANCIAL CRISIS OF THE 21ST CENTURY PART II, JUNE-DECEMBER 2008 (Andrew Felton & Carmen M. Reinhart eds., 2011) at 119-122.

The Proposed EU Regulation

The aim of the SR is to provide a framework for the re-introduction of securitisation and securitised products to the market. Several bodies were involved in drafting advice and guidance for the draft Regulation, including the Basel Committee on Banking Supervision (BCBS), the International Organization of Securities Commissions (IOSCO), the European Banking Authority (EBA), the European Central Bank (ECB) and the Bank of England (BoE).

The SR will apply to any lender or originator of assets – "typically, a credit institution"[45] – which may engage in the practice of securitisation. STS-compliant securitisations will qualify for more generous (risk-sensitive) capital treatment. The Proposal lays down strict guidelines on STS criteria. The STS must comprise only homogenous asset types and cannot itself be comprised of securitisations ("re-securitisations").[46] Any exposures included must be originated in the ordinary course of the originator's business, and any material change in underwriting standards must be disclosed to investors.[47] Representations and warranties as to the creditworthiness of the underlying exposures must be provided by the originator.[48] Strict rules on the creditworthiness and recent financial performance of borrowers must be complied with.[49] Synthetic securitisations are also excluded.

Responsibility for compliance with the criteria lies with originators, sponsors (with oversight from the European Securities and Markets Authority) and investors. Because of a perception that faulty credit ratings assigned to structured finance contributed to the crisis, the use of credit ratings as a proxy is not encouraged. Supervisory and cross-border oversight and sanctioning is also outlined, as well as rules on transparency[50], and due diligence and risk retention.[51] As shall be explained, risk

[45] SR PROPOSAL, supra note 13, at 2.
[46] See id. Art. 8(4)-(5)
[47] See id. Art. 8(6)
[48] See id. Art. 8(2)
[49] See id. Art. 8(7).
[50] See id. Art. 5. Originators, sponsors and conduits ought to make information freely available to investors on standardised templates, on websites which meet criteria on control of date quality and business continuity.
[51] See id. Art. 4. Originators, sponsors and original lenders are already required to retain some level of risk under existing legislation (for example under the Capital Requirements Regulation or Alternative Investment Fund

retention is regarded as an especially important tool, because in theory it aligns the interests of originators and investors. Under the initial Proposal, the minimum risk retention requirement – the portion of the securities that the originator must retain – was 5 percent. However, at the time of writing, this level was under negotiation and it is very likely that it will be raised in the final version of the SR.[52] STS securitisations must be rated in two ways: internally, under the Basel III Guidelines for securitisations[53] and externally, by credit ratings agencies (for regulatory and investor purposes). As with capital requirements relating to general products, securitisations may be rated through internal models (Internal Ratings-Based Approach (IRBA) or External Ratings-Based Approach (ERBA)) or through the standardised approach (SA). The assessment of credit quality of a securitisation comprises quantitative elements, particularly in relation to 'expected losses' (calculated normally through 'Value at Risk' (VaR) and/or 'Probability of Default'/'Loss Given Default' (PD/LGD) methodologies), and qualitative elements, such as an assessment of the regulatory environment.

Process-focused regulation

Before the GFC, securitisation was widely regarded as financial stability-enhancing, because it allowed for the dispersal of credit risk to a broad and diversified range of investors.[54] In the event, of

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Manager Regulation), but the burden of checking this risk retention has hitherto lain with investors (the 'indirect approach'). The current Proposal therefore includes a direct risk retention requirement, as well as a reporting requirement on the originator.

[52] In December 2016, the EU Parliament voted to approve a compromise agreement which would see originators of securitisations having to retain a material net economic interest in the securitisation of not less than 5% or 10% depending on the retention modality. If passed, under the SR, the European Banking Authority and the European Systemic Risk Board will also be granted powers to require retention rates of up to 20% in light of market circumstances. For background, see Francesco Guarascio, Despite Brexit, EU makes progress on capital market plan REUTERS (Dec. 8, 2016) available at: <http://uk.reuters.com/article/uk-eu-markets-regulations-idUKKBN13X18X>.

[53] BASEL COMM. ON BANKING SUPERVISION, REVISIONS TO THE SECURITISATION FRAMEWORK (2016).

[54] For example, a 2005 BIS report on securitisation "conclude[d] that continued development of the [securitisation] CRT [credit risk transfer] market offers potential benefits in the form of more liquid and efficient markets for the transfer of credit risk." See BANK FOR INT'N'TL SETTL'M'TS, CREDIT RISK TRANSFER (2005) at 1. In 2003 a prominent U.S. attorney had testified before a Congressional committee that "Securitization reflects innovation in the financial markets at its best." See Cameron L. Cowan on behalf of the American Securitization Forum, Statement to the U.S. House of Representatives, Joint hearing before Subcommittee on Housing and Community Opportunity and the Subcommittee on Financial Institutions and Consumer Credit, Protecting Homeowners: Preventing Abusive Lending While Preserving Access to Credit (5 Nov. 2003), 108th Congress, First Session.

course, instead of diversifying risk these risk management techniques increased homogeneity, thereby resulting in the entire financial system being exposed to fluctuations in the market for MBS.[55] In spite of this, post-GFC regulation of the securitisation market focuses on regulating the mechanics of the securitisation process. This is based largely upon lessons drawn from the standard narrative of securitisation and the GFC discussed above; namely the possible distortion in incentives that the originate-to-distribute process creates. According to McCoy, Pavlov and Wachter for example:

> "Without regulation, securitization allowed mortgage industry actors to gain fees and to put off risks. During the housing boom, the ability to pass off risk allowed lenders and securitizers to compete for market share by lowering their lending standards, which activated more borrowing. Lenders who did not join in the easing of lending standards were crowded out of the market. Artificially low risk premia caused the asset price of houses to go up, leading to an asset bubble and breeding fraud. The consequences of lax lending were thereby covered up."[56]

Characterising the problem of mortgage securitisation in this way gives rise to several possible responses. One perspective regulators adopt regarding regulating securitisation is process-focused: that is, they assume that provided that the risks from the securitisation process are minimised through efficient incentive structures and disclosure techniques, securitisation is less likely to pose financial stability issues. The rational investor model assumes that investors have an unlimited capacity to process information to account for risk within their portfolios, provided they are protected from fraud and information is made freely available.[57] In accordance with this view, the STS criteria discussed above largely address the problem via the lens of investor protection – that provided full and frank disclosure of the material risks attendant to data concerning securitised products are made available, and incentives for obfuscation reduced, distortions flowing from the securitisation process may be mitigated.

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[55] AG Haldane, 'Rethinking the Financial Network' Speech at the Financial Student Association, Amsterdam, 28 April 2009.
[56] PA McCoy, AD Pavlov, and SM Wachter, 'Systemic Risk through Securitization: The Result of Deregulation and Regulatory Failure' (2009) 41 Conn Law Rev 493.
[57] E Avgouleas, 'The Global Financial Crisis, Behavioural Finance and Financial Regulation: In Search of a New Orthodoxy' (2009) 9 J Corp Law Stud 23.

In contrast, the Proposal adopts a rather benign view of the financial stability implications of increasing volumes of asset securitisation. Instead, as noted in the introduction, it points to the relative historical stability of the European securitisation market and the safeguards built in to the STS Proposal which will help mitigate concerns about complexity and risk management posed by non-standardised securitisations. Indeed, most post-GFC research on securitisation approaches the issue on these terms, offering critiques on the securitisation process, the incentives embedded within it, and new regulations designed to safeguard the integrity of the process. Schwarcz, for example, discusses the limitations and tradeoffs of both the Dodd-Frank Act[58] (DFA) in the U.S. and the EU SR in the context of re-establishing a global securitisation market.[59] He contends that the emphasis on STS in the SR will also mitigate one of the main impediments to risk management in financial markets populated by cognitively-bounded agents; namely, complexity.[60] Indeed, thanks to its emphasis on simplicity, Schwarcz concludes that the STS framework goes "a long way towards addressing complexity as a cause of market failure"[61] and that the US authorities might consider a similar approach to regulation. Whilst more critical of the SR instrument, Bavoso argues along similar lines: in particular, contending that the SR fails on three main counts in safeguarding investor interests: (i) because of the reliance placed on rating agencies in the securitisation process; (ii) a failure to fully enunciate the criteria for STS; and (iii) potential ambiguities in the STS definition.[62]

Approaching the issue of securitisation from this process-focused perspective yields certain analytical benefits. It is clear for example that the securitisation process may be subject to several forms of incentive distortion. These distortions are thought to prevent the efficient pricing of asset-backed securities. When an originating lender securitises its mortgages loans, those loans are removed from its balance sheet and sold to outside investors, in theory insulating the lender from mortgage defaults caused by falling house prices. Because of this, there are supply-side incentives to originate

[58] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub, L. No. 111/203 (July 21, 2010) Pub. L. No. 124 Stat. 1376.
[59] SL Schwarcz 'Securitization and Post-Crisis Financial Regulation' (2016) 101 Corn Law Rev 115.
[60] SL Schwarcz, 'Regulating Complexity in Financial Markets' (2009) 87 Wash U Law Rev 211.
[61] Schwarcz (n 59) 138.
[62] V Bavoso, 'High Quality Securitisation and EU Capital Markets Union – Is it Possible?' (2016) Acc, Econ and Law: A Convivium (forthcoming).

lower-quality mortgages, as the originating bank or mortgage lender knows that the credit risk of the loans will be passed down the securitisation chain and they will therefore be largely shielded from losses on the original loans (termed the "hot potato" theory by Shin[63]). In all likelihood, this will affect aggregate mortgage underwriting standards and in tandem increase the flow of credit to the mortgage market, helping to push up prices. This is sustainable only if standards are relaxed, meaning the issue of moral hazard becomes critical. Levitkin and Wachter argue the advent of the private securitisation market in the U.S. in particular helped amplify this dynamic via complexity in private securitised products and information asymmetries between originator and MBS investors which allowed overinvestment in MBS and boosted financial institutions' profits.[64] Importantly, of course, this view assumes that there will always be a "greater fool" in the securitisation chain, upon whom the eventual loss will fall. According to scholars such as Schwarcz and Bavoso, protecting investors by establishing a more systematic securitisation framework will ameliorate the effects of these poor incentives and restore faith in the securitisation process. Ceteris paribus, the primary purpose of regulation of securitisation ought to be to mitigate the distorting incentive effects at its heart.

At one level, these arguments are certainly convincing. A good proportion of the studies into the progressive decline in mortgage lending standards, for example, appear to provide evidence for the view that the originate-to-distribute model encouraged poor lending decisions by originating banks and mortgage lenders.[65] As noted earlier, many regulatory reports into the GFC based their conclusions on the flawed incentives theory and it is therefore to be expected that any regulation appertaining to initiatives to restart securitisation markets are framed in this way. However, the standard narrative – that securitisation as a supply-side phenomenon caused the real estate bubble thanks largely to poor incentives and excessive complexity – is based upon a very narrow view of the

[63] HS Shin, 'Securitisation and Financial Stability' (2009) 119 Econ J 309.
[64] See AJ Levitkin and SM Wachter, 'Explaining the Housing Bubble' (2012) 100 Georg Law J 1177, arguing at 1181 that the housing bubble was "primarily a supply-side phenomenon."
[65] Indicatively, see Mian and Sufi (n 33); DM Frankel and Y Jin, 'Securitization and Lending Competition' (2015) 82 Rev Econ Stud 1383; A Purnanandam, 'Originate-to-distribute Model and the Subprime Mortgage Crisis' (2011) 24 Rev Fin Stud 1881; ECB, 'The Incentive Structure Of The 'Originate And Distribute' Model' (December 2008).

lending dynamic which inflated it.[66] This is not to denigrate the contributions of scholars who approach the regulation of securitisation from a process-focused perspective; after all, reducing complexity and information asymmetry in securitisation markets is likely to be welfare-enhancing. Yet, because the precise nature of the contribution of securitisation to the GFC has been distorted, recent regulatory prescriptions to mitigate possible externalities from securitisation are also likely to be flawed.

Weaknesses in the "standard narrative"

The standard narrative of securitisation's contribution to the crisis has become extremely potent, informing significant swathes of post-crisis regulations. This has occurred despite its foundations being weak. To be valid, the standard narrative must be logically consistent with the following claim: that investors were duped by sophisticated lenders who systematically originated poor loans and used the MBS as 'cover' to remove risk from their balance sheets – after all, why would anyone purchase MBS which contained dud mortgages or mortgages which were designed to fail? Further, if this was indeed the case, the empirical record would demonstrate that MBS originators – knowing their products were in reality stuffed full of junk – would attempt to remove as many of the destructive loans as possible from their balance sheets to prevent them suffering losses when the mortgages comprising the MBS failed. Yet, as I shall now explain, neither of these claims stands up in light of both information theory and empirical data on mortgage securitisation practices (and, importantly, where MBS losses eventually fell).

Take the case, for example, of the mandatory risk retention requirements enshrined in both DFA and the SR. The standard narrative claims that underwriting standards appear to have declined in the run-up to the GFC, with many claiming this provides evidence that moral hazard engulfed the

[66] This something which Schwarcz indeed acknowledges in a much earlier publication in which he critiques what I have termed the "standard narrative." See SL Schwarcz, 'The Future of Securitization' (2009) 41 Conn Law Rev 41 1313.

securitisation process.[67] Risk retention (or "skin-in-the-game") in the tradition of classic asymmetric information theory advocated by Akerlof,[68] is a tool to counteract this moral hazard. In the case of mortgage securitisation, lenders have access to superior information than MBS investors about the quality of loan portfolios underlying the MBS, but without any economic interest in the MBS, they lack incentives to screen out risky loans. If the original lender retains some economic interest in the product, this signals to the market that the loans in question are creditworthy and mitigates adverse selection problems. In the context of mortgages, without any equity retention on the part of the issuer, the loan originator would have no incentive to adequately monitor the loans comprising the MBS, and the result would be too many risky mortgages. Superficially, therefore, a risk retention requirement help avoid these problems.

Yet, as noted by Bubb and Krishnamurthy, a mandatory risk retention requirement may not be useful, as this requirement is founded upon a fundamental misreading of Akerlof's theory.[69] Akerlof argued that in cases where buyers cannot observe the same level of information about a product as sellers (i.e. there is asymmetric information), the expected response would be for the buyer to adjust their price downwards, to reflect the potential "lemon" risk. Importantly, this is because the buyer is aware that the product in question may suffer from a defect of which she has no information. If the problem becomes serious enough, market failure may ensue: investors will not be able to distinguish the quality of the securities offered on the market, and will therefore assume the worst possible quality. The equilibrium price for all the securities subsequently would drop based upon this quality assumption and offerors of good securities would withdraw from the market, reducing trading liquidity.

[67] B Keys, T Mukherjee, A Seru, and V Vig 'Did securitization lead to lax screening? Evidence from subprime loans' (2010) 125 Q J Econ 307; B Keys, A Seru and V Vig 'Lender screening and the role of securitization: evidence from prime and subprime mortgage markets' (2012) 25 Rev Fin Stud 2071; W Jiang, AA Nelson and E Vytlacil, 'Securitization and Loan Performance: Ex Ante and Ex Post Relations in the Mortgage Market' (2014) 27 Rev Fin Stud 454.

[68] G Akerlof, 'The Market For Lemons: Quality Uncertainty and the Market Mechanism' (1970) 84 Q J Econ 488.

[69] R Bubb and P Krishnamurthy, 'Regulating Against Bubbles: How Mortgage Regulation Can Keep Main Street and Wall Street Safe – From Themselves' (2015) 163 U Penn Law Rev 1539, 1571.

In the case of the pre-GFC MBS market, however, this explanation is at odds with the standard narrative of the incentive problem propounded by many researchers. This account claims instead that information asymmetry about the quality of mortgages allowed sophisticated securitisers to increase the volume of trade in the MBS market by exploiting uninformed MBS investors and selling them "lemons." By implication, the story assumes that mortgage securitisers were able to consistently and systematically trick investors into purchasing MBS stuffed with mortgages likely to default. But, the first principle in Akerlof's theory is that buyers know about the incentive problems at the outset. This will reduce their willingness to trade and lower prices, leading to less trading, not more.[70] If this occurs, the standard response would be for market participants to voluntarily contract for risk retention. The lemons problem is mitigated by the market through the following means: the reputation of the arranger; the arranger providing a credit enhancement[71] to the securities or retaining risk; or any due diligence conducted by investors.[72] Consistent with this, a recent study shows that investors charged a lower premium for their investment in MBS vehicles affiliated with the mortgage originator(s) than those with no connection, showing that the market, at least in part, priced and structured MBS to reflect incentive alignment.[73]

The imposition of standardised risk retention also ignores considerable empirical evidence which bears out Akerlof's theory, concerning both common contractual provisions between securitisers and investors and the underlying mechanics of the securitisation industry. First, as predicted by Akerlof's theory, credit risk retention was, in fact, extremely common in the

[70] As noted by Buiter and Silbert: "The [2007] illiquidity in financial markets is certainly an information problem, but it is not an asymmetric information problem… in July-August (perhaps even a bit earlier), there was a general realisation that the credit ratings granted by the main rating agencies to many asset-backed securities and structured financial products in general, were wildly generous. There therefore was an associated increase in the market's perceived average probability of default for wide classes of securities. But the greater awareness of ignorance and the increased uncertainty are market-wide and symmetric, affecting would-be buyers and sellers equally. The private information that could have caused a lemons problem was destroyed by the process of securitisation and pooling." See Willem H. Buiter and Anne C. Sibert, 'Is the credit crunch a lemons problem?' Financial Times website, 2 September 2007 at <http://blogs.ft.com/maverecon/2007/09/is-the-credit-chtml/#axzz4ROLD3lnF>

[71] Risk retention is a form of credit enhancement. See BH Mandel, D Morgan, and C Wei, 'The Role of Bank Credit Enhancements in Securitization' FRBNY Econ Pol Rev (July 2012) 35-46.

[72] AB Ashcraft and T Schuermann 'Understanding the Securitization of Subprime Mortgage Credit' Federal Reserve Bank of New York Staff Report 318 (March 2008).

[73] C Demiroglu and C James 'How Important is Having Skin in the Game? Originator-Sponsor Affiliation and Losses on Mortgage-backed Securities' (2012) 25 Rev Fin Stud 3217.

securitisation process prior to the GFC. According to Schwarcz, an experienced securitisation lawyer, "the market itself has always mandated risk-retention."[74] This is confirmed by empirical data: all but a handful of U.S. securitisers retained substantial portions of MBS. Goldman Sachs, for example, retained 70 percent of its issued MBS volumes; Merrill Lynch 91 percent.[75] Many banks also offered explicit funding guarantees to off-balance sheet vehicles, thereby insuring outside investors against losses: Acharya et al document that at least $1.3 trillion of assets were securitized and guaranteed in this fashion.[76] Banks and other financial institutions also held MBS either as inventory for their MBS fee-earning business lines or because bank capital regulation favoured the retention of securitised products. At the Swiss bank UBS, for example, management increased significantly the securitisation of mortgage assets, and at the same time, the bank began to retain a large proportion of MBS on its balance sheet.[77] It is surely inconceivable that banks retained large holdings of assets which they knew to be toxic. Further, institutions in jurisdictions in which the originate-to-distribute model was not particularly popular (for example, Ireland) – and hence had "skin in the game" – also experienced significant losses, suggesting that "poor loan origination standards were more critical than the originate-to-distribute model in and of itself."[78]

Thus, whilst the motivations for banks holding MBS on their balance sheets are plural, the data appears inconsistent with the view that banks and other securitisers foisted large volumes of poorly-underwritten loans on to unsuspecting and naïve investors. Instead, banks and other securitisers were themselves heavily exposed to downturns in the housing market, and the associated drops in the values of MBS. The aggregated losses on mortgage-related assets at the ten worst-hit U.S. lenders approached $150 billion.[79] U.K banks cumulatively lost over £170 billion, much of this

[74] Schwarcz (n 59) 126.
[75] Bubb and Krishnamurthy (n 69) Table 1, 1582.
[76] VV Acharya, P Schnabl, and G Suarez, 'Securitization without risk transfer' (2013) 107 J Fin Econ 515.
[77] From holding virtually zero CDOs in February 2006, the UBS CDO desk held over $50 billion of CDOs by September 2007. See GL Clementi, TF Cooley, M Richardson, and I Walter, 'Rethinking Compensation at Financial Firms' in VV Acharya and M Richardson (eds) Restoring Financial Stability: How To Repair A Failed System (John Wiley & Sons 2009).
[78] Segoviano and others (n 20) 12.
[79] For lenders with statistics available, these losses totalled $149.4 billion, comprising: Citigroup ($42.9 billion); Merrill Lynch ($37 billion); Bank of America ($14.9 billion); Morgan Stanley ($12.6 billion); GMAC ($10 billion); JP Morgan Chase ($9.7 billion); Washington Mutual ($9.1 billion); Countrywide ($6.6 billion); Lehman ($3.3 billion); and Wells Fargo ($3.3 billion).

through their trading books, which were heavily invested in MBS markets.[80] A more persuasive explanation therefore appears to be that, in boom times, asset prices are not always precise indicators of risk-levels. The voluntary retention of huge volumes of MBS by securitisers is strong evidence for this. Indeed, it shows that MBS were not viewed by the market as high-risk; in fact, most of the MBS products purchased by banks which eventually turned toxic were low-yield, low-risk securities. It also meant that many mortgage-related assets were highly correlated – in effect, because the risks they posed had been underestimated.[81]

These findings are supported by a very important piece of recent research on the composition of real estate loan defaults. According to the standard narrative, after exhausting the supply of creditworthy mortgage borrowers, banks and mortgage lenders began to make increasingly risky loans in order to maintain lending levels and profits. In doing so, they used securitisation as a technique to hide true levels of risk from investors.[82] Yet, Adelino, Schoar and Severino provide convincing data which refute two expected conclusion from these popular beliefs; namely, that mortgage loans were increasingly made to subprime and poor borrower in the U.S. in the lead up to the GFC, and that defaults in the U.S. were concentrated in those groups. On the contrary, they show that mortgage originations expanded at all income levels and credit scores prior to the crisis, and that defaults by middle-income, high-income and prime borrowers all increased sharply. This is fully consistent with the demand-side narrative where homebuyers and lenders each "bought into increasing house values."[83] Rather than loans being originated to borrowers "at the margins", the crisis was brought about by mortgage lending to borrowers across the entire income distribution: the share of mortgages issued to subprime borrowers remained constant during the lead-up to the GFC. More importantly, the share of delinquencies suffered by those borrowers dropped significantly during the crisis.[84] This of

[80] B Broadbent, 'Deleveraging', Speech given at Market News International, London, 15 March 2012.
[81] J Cullen, Executive Compensation in Imperfect Financial Markets (Edward Elgar 2014) 120-159.
[82] McCoy and others (n 56).
[83] M Adelino, A Schoar and F Severino, 'Loan Originations and Defaults in the Mortgage Crisis: The Role of the Middle Class' (2016) 29 Rev Fin Stud 1635.
[84] The authors note that "for the 2003 mortgage cohort, the top quintile of the income distribution constituted only 13% of mortgage dollars in delinquency three years later, whereas for the 2006 cohort, the top income quintile made up 23% of the delinquencies three years out. In contrast, over the same period, the contribution to delinquencies from the ZIP codes in the lowest 20% of the income distribution fell from 22% to only 11%. We

course undermines the notion that subprime lending encouraged distorted credit allocation which resulted in securitisations filled with poor loans. Instead, it shows that the mortgage bubble was inflated as a result of excessive lending to all groups.[85] When considered together, these findings place obvious limits on the view that correcting flawed incentives in the MBS market will prevent future housing bubbles.

4. A More Holistic View: Over-optimism, Housing Bubbles and Securitisation

The facts presented above demonstrate that the proposed regulation of securitisation under the SR is unjustifiably focused on a narrow view of market failure. Process-focused regulation may be followed religiously, and yet financial instability arising from securitised banking may still arise, if nothing is done to constrain bank lending to particular asset markets. In this context, many contributions ignore the wider financial stability issues posed by expectations-based housing booms, and pay little attention to the role(s) securitisation may play in amplifying these dynamics.

As I shall now explain, in the context of securitisation, rather than relying on regulating the processes involved, in general regulation must also take account of the behavioural biases that propel real estate lending booms. Specifically, in this context the regulation of MBS ought to be predicated on the notion that overly optimistic (and sometimes irrational) beliefs about real estate values are the main drivers of housing booms. These booms of course may morph into bubbles, and eventual crashes, with severe consequences for financial stability. Because securitisation contributes to additional lending potential at financial institutions, its credit-widening dimensions arguably need to be addressed through targeted financial regulations, something I discuss later in the article.

Over-optimism and Real-Estate Booms

find a similar pattern when we look at credit scores: the share of mortgage defaults from borrowers with high credit scores increased during the crisis, whereas the share for subprime borrowers dropped." See id. 1636-37.

[85] Other research points to similar findings; for example, Ferreira and Gyourko find that "micro data on the ownership sequences of all types of borrowers from 1997-2012 leads to a reinterpretation of the U.S. foreclosure crisis as more of a prime, rather than a subprime, borrower issue." See F Ferreira and J Gyourko, 'A New Look at the U.S. Foreclosure Crisis: Panel Data Evidence of Prime and Subprime Borrowers from 1997 to 2012' NBER Working Paper 21261 (June 2015).

Why would investors speculate on asset prices to the extent that the market value of those assets eventually crashes? The central driver is that these processes are driven by over-optimism.[86] In his seminal work, Shiller claims bubbles are usually propelled by 'new-era' thinking, a frame of reference which pushes people to believe that future market prospects are "brighter or less uncertain"[87] than in past periods.[88] Importantly, it affects not only borrowers confident of ever-increasing prices, but also lenders and investors.

The process of asset overvaluation which causes financial crashes is linear: enthusiasm for particular assets leads to short or medium term increases in their price, which cannot usually be justified objectively from available economic data. Instead, near-term memories of strong performance lead to an increase in prices, which attracts further investment: "The high demand for [an] asset is generated by the public's memory of high past returns and the optimism the high returns generate for the future."[89] This enthusiasm for these assets becomes a self-reinforcing cycle as other market participants are drawn to invest by the returns available.[90] Where agents possess heterogeneous beliefs concerning the future path of asset markets, a preponderance of confidence amongst those agents will lead to increased asset prices, even where this confidence may be misplaced.[91] The flawed memories central to this process may also contribute to 'disaster myopia'; that is, an underestimation of the likelihood of an adverse shock.[92] In benign markets with very little recent history of negative events agents, boundedly-rational agents with flawed memories may

[86] Indicatively, the ECB notes that bubbles are driven in most cases by "expectations of the productive potential of the underlying asset [coming] to reflect excessively optimistic beliefs." See ECB, The Monetary Policy of the ECB (2011) 84.
[87] RJ Shiller, Irrational Exuberance (Princeton University Press, 2nd ed. 2005) 96.
[88] In a similar vein, Minsky argued that: "[P]rofits in the present value calculations that had reflected expected 'recessions' are replaced by those that reflect continuing expansion. Simultaneously there is less uncertainty about the future behaviour of the economy [as] the belief in the reality of a new era emerges…" See HP Minsky, 'Financial Instability Revisited: The Economics of Disaster', Policy Paper prepared for the Steering Committee for the Fundamental Reappraisal of the Discount Mechanism Appointed by the Board of Governors of the Federal Reserve System (January 1970) 7 (emphasis added).
[89] RJ Shiller, 'Bubbles, Human Judgment, and Expert Opinion' (2002) Fin An J 18, 19.
[90] JC Williams, 'Excessive Optimism, Leverage and Boom and Bust Cycles' FRB San Francisco Working Paper (2013).
[91] JA Scheinkman and W Xiong, 'Overconfidence and Speculative Bubbles' (2003) 111 J Pol Econ 1183.
[92] The ability to estimate the probability of a shock is dependent on the frequency of the occurrence of the shock relative to the frequency with which the shock changes the underlying structure (in other words, if a shock changes the underlying structure, its predictive power in relation to future shocks is limited). Agents are able to model high-frequency events with more accuracy because they provide agents with greater historical data with which to formulate the loss probabilities of future shocks.

underestimate low-probability, high risk events, and take on greater exposures than an objective probability assessment would warrant.[93]

In the case of the housing market, excessive optimism may encompass banks, securitisers and 'sophisticated' MBS investors.[94] If agents underestimate the default risk of mortgages, a boom-bust period in debt and real estate prices becomes likely.[95] Moreover, increasing housing prices raise the market value of the collateral securing mortgage loans. This lowers the risks of mortgage financing for lenders and, if they are optimistic about future real estate values, they will be more willing to lend for house purchases. In the case of the recent housing boom, the probability of a housing price crash was heavily discounted. Survey evidence shows that buyers in the housing market held extremely optimistic views concerning real estate values, right up until the crash.[96] There is evidence of similar sentiments amongst investors; analysts at Lehman Brothers and JP Morgan assigned negative housing market performance very low probabilities; the latter well into 2007.[97] Foote, Gerardi and Willen provide evidence that investors understood the risks attached to MBS and the real estate market and that the risk assessments done by some securities investors were accurate in their loss predictions.[98] Indeed, mortgage securitisation experts themselves did not see the crash coming – increasing rather than decreasing their exposure to the mortgage market – despite having superior data to average investors on the housing market.[99]

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[93] C Jolls, CR Sunstein and R Thaler, 'A Behavioral Approach to Law and Economics' (1998) 50 Stan Law Rev 1471, 1477.

[94] Bubb and Krishnamurthy (n 69) 1554.

[95] T Landvoigt, 'Aggregate Consequences of the Rise in Securitized Mortgage Debt' University of Texas at Austin, mimeo (2014).

[96] Case, Shiller and Thompson found in a sample of U.S. cities between 2003 and 2007, buyer expectations of price increases in excess of 10 percent per year for 10 years. See KE Case, RJ Shiller and A Thompson, 'What Have They Been Thinking? Home Buyer Behavior in Hot and Cold Markets' (2012) 45 Brook Papers on Econ Activ 265. See also EL Glaeser and CG Nathanson, 'An Extrapolative Model of House Price Dynamics' NBER Working Paper 21037 (March 2015).

[97] Foote and others (n 21). As noted by De Grauwe: What happened to economic fundamentals in the US warranting a doubling of house prices in only seven years? Very little…[T]he driving force was excessive optimism. Prices increased because they were expected to increase indefinitely into the future. This was also the expectation that convinced US consumers that building up mortgage debt would not create future problems." See P De Grauwe 'The Banking Crisis: Causes, Consequences and Remedies' Centre for European Policy Studies Policy Paper 178 (November 2008) 4.

[98] KS Gerardi, A Lehnert, SM Sherlund and PS Willen, 'Making Sense of the Subprime Crisis' Brook Papers on Econ Activ (Fall 2008) 69.

[99] I Cheng, S Raina, and W Xiong, 'Wall Street and the housing bubble' (2014) 104 Am Econ Rev 2797.

Significantly, the information which implied house price falls and the losses these would cause was available; in fact, many investors made substantial returns from shorting institutions exposed to the housing market.[100] In the event, after rising consistently from 1997 to 2005, house prices in the US stopped rising in 2006, and fell in 2007. Yet, credit default swap spreads on financial institutions which traded heavily in the MBS markets were not affected until mid-2007 and did not widen substantially until later that year.[101] This suggests that investor sentiment regarding the real estate market – and those institutions trading in the MBS market in the US – remained irrationally positive in spite of the information available.

The sentiments described were not confined to investors in the U.S. market. In relation to the U.K., for example, research conducted just prior to the time that the housing bubble burst in the UK suggests that house prices were overvalued by as much as 25 percent, with a large portion of that distortion driven by (optimistic) expectations.[102] As in the US, loose financing terms were prevalent.[103] Increasing volumes of credit were extended to borrowers, often only on the basis of confidence in future real estate price rises; no collateral ('zero deposit') mortgages were commonplace, which are only worth issuing if the lender (or MBS investor) is confident that property

[100] See L Cordell, Y Huang and M Williams 'Collateral Damage: Sizing and Assessing the Subprime CDO Crisis' Federal Reserve Bank of Philadelphia Working Paper (2011). There are many anecdotal stories of investors who were not caught up by the euphoria of the housing boom and made fortunes by shorting it. See G Zuckerman, The Greatest Trade Ever: The Behind-the-Scenes Story of How John Paulson Defied Wall Street and Made Financial History (Crown Business 2010); M Lewis, The Big Short: Inside the Doomsday Machine (WW Norton & Company 2010); A Redleaf and R Vigilante, Panic: The Betrayal Of Capitalism by Wall Street and Washington (Richard Vigilante Books 2010).

[101] Turner Review (n 43) 46-47.

[102] A Black, P Fraser and M Hoesli, 'House Prices, Fundamentals and Bubbles' (2006) 33 J Bus Fin and Acc 1535 who conclude (at 1535) that in the case of the UK housing market: "[D]eviations [from fundamental value] do not appear to be dominated solely by speculative activities with over-sensitivity to expectations regarding fundamentals also being a major driving force." As noted by a senior UK economist at the time: "Many British people seem to believe that it is somehow inevitable that house prices rise by 10pc, 15pc or 20pc every year … GDP rises, on average, at 2pc to 3pc per year, as do real average earnings. Add 2pc to 3pc inflation to that and you have a good starting point for what you should expect for the progress of most money values over time - 4pc to 6pc per annum. So why should house prices rise by 10pc plus, year after year? ... As with other bubbles, prices went up much further than was justifiable on the economic fundamentals, as the experience of past price rises caused the expectation of further price rises, and as mortgage money became more freely available on extremely attractive terms ..." See R Bootle, 'House prices could fall back a long way after their excessive rises' Telegraph, London (14 July 2008) <http://www.telegraph.co.uk/finance/comment/rogerbootle/2793170/House-prices-could-fall-back-a-long-way-after-their-excessive-rises.html>.

[103] Igan and Loungani hold that the amplitude of economic (housing) cycles (of which the U.K. has the most pronounced in the G-7 group of advanced nations) are determined to a large degree by "the ease with which households can access mortgage credit…If mortgage markets provide opportunities to exploit increases in collateral values more easily, the financial accelerator effect is larger." See D Igan and P Loungani, 'Global Housing Cycles' IMF Working Paper 12/217 (August 2012) 21.

prices will continue to rise. If one examines the individual bank failures in the U.K. during the GFC, all were attributable to some degree to excessive optimism concerning property markets. In the case of RBS, for example, its difficulties derived mostly not from investment banking, but from traditional retail lending.[104] Similarly, Northern Rock's losses resulted mainly from it ratcheting up its residential mortgage loans (lending the most in its history in the first half of 2007), gambling on increasing residential home values.[105] HBOS suffered huge losses on its commercial real estate portfolio.[106] Bradford and Bingley's[107] failure and the near-collapse of the Co-Op bank[108] were also driven by significant increases in retail mortgage lending, with little-to-no role in causing losses for complex investment products.

Based on these observations, it is surely inconceivable that amongst such a spectrum of lenders, each of which suffered large losses on its retail loan book, optimism about future real estate values did not dominate. Moreover, the data cannot be easily reconciled with a theory of flawed incentives. Instead, mortgage borrowers, lenders, MBS securitisers and investors, each appear to have consistently underestimated the likelihood of a property crash. On this basis, one authoritative study concludes that: "analysts generally understood that falling prices would have disastrous consequences but assigned that outcome a low probability ... Our bottom line is that the problem largely had to do with expectations about home prices."[109]

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[104] According to the FSA, "[s]ignificant loan losses were subsequently suffered in many areas of business, with a particular concentration in commercial property. Indeed, impairments incurred on loans and advances eventually amounted to £32.5bn over the period 2007–10, significantly exceeding the £17.7bn of losses on credit trading activities." See FSA, The failure of the Royal Bank of Scotland – Financial Services Authority Board Report (December 2011).

[105] House of Commons Treasury Committee, 'The run on the Rock' Fifth Report of Session 2007–08: HC 56–I, 24 January 2008.

[106] Parliamentary Commission on Banking Standards, ''An accident waiting to happen': The failure of HBOS' Fourth Report of Session 2012-13, HL Paper 144; HC 705, 7 March 2013.

[107] Bradford & Bingley (B&B) expanded its loan growth aggressively in the run-up to 2007, especially in buy-to-let and self-certification mortgages. According to Policy Exchange, "B&B was a story of a business which expanded its loan book aggressively by organic means, moving further and further up the risk curve in the belief that house prices would continue to rise…" See J Barty, 'Ringfencing UK Banks: More of a problem than a solution' Policy Exchange Paper (2013) 38.

[108] The problems at the Co-Op were caused to some degree by its acquisition of specialist mortgage lender, the Britannia. For example, 75 per cent of 2012 non-core loan loss impairments in the Co-Op bank related to Britannia-originated assets. See A Bailey, Deputy Governor of the PRA, Letter to Andrew Tyrie, Chair of UK Treasury Select Committee, 10 September 2013.

[109] Gerardi and others (n 98) 69-70.

Tackling bubble-investing

According to the analysis above, the failure of investors to correctly price risks in asset markets – especially those experiencing boom-like conditions – places hard limits on the ability of process-focused regulation to maintain financial stability. Whilst the explicit function of securitisation regulation is not to tackle asset bubbles per se, the omission of the SR to address the possibility of impacts on real estate from STS securitisations may be costly to financial stability, based upon the contribution of securitisation to lending booms.

Take the case, again, of mandating risk retention in securitisation (or other forms of financing) as a primary risk management tool. Under the assumption (of this article) that a preponderance of market participants, including lenders and borrowers, in a bubble responds in the same way – with over-optimism – risk retention requirements will not guard against over-lending to property markets. For example, even if mortgage lending standards dropped in the run-up to the crisis, and originators were reaching ever lower down the credit spectrum as the boom evolved, it is established that mortgage securitisers were aware of these deteriorations.[110] If securitisers were parcelling off all mortgage risks from their portfolios to outside investors, then this could be interpreted as consistent with the moral hazard argument. But as discussed above, securitisers retained huge portions of MBS on their own balance sheets, or in remote SPVs to which they provided guarantees. This behaviour is difficult to reconcile with the moral hazard/poor incentives explanation(s).

When framed in this way, the analysis reveals that lenders themselves may underestimate the risk of failure – a classic facet of the bubble process. Importantly, the proposed SR fails to pay any heed to this perspective. In turn, this has produced gaps in regulatory analysis and reduced the utility of some recommended mechanisms to regulate securitisation, particularly risk retention. Mandating the retention of large slices of mortgage risk in large financial institutions in all probability will not

[110] Y Demyanyk and O Van Hemert, 'Understanding the Subprime Mortgage Crisis' (2011) 24 Rev Fin Stud 1848.

cure systemic risk, but simply amplify it.[111] One of the extolled benefits of securitisation is to diversify risk away from financial institutions; rather than loans staying on the books of a few large originators, credit risks may be spread across a wider pool of investors. Paradoxically however, the risk retention requirements under the SR are likely to concentrate mortgage risk in the financial system on the balance sheets of large mortgage originators and large securitisers.[112] This critique may to a lesser degree also be applied to such mechanisms as increased transparency requirements, heightened disclosure or the use of credit ratings agencies. As with the risk retention requirement, each of these measures proceeds from the same premise: that investors need to be protected in the securitisation process from the distorted incentives securitisers face;[113] thereby marginalising the significance of other risks from securitisation, particularly the credit expansion it facilitates.

Thankfully, a good deal of recent research recognises the problem that securitisation of loans creates in widening the lending channel and the consequent effects on the housing cycle.[114] Securitisation results in lower borrowing costs for originators and removes financial frictions, allowing institutions to fund new debt more quickly.[115] The existence of a liquid secondary market for

[111] As noted by Turner: "It was argued that securitised credit intermediation could reduce risks for the whole banking system, since while some of the credit risk would be held by the originating bank and some by other banks acting as investors, much would be passed through to end non-bank investors. Credit losses would therefore be less likely to produce banking system failure. But that is not what happened. Because when the music stopped … the majority of the holdings of the securitised credit, and the vast majority of the losses which arose, did not lie in the books of end investors intending to hold the assets to maturity, but on the books of highly leveraged banks and banklike institutions. The new model left most of the risk still somewhere on the balance sheets of banks and bank-like institutions but in a much more complex and less transparent fashion." See Adair Turner, The Economist's Inaugural City Lecture, 21 January 2009.

[112] Bubb and Krishnamurthy (n 69) 1580-81.

[113] The Securitisation Regulation Proposal for example states that its aim is to: "restart a sustainable securitisation market that will improve the financing of the EU economy, while ensuring financial stability and investor protection." Whilst it has on the surface a dual mandate, "ensuring financial stability" is reducible to putting "in place a more risk-sensitive regulatory framework." In fact, the proposal implies lower capital requirements for the same volume of assets. This is, at best, financial stability-neutral. On the other hand, the majority of the amendments referred to in the Proposal are directed at heightened protection for investors in securitisation. See Proposal (n 13) 1.5.1.

[114] The Commission itself notes that: "Securitisations are an important constituent part of well-functioning financial markets insofar as they contribute to diversifying institutions' funding sources and releasing regulatory capital which can then be reallocated to support further lending..." See Proposal for a Regulation Of The European Parliament And Of The Council amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms Brussels, 30.9.2015 COM(2015) 473 final 2015/0225(COD) (1).

[115] Shin, amongst others, argues that the expansion in MBS issuance between 2002-2007 was a supply-side phenomenon, driven by financial institutions' appetite for new assets to use for shadow banking activities. Indicatively he argues that "the subprime crisis has its origin in the increased supply of loans – or equivalently, in the imperative to find new assets to fill the expanding balance sheets." See Shin (n 63) 331. See also VV Acharya, T Philippon, M Richardson, N Roubini, 'The Financial Crisis of 2007-2009: Causes and Remedies'

mortgages decreases the capital constraint on originators; banks which are able to sell the loans they originate may redeploy that capital immediately to fund new loans. Securitisation markets also increase liquidity by providing new funding sources outside the banking system. The tranching process creates highly-rated assets out of riskier loans, allowing institutions which are in general restricted by regulation to purchasing securities of investment-grade to channel pools of savings into different asset classes:

> In a traditional banking system that intermediates between retail depositors and ultimate borrowers, the total quantity of deposits represents the obligation of the banking system to creditors outside the banking system. However, securitisation opens up potentially new sources of funding for the banking system by tapping new creditors.[116]

These savings would normally be directed towards safer assets such as government debt but may instead find their way into asset-backed securities, including MBS.[117] As such, this may result in significant volumes of finance flowing into an asset market with relatively inelastic supply.[118]

This facet of securitisation was pronounced in relation to mortgage lending before the crisis. Each time banks sold bundles of loans via securitisation, the liquidity obtained allowed them much greater capacity to lend. These new loans could themselves be securitised, and so on, resulting in a large expansion in the credit multiplier, as the banking sector piled up new mortgage assets. Post-crisis research by Loutskina shows that banks' holding of liquid assets declined by over 7 percent in the period 1976-2007. She isolates the effects of securitisation on this contraction, and finds it is equivalent to roughly 69% of bank capital. In other words, the shrinkage in liquid assets indicates a comparable increase in loans. Securitisation therefore increases the relative supply of loans per unit of capital.[119] On this basis, other research shows that, when isolated, the effects of securitisation pre-

(2009) 18 Fin Mark and Instr, 89; TD Nadauld and SM Sherlund, 'The Role of the Securitization Process in the Expansion of Subprime Credit' Federal Reserve Board Finance and Economics Discussion Series 28 (2009).
[116] Shin (n 63) 310.
[117] MK Brunnermeier, 'Deciphering the Liquidity and Credit Crunch 2007–2008' (2009) J Econ Perspect 77.
[118] Dell'Ariccia and others (n 17).
[119] E Loutskina, 'The role of securitization in bank liquidity and funding management' (2011) 100 J Fin Econ 663.

2006 in the U.S. contributed approximately 30 percent to the pre-GFC peak of mortgage debt.[120] Ohlrogge and Giesecke suggest that the rise in subprime mortgage lending was fuelled partially by the rapid increase in private mortgage securitisation.[121] There is also strong evidence of a similar effect in Spain, where extensive mortgage securitisation took place.[122]

Securitisation and capital regulation arbitrage

I turn now to the capital arbitrage dimension which may be feasible under the SR. I have already referred to the fact that when an institution securitises its assets and removes them from its balance sheet, it reduces its capital charge. This is a primary motivation for securitisation of assets. The SR, of course, is designed explicitly to provide preferential capital treatment for STS-eligible securitisations. However, the effects of the widening of the lending channel facilitated by securitisation are likely to be amplified by the fact that the proposed rules under the SR as currently conceived will allow additional capital regulation arbitrage. This secondary arbitrage opportunity is indirect, and is based upon the asset composition of the STS securitisations themselves. Arbitraging regulations is of course a fundamental functions of financial innovation[123], of which securitisation is a prime example. Yet, arbitrage may have financial stability consequences; in the case of capital arbitrage, particularly the additional lending capacity it affords banks. As I shall explain, this 'layering' of arbitrage opportunities, in common with the liquidity benefits from securitisation just discussed, presents a further incentive for banks to securitise their assets and thereby increase mortgage lending.

[120] Landvoigt (n 95).
[121] M Ohlrogge and K Giesecke, 'Securitization and the Growth of Subprime Mortgage Lending' 17 May 2016 available at: <https://stanford.app.box.com/s/bz36azhlen2sscu2pyx0irfa6s24bvpf>
[122] S Carbó-Valverde and FR Fernández, 'Markets and House Prices: Does Financial Instability Make the Difference?' Federal Reserve Board of Atlanta CenFIS Working Paper 10-02 (February 2010); S Carbó-Valverde, D Marqués-Ibáñez and FR Fernández, 'Securitization, Bank Lending and Credit Quality: The Case Of Spain' ECB Working Paper Series No 1329 (April 2011).
[123] F Partnoy, 'Financial Derivatives and the Costs of Regulatory Arbitrage' (1997) 22 J Corp Law 211.

The Mechanism

As detailed above, in order to be eligible for the STS-label, the securitisation in question must satisfy certain criteria. If the securitisation complies with these criteria, the capital requirement is reduced accordingly. The STS may be rated using any of the methodologies outlined earlier (the SA, ERBA or IRBA). It is to be expected that almost all of the largest banks, and certainly all of those in the UK, will adopt the IRBA approach to rating securitisations. Under the IRBA, the SR, as proposed, contains some safeguards to guard against imprudent lending and errors in risk modelling. It stipulates that a risk weight floor for all securitisation exposures of 15%, for all three approaches, except for senior positions in STS securitisations, which may be reduced to 10% in certain circumstances.[124] It also sets certain limits on individual exposures between institutions[125] and restricts use of the STS label where authorities can show that an STS has highly complex or risky features.[126]

Because the regulations exclude securitisations populated by heterogeneous assets from being designated STS, it is to be expected that future securitisations will become standardised in terms of asset type. The European Banking Authority (EBA) in 2015 recommended additional impositions on the definition of STS, so that credit risk could be further mitigated.[127] For example, following EBA advice, STS cannot be comprised of fully-guaranteed residential mortgage loans, and no STS assets may have a residual maturity of more than three years.[128] Beyond these restrictions however there is little in the IRBA to prevent the construction of wide asset portfolios from the same type of asset(s) but with radically different risk profiles. Through this, the STS instrument is open for use as an arbitrage device. The proposal, for example, is silent on the capital treatment of mortgages which do not comply with the criteria for standardised treatment under Basel III. Under Basel III, banks which

[124] Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms, Brussels, 30.9.2015 COM(2015) 473 final 2015/0225 (COD) Article 260.
[125] Id. Article 243(1)(b): "the aggregate exposure value of all exposures to a single obligor at ABCP programme level [must] not exceed 1% of the aggregate exposure value of all exposures within the ABCP programme."
[126] "Highly complex and risky features" in this context include: "non-standard" credit enhancements; pools of assets with high correlations due to exposures to particular sectors or regions; highly complex tranched loss allocations; and where repayment of securitisation positions is dependent on risk factors not incorporated in the risk models used. See id. 258(2)
[127] EBA Report On Qualifying Securitisation: Response to the Commission's Call For Advice Of January 2014 On Long-Term Financing.
[128] Proposal (n 13) Article 12.

use the Standardised Approach[129] to capital regulation must apply a minimum risk weight of 35% to retail mortgage exposures. However, a significant restriction on the weighting calculation is that any mortgage which exceeds 80% of the value of the secured property will be weighted at 75%, with this higher weighting applied to the excess of any mortgage over the 80% threshold.[130] If held on-balance sheet, therefore, higher loan-to-value (LTV) mortgages – at least under the SA to risk weighting – are capital intensive.

Yet these requirements do not apply to securitised assets under the SR. There is nothing to prevent banks from originating a larger proportion of higher-risk mortgages than they would absent the capacity to securitise them, because through the securitisation process, they may be combined with higher-quality mortgage loans to produce securities which will not require the same level of capital as a high-risk mortgage which remains on-balance sheet. There are just two substantive restrictions in the Proposal relating to MBS composition: (i) any residential mortgage exposure where the LTV is above 100% is excluded from qualifying as underlying assets under the STS label; and (ii) the average LTV of the underlying mortgage pools when aggregated must be equal to or less than 80%.[131] This will allow banks to combine mortgages of high-LTVs with those with lower LTVs and still take advantage of the preferential risk treatment available under the STS label.

The following example is instructive (for simplicity, I use the risk weights designated under the Basel III Standardised Approach applied to on-balance sheet residential mortgage-related exposures):

1. Assume a bank with a mortgage portfolio consisting of 10 individual mortgage assets of equal loan size. The total value of the portfolio is £1 million, comprised of the following: 5 mortgages with 50% LTV ratios, and 5 mortgages with 100% LTV ratios. Each mortgage loan therefore totals £100,000; however, the capital treatment

[129] I use this indicatively for, as discussed, large banks will use IRBA models. However, the internal modelling exercise will use similar assumptions (that mortgages with higher loan-to-values) will require more capital.
[130] So, for example, in the case of a 100 percent mortgage on a property valued at £100,000, the bank would have two assets: one mortgage loan of £80,000 weighted at 35 percent and a second mortgage loan of £20,000 weighted at 75 percent.
[131] Proposal (n 13) Article 243(2)(e) states that in the case of mortgages, "no loan in the pool of underlying exposures shall have a loan-to-value ratio higher than 100%."

differs due to the differing LTVs applied to each mortgage loan. Those loans with 50% equity attract a risk-weighted capital charge of 35%, resulting in a total capital requirement for the issuing bank for each individual mortgage of £2800 (£100,000 x 35% x 8%). The loans with 100% LTVs each attract higher capital requirements, thanks to the additional proportional capital requirement imposed by virtue of those LTVs being above the 80% ratio. This results in capital charge of £3440 per individual loan ((£80,000 x 35% x 8% = £2240) + (£20,000 x 75% x 8% = £1200)). On average, therefore, the capital required per individual loan across the portfolio is £2920 ((£2800 x 5) + (£3440 x 5) / 10).

2. If securitised, of course these loans would attract lower capital charges; this is a major function of securitisation.[132] Provided banks are able to construct securitisations which do not exceed the limitations on composition described above (so, with an aggregate LTV of 80% or less amongst the mortgage assets involved), these assets will be eligible for STS-treatment. In the example given above, the aggregate LTV is 75%. Accordingly, a STS-MBS could be constructed from the constituent elements described above. The total capital charge for senior traches of this STS could be as little as £8000 (depending upon the rating assigned) as opposed to £29200 (£2920 x 10) in the aggregate for on-balance sheet mortgage loans.

In other words, the STS instrument will allow banks to benefit not only from reduced capital charges for "good quality" assets, but in allowing those assets to be combined with lower quality exposures, the total capital requirement may be reduced accordingly.[133] This will not directly affect banks' capital requirements based on the securitisation instrument. However, it will incentivise them to issue a somewhat higher proportion of riskier assets at the outset by securitising them and combining them

[132] According the BCBS, capital requirements of senior securitisation exposures backed by good quality pools will be subject to risk weights as low as 10%. See BCBS (n 53).
[133] There were reports that the upcoming incarnation of the Basel Accord might apply risk weight floors to internal modelling for mortgages. However, it appears that these mooted reforms will not be implemented.

with less risky assets. In other words, not only does the SR provide for lower capital charges for STS-compliant securitisations (which is partly its function anyway) but it will allow banks to arbitrage the additional capital requirements reserved for the riskiest mortgages, provided that they the relevant MBS is structured in a way which qualifies it for a reduced capital charge.

The only safeguard in place to prevent combinations of this type becoming excessive is the ratings system (either internal- or external-based) which will determine the relevant risk-weighting. Both the Capital Requirements Regulation and Basel III Securitisation Framework[134] apply a spectrum of ratings to securitised products, known as credit quality steps.[135] Rating from credit rating agencies are also important elements in this process. Where MBS are comprised mainly of high-risk or high-LTV mortgages, this ought to be picked up during the ratings process, and the security be penalised as such with a higher risk-weighting, assuming rating methodologies are accurate. Yet, the lamentable performances of the ratings and risk-weighting processes prior to the GFC do not augur well for disciplining devices of this type; criticisms abound that they remain highly-flawed in particular, internal-modelling approaches (which will be used by the largest banks in the UK in determining capital requirements).[136] Moreover, of course, the 'magic' of securitisation is that highly-rated (in the vernacular 'triple-A') rated products may be created from lower-quality assets. The STS-criteria may be effective in preventing some of the more egregious structured-financing techniques of the pre-crisis period but STS securitisations will invariably be rated more highly in sum than their constituent parts.

Of course, even where this does not guarantee high ratings for some securitisations, the overall effect of the SR is bound to widen the lending channel. Assuming that the securitisation in practice assumes the features of the portfolio in the above example, but in MBS markets the structure

[134] BCBS (n 53).
[135] In this context, the credit quality of particular securities is broken down into 'steps' and assigned a rating, depending upon their composition.
[136] An authoritative OECD study has demonstrated that mega-banks across Europe and the UK continue even since the crisis to use their internal-ratings based approach to the Basel Accords to manage risk-weighted assets in a manner which allows them to comply with higher capital requirements with very small increases in their equity base (so-called 'risk-weight optimisation'). This has resulted in several large European banks operating with relatively low levels of common equity, despite being 'well-capitalized' in terms of Tier One risk-based capital. See A Blundell-Wignall and PE Atkinson 'Deleveraging, Traditional Versus Capital Markets Banking and the Urgent Need to Separate and Recapitalise G-SIFI Banks' (2012) 1 OECD J: Fin Mark Trends 1.

is replicated many times (in other words, the actual MBS comprises thousands, not tens, of mortgages) this will facilitate a much larger flow of finance available for investment in property markets. Whilst this may not place these securitisation themselves significantly more at risk of default (as noted previously, most EU securitisations did not default at all over the crisis period), by helping European banks to arbitrage Basel III capital regulations, it will potentially expand the credit supply channel. As noted above, this is not a theoretical argument; excessive securitisation pre-crisis was not dangerous simply because of the (allegedly) poor incentives embedded in the process but because it facilitated greater lending into a market prone to rapid and large losses in value. Lowering bank capital requirements indirectly through the STS mechanism thereby has the potential therefore to widen bank lending to property markets, which is likely to amplify the housing and mortgage cycles.

5. Ring-Fencing and the UK Mortgage Market

Previous sections have explained how housing bubbles may form, and have described the contribution securitisation may make to their formation. They have made clear that regulating securitisation from a process-focused perspective, exemplified by the STS instrument, will do little to assist in preventing their re-emergence. Yet, there is an additional reform due to be implemented in the UK which also has the potential to exacerbate real estate bubbles: ring-fencing. In this section, I analyse how ring-fencing legislation, which is due to be implemented fully in the UK in less than two years, is likely to exacerbate these concerns. Specifically, the structural changes made to the banking sector under the UK legislation, in combination with the adoption of some version of the SR, is likely to simultaneously widen the lending channel to property markets at the same time that banks become less diversified and position their balance sheets toward real estate lending. As this section will show, this is a trend which is already discernible in relation to the asset composition of the largest UK banks, which has the potential to add fuel to any fire in UK property markets. These observations, in light of the likely widening of the credit channel under the SR, may pose financial stability risks as mortgage lending becomes increasingly important to the business models of ring-fenced institutions. Further

regulation of mortgage provision may therefore be warranted; possible options are canvassed in the penultimate section.

Ring-Fencing

Conceptually, ring-fencing may be understood as "legally deconstructing a firm in order to more optimally reallocate and reduce risk."[137] In the context of banks, functionally ring-fencing serves three discrete purposes: to help a bank operate on a standalone basis; to preserve a bank's business and assets; and to limit a bank's risky activities and investments.[138] As discussed in the introduction, since the GFC, some jurisdictions have moved to forcibly separate the retail and investment components of resident universal banks. In the U.K., a version of separation was recommended by the Independent Commission on Banking (ICB)[139] and enacted under the Financial Services (Banking Reform) Act 2013.[140] Full compliance is required by the beginning of 2019.[141]

Whilst the Act stopped short of full separation and allows affected banks to remain part of the same corporate group, it requires "the ring-fencing of 'core' retail deposits from 'excluded' wholesale and investment banking activities."[142] In effect, any bank which accepts deposits and/or provides overdrafts to individuals and SMEs as part of its general business will be a ring-fenced bank (RFB). These provisions apply to entities with more than £25 billion in deposits. The legislation restricts the form of asset that RFBs will be able to hold (through a 'Prohibition Order') and proscribes a number of activities (through an 'Excluded Activities Order');[143] specifically, dealing in investments as principal, except in circumstances specified by the Treasury[144] and dealing in commodities.[145] RFBs are permitted to deal in securities and derivatives for limited risk management purposes (for example,

[137] SL Schwarcz 'Ring-Fencing' (2013) 87 South Cal Law Rev 69, 72.
[138] Id. 77-81.
[139] ICB (n 12).
[140] c.33.
[141] Bank of England, The implementation of ring-fencing: prudential requirements, intragroup arrangements and use of financial market infrastructures Policy Statement 20/16, 7 July 2016.
[142] HM Treasury, 'Banking reform: a new structure for stability and growth', Cm 8545 February 2013, 2.6.
[143] SI 2014/2080 The Financial Services and Markets Act 2000 (Excluded Activities and Prohibitions) Order 2014.
[144] Id. s.4
[145] Id. s.5

hedging)[146] and issue securitisations and covered bonds.[147] They are however prohibited, save for some exceptions (transactions arising from the provision of trade finance and transactions and/or from the payments system), from having exposures to other financial institutions outside their own corporate group, including non-ring-fenced banks, investment firms, systemic insurance firms and investment funds.[148] Amongst other things, these restrictions prevent RFBs from using wholesale finance for funding. RFBs are also prohibited from having any ownership rights or hold any capital instruments in an 'excluded activity entity' (EAEs) (subject to exceptions detailed by the PRA).[149]

The stated public aim of these requirements is to "reach a position in which a failing bank, whatever side of the ring-fence it may be, can be resolved without risk to financial stability or to public funds."[150] In particular, the ring-fence is deemed desirable because "[a] guarantee, whether implicit or explicit, distorts incentives of managers and creditors, encouraging them to pursue excessive risk and leverage [and] distorts competition, and the allocation of resources, away from smaller banks to those large enough to be regarded as systemic."[151] The legislation recognises that because banks perform critical utility functions, parts of their operations must be preserved in the event of insolvency; however, the conditions under which the state/taxpayer will be permitted to support essential parts of the relevant institution have been constrained to a bare minimum. No support for non-ring-fenced entities will be offered by the state/taxpayer in the event of their distress. The deposit-guarantee system will continue for deposit-taking institutions, as will lender-of-last-resort facilities. RFBs must comply with prudential requirements on a standalone basis as well as any related entities (excluding EAEs); a so-called RFB sub-group. This is designed to ensure RFBs have sufficient resources to meet capital requirements associated with the risks of its RFB sub-group without relying on other group entities outside the sub-group, in particular EAEs. Intra-group

[146] Id. s.6.
[147] Id. s.7.
[148] Id. s.13.
[149] Prudential Regulation Authority, The implementation of ring-fencing: prudential requirements, intragroup arrangements and use of financial market infrastructures Policy Statement PS20/16, July 2016.
[150] Id.
[151] First Report of The Parliamentary Commission on Banking Standards, Volume I: Report, together with formal minutes, HL Paper 98, HC 848, 21 December 2012, para. 104.

exposures between RFBs (and its subgroup) and the EAEs are regarded equivalently to third party exposures in the context of risk and capital.

Likely Consequences of the ring-fence

As enunciated, the main benefit of ring-fencing is a reduction in the potential for contagion between the retail and investment arms of financial institutions. This in turn, in theory will reduce market panic in the event of the insolvency or financial distress of a non-RFB. A further benefit is the fact that ring-fencing results in modularity which, in some circumstances strengthens systemic resilience.[152] In the case of the financial system, which is characterised by high complexity, reforming its constituent parts to make them less interconnected and less opaque may reduce the adverse consequences from failure in one part of the system. Decoupling institutions comprising the system by ring-fencing certain systemically important banks from the riskiest activities of other institutions in theory therefore protects that system.[153]

Yet, there are also likely to be significant financial stability costs attached to ring-fencing, even to modularity. In particular, the lack of diversification opportunities available to RFBs presents significant concerns, as the likely result is a homogenised banking system, populated by institutions with few economies of scope, holding extremely similar asset portfolios. Moreover, because capital to fund lending will be more scarce by virtue of the separation, banks will need to manoeuvre their balance sheets to focus on products which are not resource-intensive. In the U.K., this is highly likely to result in RFBs concentrating to an even greater degree on mortgage lending[154]; as I have noted, SME lending and consumer lending require large capital and liquidity commitments in comparison to retail mortgage exposures – even under internal risk modelling.

With prescriptive prohibitions placed on the sort of investments that retail banks may make, senior executives in these institutions will accordingly have little choice in portfolio assembly. Faced

[152] Schwarcz (n 137) 96-97.
[153] AG Haldane, 'The $100 billion Question', Comments given at the Institute of Regulation & Risk, Hong Kong, 30 March 2010.
[154] Goodhart (n 19).

with a choice of investing in risky, capital-intensive lending and mortgage assets with much lower aggregate capital requirements, it is to be expected that management of RFBs will have strong incentives to favour the latter: RFBs are likely to have narrow opportunities to increase return-on-equity, and booming housing markets provide avenues for investment which shareholders and managers of RFBs will find extremely difficult to resist.[155] Moreover, the incentives for additional lending to capture profits will be extremely significant in RFBs, which are limited in their investment scope. Another alternative may be to take greater risks in relation to activities which are placed inside the fence, including mortgages.[156] Other options for RFBs include commercial property lending; yet this is "[h]istorically the most perilous part, for banks, of the property market"[157] and the ring-fencing legislation does nothing to distinguish this from residential property finance.

Accordingly, in the case of the U.K., as noted earlier, the most likely consequence is that the largest banks come to act as little more than monolines focused almost exclusively on mortgage lending. The capacity of banks to securitise mortgage exposures under the SR will allow banks to lend in greater volumes to property markets, thanks to the aforementioned capital and liquidity benefits generated by securitisation.[158] Moreover, if all large banks are exposed to the property cycle, the

[155] The Institute of Economic Affairs (IEA) in the UK argues that: "Many of the banks that failed were largely or entirely retail operations, including Northern Rock, Bradford and Bingley, and Lloyds/Halifax Bank of Scotland. Indeed, this pattern has been characteristic of numerous economic crises, with institutions focusing on mortgage lending particularly vulnerable to collapse. By contrast, institutions that combine retail and investment arms may be better able to diversify risk. Losses resulting from a collapsing property market might be balanced by gains in other asset classes for example." See R Wellings, 'Plan to ring-fence banks misguided' 6 February 2013 <https://iea.org.uk/blog/plan-to-ring-fence-banks-misguided>. As noted by Policy Exchange, "During the crisis, UK banks of all sizes failed, regardless of whether they had investment bank businesses or not. Among the long list of other failures in UK, including HBOS, Northern Rock, Bradford and Bingley and of course most recently the Co-Op bank, not one of them had any investment banking activity of note…It is a fallacy to suggest that RBS was brought down by its investment banking activities. RBS' loan losses were almost twice those it suffered on its credit trading business. Its trading losses could have been readily absorbed by its available capital." See J Barty, 'Ringfencing UK Banks: More of a problem than a solution' Policy Exchange Paper (2013) 5.

[156] Acharya notes: "[R]ing-fencing in and of itself is not a panacea. In particular, banks may be encouraged to take greater risks with activities that are inside the fence, such as mortgages, corporate loans, and personal loans." See VV Acharya, 'Ring-fencing is good, but no panacea' 25 October 2011 ,http://voxeu.org/article/ring-fencing-good-no-panacea..

[157] Goodhart (n 19) 33.

[158] Placing a barrier between retail and investment bank activities may also not reduce the risks associated with the interaction between those activities in the presence of securitisation. Because the so-called "investment bank" divisions of large universal banks are likely to remain in the market for wholesale banking, they will almost certainly wish to acquire securitisations to be used as collateral for money market activities or for access to central bank liquidity facilities, something which the SR will incentivise RFBs to undertake, if only to be sold to be used as collateral, thereby adding to profits at the group level.

system will arguably become even more prone to systemic collapse. Indeed, the UK has experienced comparatively more volatile housing cycles than any other advanced nation[159]; this makes it likely that RFBs will be heavily exposed to future crises with little way of hedging their exposures. The following section provides new data on current trends in the U.K. housing and mortgage markets and explains how the spectre of ring-fencing has appeared to accentuate recent trends in retail mortgage lending, which has increased as a share of bank asset portfolios. These trends are arguably indicative of future developments, particularly in light of the SR.

The UK Housing & Mortgage Markets

Following deep price drops following the GFC, house prices in the UK have rebounded considerably and in some regions now stand at record levels. Arguably the most significant factor in this recovery has been that the supply of mortgages has remained sufficiently strong – despite the banking crisis – to prevent concerted and widespread drops in values. Mortgage supply has been maintained largely through the actions of the UK monetary authorities, including the setting (and maintenance) of historically low interest rates, and government-sponsored mortgage guarantee programmes.[160]

Currently, the four largest financial institutions in the UK account for between 70 and 80% of the retail banking market, depending upon the measure used.[161] Admittedly, in relation to mortgage financing, the picture currently is less concentrated. The UK's largest banks accounted for 55% of all new mortgage lending in 2015, although they accounted for 60% of all outstanding mortgage assets.[162] Total mortgage assets at UK banks (including lending for commercial real estate) comprise

[159] IMF, 'United Kingdom: Selected Issues' IMF Country Report No.14/234 (July 2014) 8.
[160] See n 18.
[161] The four largest UK banks as of 2014 were: HSBC, Barclays, RBS and Lloyds BG. Between them, they accounted for: 70% of UK current accounts; 80% of UK business accounts; 80% of SME loans; 80% of invoice finance; 87% of business credit cards. See Competition and Markets Authority, Retail banking market investigation: Summary of provisional findings report (22 October 2015).
[162] Council of Mortgage Lenders data, available at https://www.cml.org.uk/news/news-and-views/challenger-banks-and-specialist-lenders-showed-strongest-growth/.

approximately 79% of bank balance sheets.[163] This concentration of lending has been part of a wider trend in bank lending which started in the mid-1980s, as displayed in the following chart:

INSERT CHART 1 HERE

A good proportion of the aggregate balance sheet evolution is consistent with lower credit origination to businesses. Between 2009 and 2012, for example, net loans to businesses from UK banks dropped by 3.9% in 2009, 2.1% in 2010, 0.8% in 2011, and 1.5% in 2012[164] resulting in a significant compound drop in commercial bank loans. The SR of course is supposed to assist banks in providing finance to SMEs and other companies but, as I have explained, mortgage lending is generally more attractive to them. Further, SME loan securitisations are simply not attractive to investors; without demand, it is unlikely that banks will increase supply. SME loan securitisation in the US, for example, is virtually non-existent, despite securitisation markets being much less stigmatised and more active than in the UK and EU.[165]

As demonstrated in the following charts, the trend for mortgage lending is clear, with lending increasing year-on-year since the GFC. As shown in Chart 2, gross lending volumes continue to increase. Chart 3 shows that net monthly mortgage lending is now approaching levels seen in 2002,

[163] Adair Turner, Between Debt and the Devil: Money, Credit and Fixing Global Finance (Princeton Univeristy Press 2016) 63.
[164] Data from Bank of England, 'Trends in Lending' 2009-2012.
[165] According to Darvas: "Securitisation of SME loans and their placement with private investors can help offload …loans from bank balance sheets, thereby providing room for more lending. But this market is not functioning at the moment: while securitisation of SME loans is already reasonably widespread in Italy and Spain, but almost none of the recent securitisations were placed with market investors; instead, they were retained by the originator banks and used for repo refinancing with the ECB. Most likely, the risk/return/liquidity characteristics of such securities are not attractive to investors." See Z Darvas, 'Banking system soundness is the key to more SME financing' European Parliament Directorate General for Internal Policies Policy Department A: Economic And Scientific Policy (July 2013) 6.

which marked the beginning of the previous mortgage boom; indeed, in 2016 it approached the highest levels since 2008.[166]

INSERT CHART 2 HERE

INSERT CHART 3 HERE

If the view that banks are positioning their activities in a way to cope with the ring-fence, and in particular increased significance of mortgage lending, one would expect to find that mortgage issuance as a proportion of their aggregated activities would increase. Indeed, it seems that mortgage origination is becoming steadily more important to banks as a proportion of their gross lending levels. The following chart shows that large UK banks' mortgage books are steadily becoming larger as a proportion of total bank balance sheets with a clear trend emerging between 2007 and 2016.[167] Only Lloyds BG appears to have bucked the trend in this chart, although the recent drop in the share of mortgages on its books may be explained by the sale of the TSB brand, which was heavily concentrated in mortgages[168]:

INSERT CHART 4 HERE

[166] Commenting on this acceleration, the Bank of England noted in November 2016 that: "The annual growth rate of mortgage lending was 3.2%...This…was higher than at any other time since the end of 2008." See Bank of England, Financial Stability Report, November 2016, Issue No. 40, 16. According to the Council of Mortgage Lenders, there was a 30% increase in net lending between 2014 and 2015. See Council of Mortgage Lenders, Gross mortgage lending £17.6 billion in February, 17 March 2016 <https://www.cml.org.uk/news/press-releases/gross-mortgage-lending-176-billion-in-february/>. See also, Press Association, Mortgage demand at two-year high, Telegraph, 29 February 2016 <http://www.telegraph.co.uk/personal-banking/mortgages/mortgage-demand-at-two-year-high/>.

[167] It must be noted that the calculations in this chart are based on banks' total balance sheet activities, not solely on their retail lending. This is why the figures in this chart differ from those based on the proportions of commercial bank assets comprised of mortgages cited above.

[168] The EU Commission required Lloyds Banking Group to sell the TSB brand in a 2009 ruling on state aid. TSB was floated on the stock exchange in June 2014 before being taken over by the financial group Sabadell in July 2015.

The charts above demonstrate that underlying bank lending, both at individual banks and at the systemic level appears to be trending towards greater gross lending into the mortgage markets, even before mandatory ring-fencing, or liberalisation of the securitisation markets via the STS label.[169] This is a trend which ring-fencing retail banks and allowing them to securitise its assets is likely to exacerbate. What makes things worse in the case of the UK is that housing stock in is quite inelastic and thus unable to push prices down through substantially increased supply. Therefore, the pressing question of the day is whether regulation could avert any looming financial stability risk, taking also into account the state and composition of demand in the real estate market, and impending structural changes in the banking system. The next section surveys possible regulatory options.

6. Macroprudential Regulatory Instruments and Housing Markets: The UK Approach

Having analysed the lending trends above, I now turn to the instruments available to regulators to address them. Tackling mortgage growth was traditionally achieved through interest rate policy. However, ultra-loose monetary policy has blunted its effectiveness. Moreover, in the case of securitisation, as it increases the spectrum of funding sources, interest rate changes are not as effective on the lending activities of banks which securitise significant proportions of their loans. The interest-rate tool may therefore be ineffective on constraining lending, especially in housing markets.[170] Accordingly, many regulatory authorities now rely on various macroprudential policies ('macropru') instead.

Real estate markets are of course often at the epicentre of financial stability shocks and in this context, macropru is designed with the principal aim of limiting the damage caused by mortgage defaults. This may be achieved through three main channels: lowering lenders' losses; increasing

[169] A recent survey of 49 EU experts in finance found that 61% believe that an increase in household mortgage lending is a risk to financial stability. See FESSUD, 'Foresight – The Future of Finance' Working Paper 11 Infographics (November 2016).
[170] Loutskina (n 119).

banks' capital ex ante so they may withstand losses from mortgage defaults; and preventing busts from quickly morphing into booms by limiting the effects of policies designed to support house prices following a bust from contributing to excessive price rises in the future.[171] The specific measures used to achieve this usually take the form of: (i) higher bank capital and liquidity ratios applied to banks; and (ii) limits on loan-to-value and debt-to-income (DTI) ratios in mortgage loans. For reasons which shall now be explained, relying on the latter basket of mechanisms – particularly LTV limits – arguably holds the most promise for reducing the incidence and magnitude of real estate bubbles. The use of macroprudential measures in combination is also more effective than employment of a single tool.[172] Perhaps surprisingly, LTV limits are currently the only measure which has not yet been adopted in the UK by the central bank as a macroprudential instrument. Yet, in light of the SR proposal, further measures may be required in the UK if new RFBs do, as is likely, evolve to become almost exclusively focused on mortgage lending.

(i) Capital & Liquidity Regulation

Increasing bank capital requirements and introducing binding liquidity ratios have been at the forefront of global initiatives to make the financial system more resilient to shocks. The UK adheres to the recommendations of the Basel Committee, and remains bound by European legislation, particularly CRD IV. Higher capital requirements make bank failures less likely by requiring a capital buffer to absorb losses, and make runs less likely by reducing the reliance of the bank on deposit financing. In turn, liquidity restrictions force banks to hold a relatively high proportion of liquid assets and prevent them from relying on wholesale finance (something which RFBs will be prevented from doing in any case).

[171] As discussed above, retail mortgage lending attracts a risk-weighting of 35 percent under Basel III, unchanged from Basel II. Yet, large banks remain able to calculate their risk-weighted assets for capital levels internally under the Advanced-IRB approach. Requirements for some mortgages may be reduced from the 35% under the standardised approach; average mortgage risk weights in Europe are just 14%. See V Le Leslé and S Avramova, 'Revisiting Risk-Weighted Assets: Why Do RWAs Differ Across Countries and What Can Be Done About It?' IMF Working Paper WP12/90 (2012).
[172] IMF (n 159) 36.

There is not space in this article for an exhaustive discussion of bank capital and liquidity regulation, although it is instructive to highlight some of their inherent weaknesses in targeting mortgage lending. The limitations of capital and liquidity regulations are well-known, particularly the procyclicality of such measures. In the early stages of economic expansion, virtually all assets pay off and banks are able to book capital gains based on (today's) high asset prices. In contrast, during a downturn banks will be forced to securitise mortgages to a greater extent in order to comply with capital regulations and in the process, exacerbate the fire sale loop. On this basis, capital regulation, based on risk-weighting, is highly procyclical. Thus, it is unclear to what extent increased capital ratios would act as a risk restraint in the case of securitised lending.[173] The extent to which capital regulations may be gamed by large financial institutions also remains a concern,[174] especially as tinkering with mortgage risk-weights does little to dampen credit and house-price growth.[175] Moreover, whilst counterparty exposure limits are included in revisions to Basel III, in calculating default risk, the risk weighting system does not take into account the fact that institutions may be exposed to an entire market – such as the housing market – in determining capital requirements. Not punishing portfolio invariance is therefore a very important concern when bank lending is concentrated without breaching large exposure limits, and may become even more concerning once ring-fencing is introduced.[176]

As with capital regulation, there are issues with liquidity ratios, which are very procyclical. If, in bad times, liquidity regulation becomes binding banks will aim to securitise even more of their assets (being more liquid), which will add to any firesales in a downturn. Thus, where a liquidity ratio

[173] This is perhaps why Basel regulators have refrained from introducing internal risk-weight floors for mortgages, which would penalise banks' holdings of lower-risk mortgages. There are however proposals in the UK to limit some assumptions used in banks' internal modelling. For example, the data used to estimate probability of default (PDs) in many internal models are based upon very short, recent episodes (often no longer than a year), and the assumptions underlying loss-given default (LGD) are also often very inconsistent across banks' models. The PRA has therefore proposed for more standardisation in these risk models. See Bank of England, 'Residential mortgage risk weights' Consultation Paper CP29/16 (July 2016).

[174] A Blundell-Wignall and PE Atkinson, 'Thinking beyond Basel III: Necessary Solutions for Capital and Liquidity' (2010) 1 OECD J: Fin Mark Trends 9.

[175] IMF (n 159) 35.

[176] As noted in the context of macroprudential regulation: "Basel-style rules forces market participants to make more similar portfolio decisions, thus making them more procyclical." See J Danielsson, R Macrae, D Tsomocos, JP Zigrand, 'Why macropru can end up being procyclical', 15 December 2016, <http://voxeu.org/article/why-macropru-can-end-being-procyclical>.

is binding in a good state where asset values are high, it would become even more binding in a bad state when asset values have dropped. Counterintuitively therefore securitisation increases liquidity risk.

(ii) Loan-to-value, loan-to-income and debt-to-income limits

Because of the limits of capital and liquidity regulations, particularly in targeting mortgage lending growth without creating distortions elsewhere, authorities could choose instead to use LTV limits or LTI/DTI ratios in order to contain mortgage credit expansion; international evidence points to strong effects from targeted housing instruments on mortgage growth and house price rises.[177] Many countries now use LTV and LTI/DTI ratios either in isolation or in combination.[178] LTV ratios are akin to leverage restrictions, which limit the amount of debt a borrower may assume for an asset purchase.[179] These limits guard against both unexpected shocks to income and interest rates, and the underestimation of the severity of tail risks. Limits on high LTV lending reduce potential losses in net worth for households for a given fall in nominal house prices.[180] In terms of the banking channel, lower LTV ratios force mortgage borrowers to absorb a greater slice of the losses from a real estate value collapse, so that banks' defaults are much lower than absent the LTV restriction. Moreover, they slow mortgage growth by requiring that house purchases are funded with equity (which requires building), rather than through credit. Looser credit terms, as noted above, are a hallmark of house price bubbles. Amongst advanced economies, LTV limits have been used with significant success in

[177] C Lim, F Columba, A Costa, P Kongsamut, A Otani, M Saiyid, T Wezel and X Wu 'Macroprudential policy: what instruments and how to use them? Lessons from country experiences' IMF Working Paper No. 11/238 (2011).

[178] Hong Kong and Korea both suffered house price collapses in the early 2000s. Each now uses a combination of LTV and LTI. See Bank of England, 'The Financial Policy Committee's powers over housing tools: A Policy Statement' (July 2015). Canada prohibits any mortgage which exceeds an LTV ratio of 80%.

[179] A simple example of an LTV limit might be: regulators could limit the proportion of mortgages (or prohibit mortgage products) permissible with LTVs of greater than 80%. So, for a £200,000 home purchase, a home buyer would require a deposit of £40,000.

[180] See A Benito, 'How does the down-payment constraint affect the UK housing market?' Bank of England Working Paper No 294 (March 2006). Benito finds that "a large incidence of households with high levels of leverage (loan to value ratios) raises the sensitivity of house prices to a shock."

moderating housing booms.[181] IMF research shows that LTV ratios slow mortgage credit growth by 0.8 percent and house price inflation by 1.9 percent.[182]

LTI limits restrict borrowers from obtaining mortgages which exceed a given multiple of their income. DTI limits on loans prevent borrowers from obtaining mortgages under which repayments exceed a given amount of their income per month. In this way, DTIs target households, rather than lenders. However, DTI limits are more susceptible to gaming than LTI, because by lengthening a mortgage terms, monthly repayments may drop substantially.[183] This not only allows higher lending to take place but also increases the maturity mismatch between banks' funding and lending, giving rise to liquidity risks. Despite this, the IMF finds that DTI limits may be potent tools with which to moderate mortgage markets, with DTI limits restricting mortgage credit growth by 1.4 percent and house price inflation by 1.8 percent.[184] Accordingly, DTI limits are almost as effective as LTV limits in slowing house prices.[185]

Ex ante LTV limits in combination with LTI/DTI limits therefore appear to hold considerable promise for reducing the incidence of housing bubbles which, as noted, are the greatest threat to financial stability and economic growth.[186] These tools may, of course, also be useful in tackling the self-reinforcing feedback effects in housing markets, referred to earlier in the article, where valuation increases induce higher supply and demand for credit, which themselves trigger further value increases. Expectations of future price increases are key mechanisms of this channel. Where LTV or LTI limits constrain mortgage lending in the upswing of the cycle, this is likely to affect expectations concerning future house prices and increasing the potency of the macroprudential tools. Because the

[181] Singapore, Hong Kong, Ireland, New Zealand and areas of Canada each use variants of LTV limits.
[182] IMF (n 159) 35.
[183] 30 or 35 year-mortgage terms are becoming increasingly common in the UK, which are a way of reducing monthly payments due under a mortgage agreement. Approximately 15 percent of new mortgages in 2016 were 35 year terms, with another 35% of mortgages at terms between 30 and 35 years. See Bank of England, Financial Stability Report (November 2016) Issue No. 40, Chart F, 23. Borrowers are thus to some extent arbitraging the macroprudential restrictions.
[184] IMF (n 159) 36. See also R Baptista, JD Farmer, M Hinterschweiger, K Low, D Tang and A Uluc, 'Macroprudential policy in an agent-based model of the UK housing market' Bank of England Staff Working Paper 619 (2016).
[185] KM Kuttner and I Shim 'Can Non-Interest Rate Policies Stabilize Housing Markets? Evidence from a Panel of 57 Economies' BIS Working Paper 433 (2013).
[186] See MK Brunnermeier, A Crockett, CAE Goodhart, AD Persaud and HS Shin 'The Fundamental Principles of Financial Regulation' Geneva Reports on the World Economy 11 (June 2009).

housing wealth of mortgage borrowers increases by more than a one-to-one basis as house prices rise[187] loose mortgage finance term can allow house prices to move away significantly from income relations over the medium-term. LTV and LTIs can be effective in moderating these amplification risks. House prices may also be affected by equity withdrawals, which are facilitated even where incomes do not change provided lenders expect future house price increases.[188]

In the UK, the Bank of England has recommended the implementation of LTI and DTI limits,[189] largely in response to data in 2014 which suggested that mortgage underwriting standards were loosening.[190] Under the Bank's provisions, high loan-to-income mortgages (designated at loans which equal or exceed 4½ times borrower income) at large UK mortgage originators[191] may not comprise more than 15% of their mortgage books over two consecutive quarters.[192] The Bank also imposes DTI affordability checks on borrowers, requiring lenders to assess borrower's additional credit commitments and other regular payments, as well as the LTI obligation under the mortgage contract, in assessing a mortgage. In contrast, whilst the Bank of England has consulted on LTV limits and has powers to use them, it has not implemented them.[193] This is perhaps curious given the empirical evidence on their effectiveness, and on the susceptibility of high-LTV mortgages to default. Many countries have used LTV limits successfully in order to control real estate lending booms.[194] In

[187] For example, if a mortgagor borrows 90% of the value of a house, a 10% increase in the value of the house doubles their equity holding.
[188] One study shows that U.S. homeowners borrowed 25 cents for every dollar gain in home equity between 2002 and 2006. See A Mian and A Sufi 'House prices, home equity-based borrowing, and the US household leverage crisis' (2011) 101 Am Econ Rev 2132.
[189] Under the Bank of England Act 1998, the Financial Policy Committee of the Bank may make "Recommendations" or "Directions." Recommendations can be issued to anybody, including to the PRA and FCA. It can also give Directions to those regulators to implement a specific measure to further the FPC's objectives. See Prudential Regulation Authority, *Implementing the Financial Policy Committee's* recommendation on loan to income ratios in mortgage lending Policy Statement PS9/14 (2014).
[190] 2014 estimates showed that around 40% of new mortgages were at LTI ratios of at least 3.5, 25% at were at LTI ratios of at least 4, and 10% were at LTI ratios of at least 4.5. See Mark Carney, Speech given by the Governor of the Bank of England at the Lord Mayor's Banquet for Bankers and Merchants of the City of London at the Mansion House, London, 12 June 2014, 7.
[191] Lenders who issue less than £100 million of mortgages per month or less than 300 mortgage contracts per month are excluded.
[192] PRA 2014/24, PRA Rulebook: Housing Instrument 2014. Some buy-to-let restrictions were also introduced; see PRA, 'Underwriting standards for buy-to-let mortgage contracts' Supervisory Statement SS13/16 (September 2016).
[193] In fact, one of the UK's largest mortgage lenders in 2016 reintroduced 100 percent LTV mortgages for the first time since the GFC. See E Dunkley 'Barclays launches first 100% mortgages since crisis' Financial Times, May 4 2016 <https://www.ft.com/content/4ff23b54-113f-11e6-839f-2922947098f0>
[194] IMF, Global Financial Stability Report, 129 (2011).

the UK, high LTV mortgages have much higher default rates than those with lower LTVs, with a one percentage point increase in LTV leading to a one percent increase in the probability of default.[195] Loans with LTVs of 90% or above are four times more likely to be in arrears than those below, and high LTVs are a strong predictor of mortgage default.[196] In contrast, data from the UK shows LTI ratios are not a strong or consistent predictor of default,[197] which is consistent with findings from the U.S. market.[198]

These results indicate that placing direct limits on banks' capacity to lend for mortgages, and borrowers' ability to obtain financing, are the optimal ways to reduce the erosion of mortgage underwriting standards characteristic of mortgage finance booms. In turn, this ought to reduce the frequency and size of real estate bubbles. As noted above, the procyclicality of capital and liquidity regulation – despite the new tools afforded to regulators to counteract credit booms – may not overcome the collective over-optimism which normally accompanies housing booms. Further, in light of the arbitrage opportunities presented by the SR, discussed above, invoking LTV ratios in the UK may become a pressing requirement.

(iii) Restrictions on Mortgage Securitisations?

Perhaps the obvious question based on the above analysis, and in view of both the imminent rejuvenation of securitisation markets and bank activity restrictions, is whether in implementing the proposed securitisation regulation in the UK, additional restrictions on the MBS market are warranted. As I have noted in this article, so-called "risky" lending may not be the main driver of housing booms and subsequent busts; rather higher aggregate lending, which is not always reflective of poor underwriting, may emerge even in prime mortgage loan markets. Because of this, targeting the

[195] F McCann 'Modelling default transitions in the UK mortgage market' Central Bank of Ireland Research Technical Paper 18/RT/14 (2014).
[196] Financial Services Authority, 'Mortgage Market Review', Discussion Paper 09/3 (October 2009).
[197] Financial Services Authority, 'Mortgage Market Review: Responsible Lending' Consultation Paper 10/16, (July 2010) 42.
[198] JV Duca, J Muellbauer, A Murphy, 'Housing markets and the financial crisis of 2007–2009: Lessons for the future' (2010) 6 J Fin Stab 203; A Kelly ""Skin in the Game": Zero Downpayment Mortgage Default" (2008) 17 J Hous Res 75.

characteristics of bank mortgage loan assets – such as LTVs and DTIs – may not always constrain excessive lending, particularly as home prices may fall much further than anticipated when banks issue "non-high risk" loans.[199]

Restrictions on securitisation may therefore add to the effectiveness of macropru in limiting the incidence(s) of housing bubbles. If housing booms are driven as much by expectations as fundamentals, limiting the width of the lending channel is a crucial undertaking. The range of potential restrictions is wide, but each has limitations and trade-offs. Workable solutions might be to place restrictions on the form of mortgage assets which individual banks are permitted to securitise. One solution for example might be to allow only 'standardised' mortgages to be securitised i.e. where the mortgages to comprise the securitisation pool comply with some pre-determined criteria.[200] Because complexity and information gaps in the securitisation process were blamed for creating incentives for poor underwriting, closing these gaps through standardisation would reduce the incentives to originate mortgage loans of lower quality. By proxy, this would to an extent standardise the MBS constructed from the underlying assets. This would in turn help in reducing heterogeneity and complexity, informational asymmetries between lenders and investors, and provide improved regulatory discipline. In particular, it would close the arbitrage loophole referred to earlier. In this vein, a workable alternative might be to prohibit the securitisation of high-risk mortgages – at LTV ratios of less than the 100% currently permitted – in order to disincentivise banks from issuing them in the first place.[201]

Yet, these solutions would not address the problems associated with mortgage markets identified in this article. Indeed, the same critique as that levelled at the investor-protection moral-

[199] For example, a mortgage loan with an LTV of 80% is not viewed as high-risk by regulators, yet a house price drop of 20% would wipe out all of the equity in any mortgage issued at those terms. If house price crashes of 20% were highly unusual, this might not present a problem; however house price falls of this magnitude occurred twice in the UK over approximately 20 years: between 1990 and 1995, UK house prices dropped 21%. Property prices dropped significantly in the period 2007-2011, including drops in single years of 16.2% in 2008 alone; property prices continued to fall until 2011. See Nationwide Building Society House Price Index, <http://www.nationwide.co.uk/about/house-price-index/headlines>.

[200] Levitkin and Wachter (n 64, 1256) propose "restricting securitization to proven, sustainable mortgage products for which there is well-established consumer demand and performance history."

[201] This would reflect underlying mortgage regulation in the UK, discussed earlier, which restricts certain 'high-risk' mortgages from comprising more than a certain proportion of their mortgage portfolios.

hazard driven perspective may be applied. Each proceeds from a parallel position to mandatory risk retention requirements under the SR; that is, provided incentives to originate lower-quality mortgages are restricted, and proper information is provided to investors and to regulators to allow them to make informed choices, poor quality mortgages will not be securitised (or at least the volumes reduced), making the possibility of a housing bubble more remote. Alternatively, provided end-investors are themselves less-leveraged, negative externalities from mortgage defaults may be contained and financial stability preserved. But as explained, housing bubbles are driven by common optimistic expectations amongst buyers of properties and their creditors. Because of the behavioural tendencies amongst all parties when it comes to real estate markets, this excessive lending is possible with or without restrictions on the composition of securitisations. In fact, given that the main contribution of securitisation to housing bubbles is its capacity to widen the lending channel – which as noted will become more significant in an era of RFBs – constraining securitisation volumes is likely to be more appropriate in containing future risks. The basic purposes of securitisation, as noted earlier, are to broaden funding sources and to economise on capital, each of which facilitates higher lending volumes.

Constraining these channels therefore assumes fundamental importance. For these reasons, restricting securitisation of mortgage loans is likely to be needed as part of any regulatory response to future developments in the MBS market. On this basis, the SR could be amended in the UK context to stipulate that only loans to SMEs and other "productive" loans could be the subject of STS securitisations, thereby placing an outright ban on STS MBS. Whilst draconian, there is justification for this form of restriction from the Commission itself. The professed aim of the Capital Markets Union is to "better link savings with growth and provide more options and better returns for savers and investors…offer businesses more funding choices at different stages of their development and to channel investment to where it can be used most productively, increasing the opportunities for Europe's companies and infrastructure projects."[202] Elsewhere – in the Capital Markets Union Action Plan – the Commission argues that the SR would "[r]evitalise simple, transparent and standardised

[202] See Proposal (n 13) 6.

European securitisations to free up capacity on banks' balance sheets and provide access to investment opportunities for long term investors."[203] No mention of mortgage lending is made by the Commission in either document.

On the other hand, restricting securitisation entirely to SME-linked loans in itself may result in undesirable indirect effects. The main counter-argument – that allowing banks to securitise mortgages will free up balance sheet space for greater credit origination to businesses – is, in theory, solid. Preventing RFBs from securitising mortgages will further constrict lending, with the likely result of reduced credit to SMEs. Conversely, of course, preventing RFBs from securitising mortgages will leave them even more exposed to the housing cycle, as they are unable to shift any risks from their balance sheets from real estate-related assets. Whilst there are significant benefits to be realised for the real economy from increased lending for production, it would be deeply unfortunate to restrict the securitisation of mortgage lending simply to achieve this end, particularly if it resulted in a banking system comprised of homogenous, undiversified institutions almost entirely exposed to the housing market.[204]

For these reasons, a solution which permits securitisation of mortgages, but prevents the securitisation of more than a certain proportion of a bank's portfolio, might be favourable. This will mitigate the effects of the introduction of the SR on mortgage markets and still provide incentives for RFBs to issue non-real estate loans which will benefit from more risk-sensitive capital treatment. Giving a rough estimate to the question of what would be the appropriate level of assets eligible for securitisation is beyond the capacity of a mere lawyer. But there are at least two guiding principles which might inform this regulation:

[203] Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee Of The Regions Action Plan on Building a Capital Markets Union, Brussels, 30.9.2015 COM(2015) 468, 6.

[204] A further solution might be to place restrictions on the buy-side of the MBS market. Because MBS are often bought by leveraged investors, in the event of widespread mortgage defaults, the cumulative effects of those defaults are amplified. Many investors typically use MBS as collateral for further borrowing in secured funding markets. Imposing higher margin requirements on secured finance transactions would therefore reduce both aggregate leverage amongst MBS investors and the mortgage finance churn.

(i) The first relates to balance: there must be an appropriate balance struck in any move to restrict the securitisation of mortgages between MBS and securitisation of other forms of loan. If the SR is to have any benefit, banks must be able to securitise some proportion of their mortgage loans. As banks are likely to concentrate lending on property markets, securitisation must be permitted to an extent to prevent them from becoming overexposed to real estate values. Securitisation of mortgages is not undesirable per se. As noted above, by freeing up balance sheet space, the capacity to issue MBS may allow banks to issue more loans for productive activities. But as I have also discussed, securitisation is also likely to augment the mortgage lending channel. Allowing lending levels to appreciate significantly in a market likely to become saturated by the activities of RFBs risks putting further pressure on housing prices. One response might be to replace maximum thresholds for MBS issuance as a proportion of total asset securitisation, with a requirement that for a proportion of MBS issued, a given proportion of loan assets must be comprised of loans to SMEs. The inherent tradeoff in a stipulation such as this is that mortgage risks might become concentrated on bank balance sheets if demand for SME loans is low, increasing systemic fragility. Placing maximum thresholds on mortgage securitisation levels is therefore likely to be preferable. A simple implementation mechanism would be to provide that, beyond a certain threshold, preferential capital treatment for bank-originated STS would no longer be applicable. This would provide an additional disincentive for banks to issue mortgage assets and thereby place a constraint on the flow of finance to real estate markets.[205]

(ii) Second, the regulation of the MBS market must be dynamic: any regulation of the MBS market cannot be static, and any restrictions on securitisation must be subject to

[205] Although some may argue this would introduce further regulatory complexity, it would be relatively easy to incorporate reporting of this data into existing bank monitoring systems. For instance, large banks must report their capital, liquidity and asset quality positions on a regular basis to financial regulators under the Capital Requirements Regulation. Their reported capital levels (which would be those affected by a measure such as this) are monitored closely by regulatory authorities. For details, see Bank of England, 'CRD firms - Reporting Requirements' at <http://www.bankofengland.co.uk/pra/Pages/regulatorydata/formscrdfirms.aspx>.

adjustment based on the judgment of regulators, based on economic conditions. Given the appropriate systems (which are, indeed already in place in the UK in relation to the housing market) regulators ought to be prepared to intervene where appropriate. The main dilemma for regulators in relation to housing bubbles is of course, that they are sometimes difficult to spot, and regulators may therefore be forced to substitute their own judgment(s) for that of the market. Yet, there are other areas of regulators are provided discretionary tools when certain indicators flash and warnings are triggered. Analogous examples include the discretionary powers granted to regulators under Basel III to increase bank capital requirements through the cycle via the counter-cyclical buffer[206] or in the UK, for a variable leverage ratio.[207] Affording regulators discretion over these tools is not without limitations; regulators are themselves anything but immune to collective the over-optimism or disaster myopia behavioural tendencies discussed previously.[208] However, it is also clear that central banks and financial regulators engage in much improved data collection and dissemination since the GFC which, whilst imperfect, allow financial regulators to make more informed decisions concerning appropriate constraints.[209] Further, as discussed above, the tools available to regulators to specifically monitor housing markets are also more refined.

[206] Basel III, The 'countercyclical buffer' ('CB') requires banks to build up to an additional 2.5 percent of Tier One capital in times of 'excessive' credit growth. The Bank of England activated the CB in March 2016, increasing capital requirements by 0.5%, but the buffer was released soon after, in July 2016, following the referendum on the UK's membership of the EU. See Bank of England, 'Financial Policy Committee statement from its policy meeting of 23 March 2016', 29 March 2016 at http://www.bankofengland.co.uk/publications/Documents/news/2016/032.pdf; Bank of England, Financial Stability Report (July 2016) Issue No. 39.

[207] Bank of England (n 9). The PRA is empowered to set a minimum leverage ratio (LR) of 3% for all UK financial institutions; a supplementary leverage ratio for systemically important financial institutions; and a countercyclical leverage ratio buffer (CCLB). This may also be increased at the discretion of the PRA to require higher levels of capital based on the activation of the CCB.

[208] See AG Haldane, 'Central bank psychology', Speech given at the "Leadership: stress and hubris" conference hosted by the Royal Society of Medicine, London, 17 November 2014.

[209] FSB, Implementation and effects of the G20 financial regulatory reforms: Report of the Financial Stability Board to G20 Leaders (9 November 2015).

7. **Conclusion**

This article has challenged the standard narrative concerning the interaction between securitisation, real estate bubbles and financial stability. The existing literature on the topic of securitisation is process-focused, concentrating on the problematic of incentives in the securitisation process. The literature which adopts this view holds that the principal focus of regulators ought to be investor protection, through ensuring that incentives for poor loan origination are minimised. To achieve this, greater information disclosure and transparency, and reduced complexity, are recommended. A consequence of this analytical framework is that efficient credit allocation decisions are made, and the likelihood of securitisation-induced fragility is reduced.

In contrast, I have argued that the main danger posed by the securitisation process is its contribution to widening the lending channel, particularly in the context of real estate lending. Housing bubbles are generated largely through over-optimistic expectations of future house price growth. In the past, securitisation has contributed to these bubbles by acting as a mechanism allowing banks to increase credit origination. This credit origination inflated real estate values to levels which were not justified by underlying economic fundamentals. The contribution of securitisation was not decisive in this process, but it played a large role by removing capital constraints and loosening banks' lending capacity.

Potential remedies to this issue vary. Existing macroprudential policies are likely to be effective to a point in containing future housing bubbles. Yet, the structural reforms taking place in the U.K, most notably ring-fencing, is likely to result in several very large monoline mortgage lenders. Whilst allowing these institutions to securitise their assets to diversify away the risks from mortgage lending is vital, regulators must also be cognisant of the capacity of securitisation to contribute to excessive lending, a facet of securitised banking which is likely to become more acute in the presence of RFBs. Re-introducing mortgage loan securitisation must therefore be approached with caution, particularly in the UK. Restricting mortgage securitisation levels may be appropriate in the interests of financial stability.