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The case for a better functioning securitisation market in the European Union

A Discussion Paper

May 2014

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Prepared by Bank of England and European Central Bank staff

The Bank of England and the European Central Bank would welcome comments and views on the material set out in this Paper.

Comments should be sent by 4 July 2014 to:

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And to the European Central Bank by email to: Securitisation2014@ecb.europa.eu

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Executive Summary

1. The European Central Bank (ECB) and the Bank of England jointly published a short paper on 11 April regarding the impaired securitisation market in the European Union (EU). This Discussion Paper builds on the short paper, providing a more in-depth analysis of the issues. It examines the potential benefits of securitisation and outlines various impediments that may currently be preventing the emergence of a robust securitisation market. It also presents possible policy options authorities could consider in response. The purpose of the Paper is to elicit feedback from interested parties and to stimulate general discussion among stakeholders on the impediments identified and the suggested policy options aimed at alleviating them.

2. The potential benefits of securitisation depend on its purpose: it can be used as a way to fund assets, a means of transferring risk, or both.

3. As a *funding tool*, securitisation can contribute to a well-diversified funding base, in terms of maturity, investor type and currency. It can facilitate asset-liability maturity-matching and can enable banks to access a broader range of investors by tailoring different tranches of an asset-backed security (ABS) to investors' risk appetite and preferences. Looking ahead, the banking system is likely to need access to a wider range of funding sources. The revival of the ABS market can therefore play a useful role in ensuring that there is not a renewed build-up of systemic risk, including from excessive reliance upon any single source of financing.

4. Well-functioning securitisation markets also enable non-bank financial institutions to raise funding for their real economy lending, thereby providing an alternative to bank lending.

5. Subject to meeting retention requirements, *credit risk transfer* away from the banking sector can be beneficial to the real economy, the banking sector and both monetary and financial stability. First, where risk is genuinely transferred to non-bank investors, it can free up bank capital, allowing banks to extend new credit to the real economy. This may support the transmission of accommodative monetary policy, where the bank lending channel may otherwise be impaired. It may also reduce the dependency of banks' lending decisions on business cycle conditions and lower the exposure of real economy borrowers to re-financing or liquidity risk, thereby increasing banks' resilience and helping to contain systemic risk. Second, if properly structured, securitisations may reduce the potential for concerns to

arise around banks' balance sheets, thus limiting the degree to which banks' funding sources are withdrawn during times of stress.

6. More generally, securitisation can contribute to enhancing the issuer's risk management culture through the discipline the process of securitising assets imposes.

7. Some securitisations may further provide long-term investors, such as insurance companies and pension funds, with a broader pool of assets that are genuinely low-risk from a credit perspective. In principle, greater issuance of low credit risk ABS may also deepen the supply of high-quality collateral, which could be particularly useful given the post-crisis trend towards greater collateralisation of financial transactions, with regulatory reforms headed in a similar direction. Reliable secondary market liquidity of ABS will be important in supporting the use of ABS as collateral in this way.

8. The reputation of securitisation has been severely tarnished by the financial crisis, reflecting both the prominent role of ABS involving complex structures and poorly underwritten loans in precipitating distress, and an over-reliance on a fragile, highly leveraged investor base dependent on short-term wholesale funding. While such practices were particularly prevalent in the United States, the level of market-placed issuance has remained low in the EU in the aftermath of the crisis. This is also likely to reflect factors that go beyond 'post-crisis stigma'.

9. There are a range of potential impediments that may be preventing transactions from being priced in a way that meets the demands of both investors and issuers.

10. First, some types of investor may currently be deterred from holding ABS due to changes in regulatory capital charges to be held against these investments, and uncertainty about the final outcome of post-crisis reforms. On the one hand, the December 2013 EIOPA proposals affecting insurance companies (Solvency II) include a less conservative treatment than previously proposed for securitisations with simple structures, well identified and transparent asset pools with predictable performance. Similarly, capital charges applied by the securitisation framework of the Basel Committee on Banking Supervision (BCBS) have been revised downwards in more recent proposals. On the other hand, the proposed treatment for higher-quality ABS may still be perceived by investors as conservative, particularly when compared with similar asset types.

11. Second, post-crisis, investors appear to have been more cautious in their risk assessment of assets, which in the short term may represent an impediment to the quick revival of the securitisation market. For example, legacy loans originated pre-crisis may have spreads that are too low to generate sufficiently high yields on transactions to compensate for investors' perceptions of risk. Investors also require appropriate systems and expertise to assess and manage the risks inherent in their investments. While this applies to all instruments, such hurdles for securitisation may be higher compared to other assets due to the paucity of available data for some ABS, for example, those backed by loans to small and medium enterprises (SMEs). Further difficulties may arise from a lack of standardisation across the EU or because securitisations simply have more complex risk characteristics than other assets. The difficulty of assessing market liquidity may add additional challenges to the assessment and management of risk.

12. Third, there may be deterrents to potential issuers. For example, banks might feel constrained by uncertainty around capital relief available under future securitisation capital rules. And while retention requirements are to be welcomed for better aligning the interests of issuers and investors, they may act as a deterrent to some issuers, particularly non-banks, who may find it problematic to fund retained portions. The inconsistent implementation of retention requirements globally may also result in unequal treatment across different jurisdictions. It may further be difficult to securitise certain types of loans or small pools of loans due to investor preferences, the nature of cash flows or availability of historical data. And smaller lenders or new entrants to the securitisation market may lack the necessary systems, data, and credibility. Issuers may also be unable or unwilling to offer sufficiently attractive spreads to investors given cheaper alternative funding opportunities or consideration of other cost pressures.

13. Fourth, the imposition of structured finance credit rating caps on ABS has had a negative impact on the securitisation market in certain EU countries where it is no longer possible to achieve a triple-A rating regardless of the extent of credit support in the structure. This results from the imposition of a hard sovereign rating cap, which may undermine transparency around the inherent credit quality of securitisations.

14. Fifth, concerns around the continuing availability of the infrastructure necessary to arrange and service a securitisation can further raise risks and/or increase direct costs to issuers. One specific issue relates to credit rating agencies' requirements that providers of ancillary facilities (e.g. swaps, bank accounts) meet a certain credit rating criterion. The universe of such providers is significantly smaller and

much more concentrated than prior to the financial crisis.

15. Finally, historical trading volumes of securitisations have been relatively low. This is not necessarily a sign of an instrument being fundamentally illiquid, though actual or perceived illiquidity is an important determinant of pricing and investor demand.

16. When considering options for transforming securitisation in the EU, it is vitally important to be cognisant not only of the advantages such markets confer, but also the potential risks they pose to financial stability. Such considerations point towards various desirable properties of robust securitisation markets.

17. For example, robust securitisation markets require investors that are resilient to changes in economic conditions. It would therefore be desirable for risks to be distributed across the financial system in a transparent and diverse manner, to an investor base that is not excessively leveraged or dependent on short-term funding. Equally, securitised assets should embody features that improve the ability of investors to predict their performance in different economic environments, which in turn should support demand. Examples of such features include: assets backed only by real economy loans as opposed to re-securitisations¹; transparent structures involving credit claims rather than derivatives (so-called 'synthetic' forms); and a well understood and controlled relationship between the securitisation vehicle and the issuer. Authorities should also be aware of the ways in which securitisation could potentially increase interconnectedness amongst financial institutions.

18. Involvement in this market by the authorities may be desirable to support its revitalisation in a more robust form. First, to lend credibility and to maximise the broader benefits of well-functioning securitisation markets. And second, to help prevent the re-emergence of markets over time that do not adhere to standards conducive to financial stability.

19. There are a number of options competent authorities may wish to consider. The development of high-level principles for 'qualifying securitisations', to be applied to an entire transaction and not to individual tranches, could aim to identify securitisations that are simple, structurally robust and transparent, enabling investors to model risk with confidence and providing originators with incentives to behave responsibly. Central bank-eligible ABSs that follow such principles have historically performed well. It is important to note that such securitisations would not be 'risk free' and investors would still need to conduct proper due diligence. Rather, the initiative would aim to promote securitisations for which the risks and payoffs could be

¹ Securitisation transactions backed by other securitisation assets.

consistently and predictably understood, making such due diligence more straightforward as uncertainty and model risk are lower.

20. Consequently, 'qualifying' securitisations could benefit from improved secondary market liquidity and may also warrant a specific regulatory capital treatment. Haircuts applied to such assets in central bank liquidity operations may also decrease commensurate with observable improvements in their risk characteristics. In both cases, it is important to recognise that the use of 'qualifying securitisation' should not be regarded as a one-size-fits-all approach; additional requirements may be needed depending on the application.

21. Securitisation markets may also benefit from some harmonisation of standards across the EU alongside improvements in data availability.

22. In terms of data availability and standardisation of disclosure, the ECB and Bank of England loan level transparency requirements (which require reporting of loan level data for ABS, including SME securitisations) already provide a significant step forward compared with the past. Further improvements in disclosure of transaction documentation and performance information are envisaged by the European Securities and Markets Authority (ESMA). There may also be scope for additional standardisation of prospectuses and investor reports. The case for any further developments should be built on a robust cost-benefit analysis.

23. Furthermore, credit registers that provide details of loan performance beyond those assets backing securitisations could, in a manner that is consistent with applicable national data protection, confidentiality and professional secrecy laws, provide additional transparency to investors and market participants in general. This would be particularly important for SME loans and would help investors to develop their own credit models and risk metrics. With the loan level information that credit registers could provide, along with improved information from ABS disclosures and other sources, authorities could subsequently consider encouraging industry to develop benchmark indices of borrower, loan and tranche performance, to assist issuers to structuring transactions and investors in managing risk.

24. To support the provision of ancillary facilities to securitisation vehicles, it may further be beneficial to investigate the possibility of securitisation vehicles accessing bank accounts that fall outside the account provider's insolvency estate, and so are fully protected in the event of the provider's default. But such an initiative would face a number of hurdles and potential benefits and costs should be carefully weighed against each other.

25. Finally, to provide investors with greater visibility and understanding of the impact of sovereign

and ancillary facilities debt rating caps on ABS ratings, credit rating agencies could publish additional information to complement their overall rating. This could include a matrix showing the implied rating of the various tranches if the sovereign and ancillary facilities rating caps were to be set at higher levels than currently.

26. The Bank of England and the ECB would welcome comments from interested parties on all aspects of this Paper. A more specific list of questions on which the Bank of England and the ECB would particularly welcome feedback is set out at the end of this Paper. Comments should be sent by 4 July 2014 to:

Bank of England
by email to: Securitisation2014@bankofengland.co.uk

European Central Bank
by email to: Securitisation2014@ecb.europa.eu

1 Introduction

27. The ECB and the Bank of England jointly published a short paper on 11 April regarding the impaired securitisation market in the EU. This Discussion Paper builds on the short paper, providing a more in-depth analysis of the issues. It examines the potential benefits of securitisation and outlines various impediments that may currently be preventing the emergence of a simple, transparent and robust securitisation market. It also presents possible policy options authorities could consider in response.

28. At present, activity in public securitisation markets in Europe is largely moribund (**Box 1**). Potential impediments to its revival include a mix of temporary factors, such as the current interest rate environment and the stigma attached to securitisation, and more structural factors, such as regulatory treatment of securitisation and inadequate information about asset performance.

29. There are clear reasons to suggest it may be desirable for authorities to intervene in securitisation markets. A well-functioning market for securitised assets can potentially enhance long-term financial stability but, in the absence of intervention, it is uncertain whether these benefits will be fully realised. At the same time, the potential for securitisation markets to damage financial stability was evidenced all too clearly during the crisis. Looking forward, it would plainly be undesirable if the financial system was to acquire an excessive reliance upon any single source of financing or if the securitisation market developed in a way that did not adhere to the standards conducive to a well-functioning market and hence broader stability.

30. In seeking to minimise the risks associated with securitisation while maximising the benefits of a well-functioning market, the authorities have the credibility to set standards and co-ordinate different parties.

31. This Discussion Paper is issued for public comment and aims to elicit feedback from interested parties. Feedback will help determine possible actions to reduce impediments.

32. The remainder of this Discussion Paper is structured as follows. Section 2 provides an overview of the rationale for promoting a well-functioning securitisation market, articulating the benefits of securitisation. Section 3 outlines various impediments that may currently be preventing the emergence of a well-functioning securitisation market. Section 4 presents some possible policy options aimed at improving the functioning of this market, including high-level principles that could identify a new class of 'qualifying securitisations'.

33. Throughout, a number of boxes are included to elaborate upon some of the themes covered. Box 1 describes the current state of securitisation markets. Box 2 outlines the regulatory context. Box 3 presents the characteristics that may be considered to determine 'qualifying securitisations'. And Boxes 4 and 5 provide background on the role of securitisation in the financial crisis and the determinants of market liquidity, respectively.

34. The ECB and Bank of England would welcome comments on all aspects of this paper, but in particular on the specific questions raised throughout. These are reproduced in Section 5.

2 Motivation

35. Securitisation is a tool that can be used to support various objectives. This section articulates four uses of a well-functioning securitisation market, highlighting the potential benefits to issuers, investors and the system as a whole. The section concludes by drawing together some key themes and points to note.

An investment instrument for non-banks and banks

36. Long-term investors such as insurance companies and pension funds are natural buyers of long-term assets given the duration of their own liabilities. In principle, they could extend loans directly, but they may be deterred from doing so because of: the illiquidity of whole loans; prohibitive operational and due diligence costs compared to the benefits of engaging in direct lending; lack of expertise; and in some cases a lack of the necessary infrastructure to enable such lending to occur.

37. Securitisation can potentially help in this regard, providing that such markets are liquid and participating institutions have adequate risk management systems and capabilities. Currently, however, owing to a variety of factors, some outlined in this Paper, market-placed ABS have short maturities, amortising in around two to five years as the underlying assets are repaid.

38. For both banks and long-term non-bank investors, securitisation provides a means of diversifying their exposures to the real economy, in terms of the underlying credits, their geographical location and liquidity properties. Moreover, the flexibility securitisations offer to customise cash flows and risk exposures can be particularly useful for those investors that have specific maturity, coupon, yield and risk preference needs, which can be difficult to satisfy elsewhere. For example, tranches can be structured to offer an exposure to the industry of the asset pool as a whole, with minimal exposure to idiosyncratic risk. Some securitisations may further provide long-term investors, such as insurance companies and pension funds, with a broader pool of assets that are genuinely low-risk from a credit perspective, alongside government bonds.

A funding tool to support real economy lending by banks and non-banks

39. For banks, there are a number of reasons why securitisation can be a useful funding tool, including:

- **Credit conditions:** By meeting investor demand for credit-enhanced securities, it may be possible to issue securitisations at lower cost compared with alternative sources of funding, which should be broadly positive for credit conditions in the real economy;
- **Asset-liability maturity matching:** Securitisations can facilitate asset-liability matching during the life

of the transaction, with the securities often bearing contractual legal maturities at least as long as the longest maturity asset in the underlying pool;

- **Risk management:** The discipline imposed on an issuer wishing to operate a securitisation platform requires significant investment in the collection and dissemination of management information and in systems more generally. Firms' ability to manage their balance sheets is likely to benefit from these investments and processes;
- **Encumbrance:** Other forms of secured funding such as covered bonds may require higher degrees of over-collateralisation and lead to significant asset encumbrance. High encumbrance levels may deter investors in a bank's unsecured liabilities, particularly during times of stress, when concerns might arise about the quantity of unencumbered assets (and in particular the highest quality assets) available to them in a liquidation scenario. Encumbrance associated with securitisations is less significant.
- **Investor base:** The ability of securitisations to isolate risks pertaining to a specific asset pool and to tranche securities into specific risk baskets can allow issuers access to a wider range of investors than in the unsecured senior debt and covered bond markets. It may also allow the same range of investors to invest in more debt associated with a single firm;
- **Diversification:** More generally, securitisation may contribute to a well-diversified funding base, in terms of maturity, investor and currency.

40. For non-banks, securitisation has the potential to provide funding for real economy lending that may otherwise be difficult to source. Diversification of lending is potentially positive for financial stability, since some non-bank institutions may be less vulnerable to problems experienced by banks (which provide the majority of funding to the real economy) in the event of a downturn, for several reasons:

- Risks to the balance sheets of non-banks may be **less correlated** with those of banks, particularly if these institutions tend to specialise in particular areas of lending. That said, they could be less resilient to some shocks than banks given the concentration of lending to one borrower type;
- Non-banks may be **less leveraged** than banks, particularly if the absence of a perceived 'too big to fail' subsidy requires them to better manage their risks;
- Non-banks may be **less reliant** on 'unstable' short-term funding sources, though they may have to rely on banks to fund the warehousing of assets during the pre-securitisation build-up phase;
- Non-banks may have **less complex** and easier to understand balance sheets than those of banks.

It is important to note that in order to take advantage of the securitisation market, non-banks will also require the expertise, information and technology to undertake direct lending in the first place.

A risk transfer device for originating banks

41. The financial crisis highlighted how a reliance on banks to extend credit can expose the real economy to inefficient credit constraints, particularly during times of stress.

42. One natural complement to bank lending is the capital markets, which have played an increasingly important role in companies' access to finance post-crisis.² But market-based financing starts from a comparatively low level, particularly in the EU. Debt securities constitute around 10% of the financial liabilities of UK non-financial companies; for the euro area, the corresponding figure is 5%. In the United States, debt securities represent around 14% of the liabilities of US non-financial companies.³

43. The direct provision of finance to all types of borrower would require an unrealistically major reconfiguration of capital markets. And for certain types of lending, such as loans to SMEs and residential and commercial property lending, banks are arguably better placed to extend credit given their branch network, credit assessment expertise and their operational capabilities.

44. But securitisation can potentially alleviate the pressure on bank lending by providing banks with a market-based means of transferring risk. It does so in three important ways:

- Genuine risk transfer reduces the likelihood of banks becoming capital constrained, which could otherwise impair their ability to extend new credit. For example, notwithstanding the recent signs of recovery, this could support the transmission of accommodative monetary policy, where the bank lending channel may otherwise be impaired.
- Securitisation could reduce the dependency of banks' lending decisions on business cycle conditions and lower the exposure of borrowers to re-financing or liquidity risk, thereby increasing banks' resilience and helping to contain systemic risk.
- If properly structured, securitisations may reduce the potential for concerns to arise around banks' balance sheets, thus limiting the degree to which banks' funding sources are withdrawn during times of stress.
- By potentially enabling banks to lend without committing too much capital and other sources of funding, securitisation could provide indirect market access to certain borrowers, such as SMEs, who are otherwise unable to access markets directly.

² In the United Kingdom, companies raised £32 billion in net issuance of debt securities in the five years prior to the financial crisis, compared to £74 billion in the five years since.

³ Figures are as of end-2013 with the exception of the euro area figure which is as of end-2011.

45. Risk transfer can take place via securitisations issued in either cash or synthetic forms. In a cash securitisation, legal ownership of the assets is transferred to a special purpose vehicle (SPV), and the cash flows from the assets allow the SPV to pay debt service on the securities. In a synthetic securitisation, ownership of assets does not change hands but insurance is purchased against a defined portfolio of loans. Although the risk transfer provided by the two types of structure is similar from a financial point of view, there are practical differences that tend to make synthetic deals more complex. For example, they expose insurance buyers to counterparty credit risk.

46. For banks, the incentive to undertake risk transfer activity in either form emanates from the amount of regulatory capital relief achieved and their own assessment of economic risk transfer. The amount of regulatory capital relief depends on the reduction in risk weighted assets relative to the risk weights on the underlying pool, which in turn depends on the form and the amount of the securitisation that is transferred to third parties.

47. Risk weights on retained tranches of a securitisation are determined by international regulation in the form of Basel Committee on Banking Supervision (BCBS) standards and EU legislation via the Capital Requirements Regulation (CRR). Firms are responsible for evaluating on an on-going basis whether the requirements of the CRR have been met when they seek to reduce their capital requirements through securitisation. In addition, supervisory judgment is applied to evaluate and monitor the degree to which risk transfer has actually taken place and whether this is commensurate with any reduction in regulatory capital requirements.

A means of generating high quality collateral to meet increased demand

48. Securitisation markets transform illiquid loans into more liquid assets. One implication of this is that, in principle, they can increase the supply of high-quality collateral to support other transactions. This is particularly important given necessary regulatory reforms since the crisis to increase levels of collateral in the financial system to reduce counterparty credit risk – for example, through over the counter (OTC) derivative reform – as well as given the introduction of the Liquidity Coverage Ratio (LCR) for banks.

49. A high-quality, transparent and standardised private sector liquid asset would help diversify the supply of such collateral. But there would likely need to be significant improvements in the liquidity of securitisation markets for there to be confidence in their wider use in collateralised funding markets. During the crisis, market haircuts for repo transactions backed by securitisations, including mortgage-backed security (MBS), increased markedly – and by more

than those for other risky instruments, such as equities and high-yield corporate debt.

Points to note

50. While, in principle, prudently-designed securitisation markets could achieve the benefits set out above, different objectives may require different market characteristics. For example, to be a reliable funding source, it is not necessary that securitisations should also provide significant credit risk transfer. Indeed, almost by definition, securitised assets that include a material amount of credit risk are unlikely to be regarded as high-quality collateral. Conversely, securitisation may need to include significant credit risk to generate sufficient yield to attract certain long-term investors. For these and other reasons, individual transactions typically include a variety of tranches that meet these different investor portfolio preferences – for example, including a low risk, “senior” tranche as well as a higher risk “mezzanine”

and/or “junior” tranches. It is therefore useful to think of securitisation tranches as falling into two broad buckets:

- **‘Liquidity’ products:** These provide higher-quality and more liquid instruments that incorporate a smaller degree of credit risk (similarly to highly-rated covered bonds), although importantly, even senior tranches are likely to be exposed to some credit risk in a severe downturn. The underlying exposures will typically be low risk;
- **‘Credit’ products:** These enable a significant degree of risk transfer and provide investors with high-yielding investment opportunities. These will tend to be the more subordinated tranches within a structure, and may include higher risk assets in the underlying pool. These products may therefore be comparatively more exposed to idiosyncratic credit risk on the assets in the pool.

Box 1**State of the securitisation market**

51. This box provides a brief overview of the current state of securitisation markets, drawing on some key differences between Europe and the United States.

Decline of the securitisation market

52. Global securitisation markets grew dramatically in the run up to the crisis, with amounts outstanding peaking at €2 trillion in Europe and US\$11 trillion in the United States. They have since contracted sharply since, especially in Europe (**Charts 1 and 2**).

53. Aggregate US issuance has been reasonably strong since the crisis, with US\$2.2 trillion issued in 2013, equivalent to around two-thirds of the pre-crisis annual rate (**Chart 3**). This issuance has been driven predominantly by Agency MBS. Of the other asset classes, only auto loan ABS issuance levels have been maintained since the crisis (**Chart 4**).

54. In Europe, where there is no Agency MBS market, aggregate issuance has been notably lower since the crisis, with only €174 billion issued in 2013 (including retained issuance); equivalent to roughly 40% of the pre-crisis annual rate (**Chart 5**). This figure is significantly lower if retained issuance, which has often been used by banks to access central bank funding, is excluded. As in the United States, new issuance of private label residential mortgage-backed securities (RMBS) in Europe has fallen markedly. But issuance of ABS backed by auto loans and consumer loans, for example, has held up reasonably well (**Chart 6**).

55. The outstanding amount of securitisations in the EU at the end of 2013 was about €1.4 trillion (**Chart 2**), or around one fifth of the size of the US securitisation market. RMBS formed by far the largest segment, accounting for 59%; SME ABS was the next largest, but accounted for only 8% of the market. The jurisdictions with the largest outstanding securitisation markets in Europe are the United Kingdom, Netherlands, Spain and Italy.

56. In 2006, virtually all primary issuances were placed with end-investors and other banks; by 2009, almost all deals were retained by the originating banks and many were placed as collateral with central banks. Despite some small increases since 2009, public issuance volumes remain very low in Europe and continue to be mostly originated in a small set of countries such as Germany, Netherlands and the United Kingdom. The deals that have emerged from the more stressed economies either involve short maturities, high yielding assets or SME transactions with specific support from the European Investment Bank (EIB) or European Investment Fund (EIF) (e.g.

via purchases of senior or mezzanine tranches and/or via guarantees).

57. Despite the low issuance and the modest take-up by investors, most European structured finance products performed well throughout the financial crisis from a credit standpoint, with low realised default rates. For example, according to a recent analysis by Standard & Poor's, the cumulative default rate on European consumer-related securitisations, including SME CLOs, between the start of the financial downturn in July 2007 and Q3 2013 has been only 0.05%.⁴ By comparison, securitisations on US loans, including subprime loans, experienced default rates of 18.4% over the same period. These measures include defaults triggered by non-payment of interest and so do not necessarily correspond to ultimate losses to bondholders, as the collateral may subsequently generate sufficient cash flows to partly compensate investors. A study of securitisations issued between 2000 and 2012 by Fitch Ratings found that most European structured finance asset classes (apart from some commercial mortgage-backed securities (CMBS) had negligible losses, both incurred and expected, of a few basis points. By comparison, US subprime securitisations had incurred and expected losses of 12% and losses on US collateralised debt obligations (CDOs) were around 50%.

58. The next section draws out some of the key dimensions that distinguish securitisation markets across jurisdictions and asset classes.

Guarantees

59. The differing levels of overall issuance in the United States and European RMBS markets can be partly attributed to the comparative strength of Agency MBS issuance in the United States. These securities are backed by loans that conform to specified standards⁵ and are structured so as to reduce the credit risk borne by investors through a guarantee from the so-called Government Sponsored Enterprises (or GSEs), primarily Fannie Mae and Freddie Mac. Both of these GSEs were taken into conservatorship in September 2008.

60. A variety of initiatives in the United States and Europe have attempted to support SME lending and transform SME-backed securities into a viable securitisation market. In the United States, the Small Business Administration (SBA) offers support for SME lending by guaranteeing up to 85% of the principal on loans originated by approved institutions. The 7(a) loan programme provides credit to a wide range of

⁴ The corresponding default rates for European consumer finance ABS, RMBS and SME CLO are 0.04, 0.1 and 0.4% respectively.

⁵ Guidelines for conforming loans include maximum loan size, loan-to-value ratio, debt-to-income ratio, credit score and borrower history.

eligible small businesses, with SBA loan value reaching a record high of more than US\$93 billion in 2010. However, the supply of SBA-backed ABS has been limited.

61. In Europe, the EIF provides direct credit enhancement for the senior and mezzanine tranches of securitisations backed by SME loans, including guaranteeing ratings at AAA. National and regional government guarantee programmes for senior tranches of SME securitisation also exist, such as the FTPYME and FTGENCAT schemes in Spain and the FCGPMI in Italy.

Standardisation and information

62. The availability of relevant information for investors varies by jurisdiction and by asset type. Newly-originated securitisations tend to be accompanied by detailed prospectuses and investor reports, including data on the assets included in the specific deal and monitoring performance metrics post origination, but these data have been inconsistent across deals.

63. Data availability has improved in various jurisdictions post-crisis. In the United States, Dodd-Frank and related initiatives will require that loan-level information is available to investors at the time of origination and on an ongoing basis. In Europe, the ECB and the Bank of England have introduced loan-level information requirements as part of their collateral eligibility criteria.⁶ Furthermore, ESMA is preparing draft regulatory technical standards for ABS disclosure requirements, in relation to the CRA3 (Regulation (EU) No 462/2013), which may include requirements on transaction documentation, loan-level data reporting and availability of cashflow models, consistent with the Bank of England's collateral eligibility criteria. But further improvement in data availability and standardisation might still be helpful.

64. Credit registers could also improve the availability and quality of information that could, in principle, also benefit securitisation markets by allowing investors to build more accurate models of default and recovery rates. In Europe, many countries already have credit registers; in the United Kingdom, no such credit register currently exists.

Accounting treatments

65. Differences in accounting treatments across jurisdictions and underlying asset types may also help to explain issuance patterns across securitisation markets. In particular, US banks, which report on a US Generally Accepted Accounting Principles (GAAP) basis, may have had stronger incentives to issue

securitisations than European banks, which follow International Financial Reporting Standards (IFRS) (or other national GAAP rules). This is because US GAAP allows for a greater proportion of structured finance vehicles to be treated as being off sponsoring banks' balance sheets. The tendency for 'arbitrage driven' transactions (such as leveraged collateralised loan obligations (CLOs), structured investment vehicles (SIVs), etc.) to be treated off balance sheet in contrast to 'funding ABS' transactions (such as RMBS and auto loan ABS), may have been a factor in their relative growth pre-crisis. That said, differences are expected to be smaller in the future.⁷

Substitutes

66. In contrast to the United States, there is a deep and liquid European covered bond market, which may have partially offset the reduction in European securitisation issuance.

67. In general, covered bonds require a higher degree of over-collateralisation than securitisations. And unlike securitised assets, covered bonds are an obligation of the issuing bank, backed by a pool of assets to provide investors with a second form of recourse in the event of the issuer's default.

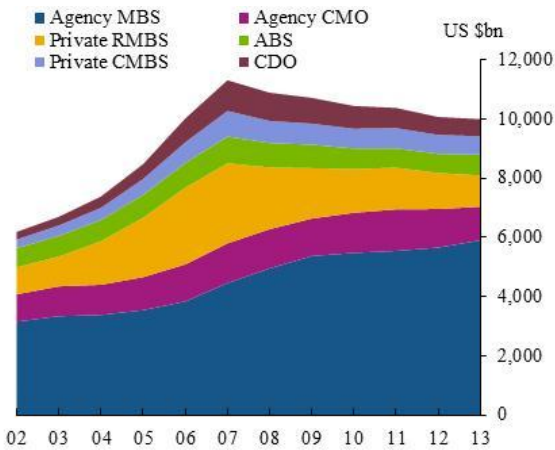
68. The regulatory treatment of covered bonds relative to securitisations may also increase the incentives for regulated firms to invest in covered bonds. One example of such differences in regulatory treatment is the Standardised Approach in the CRR, which applies lower risk weights to certain covered bonds for bank investors. Another is, subject to pending regulatory decisions, the LCR. Under the BCBS regulations, certain covered bonds may be eligible as Level 2A High Quality Liquid Assets (HQLA), whilst only a limited universe of securitised assets may be eligible as Level 2B HQLA, at the discretion of national authorities and subject to a higher haircut.

69. While covered bonds differ from ABS in a number of important ways, they also share numerous similarities – in particular, some prudently structured, high-quality ABS tranches may provide credit protection comparable to covered bonds that have similar underlying collateral. Regulatory requirements should therefore take into account these characteristics and, where warranted, ensure that there is a uniform approach to their regulation to ensure that both types of instrument are subject to appropriate regulatory requirements. Such an approach should help to ensure there are no regulatory incentives for undue overreliance on one type of instrument at the expense of the other.

⁶ For the Eurosystem, this began in January 2013 for RMBS, SME ABS and CMBS. In January 2014, the reporting requirements began for the other asset classes - auto, leasing and consumer ABS transactions – and in March 2014 for credit card ABS. For the Bank of England, reporting requirements were introduced in December 2011.

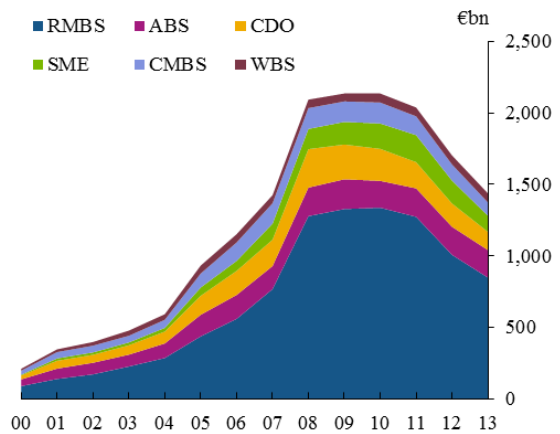
⁷ For example, at the request of the SEC and The President's Working Group on Financial Markets, FASB introduced FAS 166 and 167 effective 1 January 2010 'to address concerns about companies who were stretching the use of off-balance sheet entities to the detriment of investors'.

Chart 1: US securitisation outstanding



Sources: SIFMA.

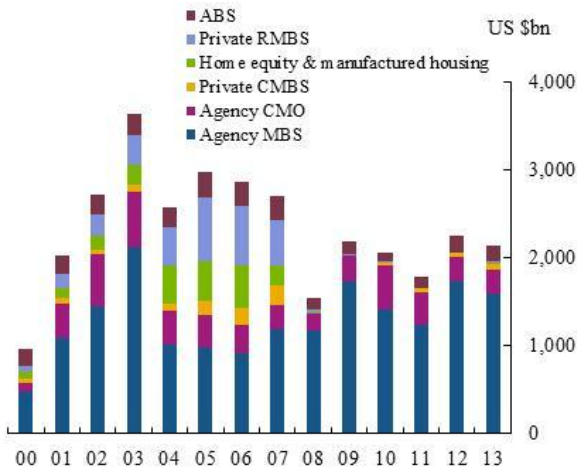
Chart 2: European securitisation outstanding ^(a)



Sources: SIFMA and Bank calculations.

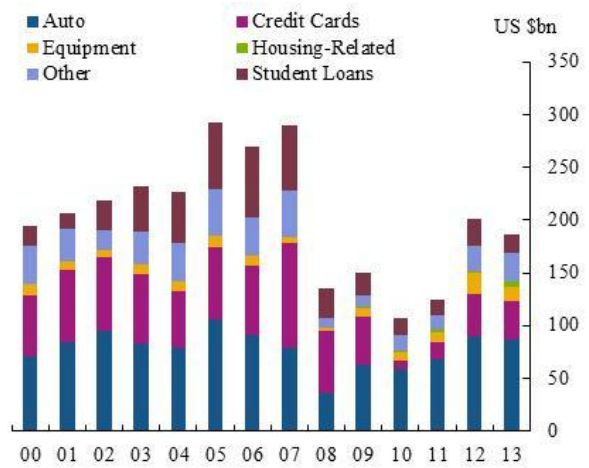
(a) Includes retained deals

Chart 3: US securitisation issuance



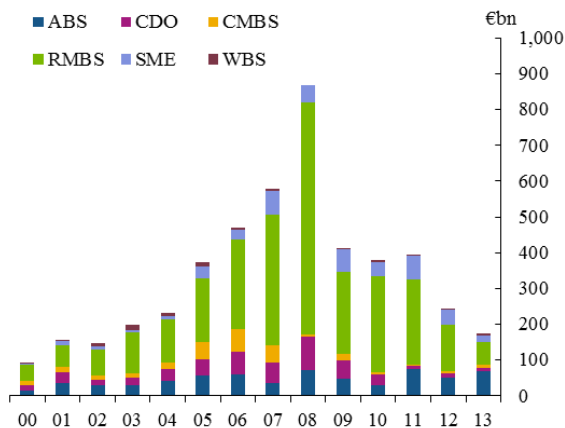
Sources: SIFMA.

Chart 4: US ABS issuance



Source: SIFMA.

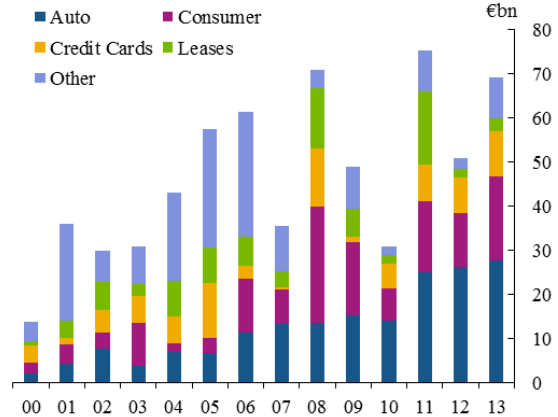
Chart 5: European securitisation issuance ^(a)



Sources: SIFMA and Bank calculations.

(a) Includes retained issuance

Chart 6: European ABS issuance ^(a)



Sources: SIFMA and Bank calculations.

(a) Includes retained issuance

Box 2**Regulatory context**

70. A number of regulatory initiatives, some already established and some still subject to negotiation or confirmation, affect incentives to issue or invest in securitised assets for regulated firms. Many of these initiatives have been designed with the aim of addressing the fragilities exposed during the crisis, such as opacity of securitisation structures, investors' often mechanistic reliance on external

ratings, insufficient capital held against exposures and misalignment of issuer and investor incentives. Table 1 sets out some of the most relevant initiatives but there are a number of others, such as the European Market Infrastructure Regulation (EMIR), Regulation A/B in the United States and the ESMA credit rating agency (CRA) disclosure rules.

Table 1: Selected regulatory initiatives

Regulatory initiative	Objective	Description	Channel of potential impact on securitisation	Timeline
G20 Retention principles	Aims to align incentives of issuers and investors.	In line with the statement from G20 leaders following the 2009 Pittsburgh summit, a number of jurisdictions have set, or are in the process of setting, risk retention requirements. In Europe a 5% retention requirement must be met for banks and certain other regulated investors to be able to invest in a securitisation. In the United States, regulatory agencies recently consulted on rules to implement retention requirements.	Demand (where the onus is on investors to ensure compliance, e.g. under AIFMD or CRR) and supply (if issuers find it difficult to meet retention requirements).	Retention requirements in force from 2011 via CRD/ CRR. Commission to adopt Binding Technical Standards by 30 June 2014. US rules under consideration.
BCBS Capital requirements	With respect to securitisation, aims to address the following: <ul style="list-style-type: none"> - mechanistic reliance on external credit ratings, - imprudently low risk weights - cliff-edge effects arising following credit rating downgrades 	Requires banks to hold capital against investment in securitisation. Also enables bank issuers to obtain capital relief on securitised assets sold to third-party investors subject to certain conditions.	Supply (enabling capital relief and affecting capital weights on retained risk tranches on funding transactions) and demand (capital requirements on bank investors) Banks' willingness to hold (and provide liquidity) on ABS affects non-bank investors' willingness to hold ABS	The BCBS consultation on its latest proposals closed for comments on 21 March 2014.
BCBS Liquidity requirements	Introduces a global framework for liquidity regulation that promotes the short-term resilience of the liquidity risk profile of banks	The LCR requires that a bank's stock of unencumbered HQLA be larger than the projected net cash outflows over a 30-day horizon under a stress scenario specified by supervisors. The BCBS standards give national authorities the discretion to include RMBS in Level 2B HQLA subject to certain conditions and a 25% haircut.	Demand (potential inclusion in HQLA) and supply (requirement to hold liquid assets against securitisation due to mature within 30 days and against liquidity lines to securitisation vehicles/ ABCP conduits)	In Europe, the CRR requires the Commission to specify a binding LCR by mid-2014.

Solvency II	Aims to establish a revised set of EU-wide capital requirements and risk management standards for insurers with the objective of increasing protection for policyholders.	Requires insurers to hold capital against investment in securitisation. The European Commission asked the European Insurance and Occupational Pensions Authority (EIOPA) to examine whether the calibration and design of regulatory capital requirements for long-term investments in certain asset classes under the envisaged Solvency II regime necessitates any adjustment in the context of promoting growth in the economy but without jeopardising the prudential nature of the regime.	Demand. Insurers are an important non-bank investor in ABS.	The EIOPA report was delivered in Dec 2013 and is now being considered by the European Commission.
Consolidation/ sponsorship	Ensure that the risks of banks' off balance sheet exposures to and other connections with ABCP conduits and other securitisation vehicles are properly captured in regulation.	Large exposure limits: BCBS has developed a framework for measuring and controlling large exposures to provide a common minimum standard internationally.	Reduction in supply.	Implementation of the revised standards is scheduled to take effect from 2019.
		Capital and liquidity regulation: banks face increased capital requirements for counterparty credit risk and are required to hold liquid assets against the potential draw-down of off-balance sheet credit and liquidity facilities.	Supply. Reduces the attractiveness of establishing ABCP conduits.	See above
		Scope of consolidation: work is on-going at the BCBS to ensure that scope of consolidation for banks is appropriate.	TBC	TBC

3 Barriers to a well-functioning securitisation market in the EU and economics of securitisation

71. There are a range of circumstances that may be preventing the emergence of a well-functioning securitisation market in Europe. This section explores the potential impediments that may be preventing transactions from being priced in a way that meets the demands of both investors and issuers.

Impediments to investors

Regulatory considerations

72. Long-term investors may face (increased) capital requirements that could deter investment in securitisation in the future, especially for smaller firms, for whom the infrastructure costs to investing in securitisation may be high. One potential example is the impact of Solvency II on insurers' incentives to invest in securitisations relative to other assets, where proposals for capital requirements are still under consideration.

73. The regulatory environment for bank investors also remains subject to some uncertainty, in terms of both capital and liquidity requirements, likely affecting their willingness to participate in the market. Regulatory initiatives have been designed to address the shortcomings highlighted during the crisis. However, the proposed changes arguably treat ABS in ways that might be perceived as unduly conservative, relative to both the realised credit performance of European securitisations during the crisis and more particularly relative to other forms of long-term debt such as covered bonds. Moreover, banks acting as market makers (and therefore holding inventory) will likely face increased capital requirements for their trading book assets. This may in turn adversely affect the economics of market making in securitisation markets, potentially negatively impacting secondary market liquidity. Additionally, the expectation among investors that most types of ABS will be excluded from banks' liquid asset buffers may incentivise banks to hold alternative types of eligible assets.

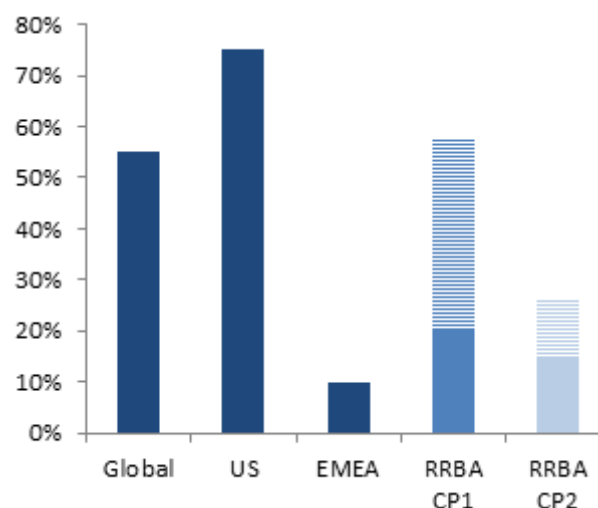
74. Inconsistent implementation of risk retention requirements across jurisdictions also has the potential to lead to an un-level playing field and further hinder cross-jurisdictional investment flows.

75. As noted above, future changes to capital requirements for securitisation are still under consideration. The December 2013 consultation paper from the BCBS on proposed revisions to the banking book securitisation framework for banks included less conservative capital requirements than the BCBS's initial proposals. And recent EIOPA proposals affecting insurance companies (Solvency II) include a less conservative treatment than previously proposed for securitisations with simple structures, and well identified and transparent asset pools with predictable performance. But in both cases, the proposed capital

charges may still be perceived by investors as high relative to other assets. Any differences in capital requirements across assets should be justified by a robust assessment of differences in relevant risks.

76. Chart 7 compares the implied risk weights that would have covered losses incurred by senior tranches on securitisations during the recent crisis with the BCBS proposals. It shows that the revised BCBS proposals now lie further below the implied risk weights for losses incurred globally. But this masks differences in loss rates across regions, which in Europe were just over a tenth of those in the United States. Against that, the severity of the actual stress seen in EU securitisations may not be fully representative of BCBS bank solvency standards. Furthermore, banks' holdings of securitisations have generally been international; a number of EU banks held and invested in US securitisations.

Chart 7: Implied risk weights covering global losses incurred and BCBS proposed risk-weights for AAA senior tranches. ^{(a),(b)}



Source: Fitch Ratings, BCBS and Bank calculations.

(a) Implied risk weights based on historical losses, and proposed risk weights for the External Ratings-based Approach under the first and second BCBS consultative documents.

(b) Losses incurred and expected between July 2007 and July 2011. Expected losses are based on Fitch's Recovery Rating.

Behavioural constraints

77. Asset managers could be deterred from holding securitisations as their own investors (e.g. pension funds, retail investors) may not be comfortable with the asset class, for example as secondary market liquidity may be limited and there is potential stigma attached, particularly given regulatory changes since the crisis.

Risk assessment and management

78. Investors require appropriate systems and expertise to assess and manage the risks inherent in the assets that they hold. This applies to the whole investment universe, but the hurdles for securitisations may be perceived as higher, for example, due to a lack of comprehensive market data, particularly for lesser-

developed asset classes such as ABS backed by SME loans. More generally, potential investors may be dissuaded by a lack of standardisation; this may be exacerbated in Europe by fragmentation, in terms of structures, documentation, asset types, legal frameworks and trading infrastructures.

79. Some securitisations are complex and may be subject to prepayment risk, both of which can exacerbate cash flow uncertainty. Smaller firms may outsource risk management of their portfolios, but this will increase the cost of investing in securitisations. Risk management may further be hampered by uncertainty around the depth of market liquidity for securitisations, particularly in the absence of significant activity by banks and concerns over the sustainability of investor appetite.

80. Equally, the crisis may have created some uncertainty over sponsor support, including the ability and willingness of issuers to call securitised assets at their expected call dates. The threat of unexpected credit rating changes and/or price movements further creates uncertainty for long-term investors in meeting their mandates and for leveraged investors in securing repo financing.

Further considerations affecting yields

81. From the investor's perspective it is important that the securitised asset produces an adequate level of yield given the risk, capital required and other costs of investment. This will be a function of two key components:

- *Perceived risks on the underlying assets.* For any given tranche structure, the credit risk of underlying assets is a key determinant for the required yield on the tranches. It may be the case that legacy loans originated pre-crisis have spreads that are too low, relative to the yields that investors demand on the bond tranches in light of their current perceived riskiness of the underlying loans. For example, relative to pre-crisis period, yield expectations may have risen, reflecting a greater appreciation of liquidity risk. Loans originated more recently may have higher spreads, but there may not be sufficient volumes of such loans to securitise, given currently muted levels of demand from real economy borrowers at elevated spreads.
- *The structure of the securitisation.* Typically a securitisation is structured so that some tranches produce high spreads and others produce low spreads. Given the need to offer investors high spreads, issuers could choose to skew spreads towards the former and retain the latter, but this approach would not support a funding objective.

82. It is also important that the cash flows produced by securitisation tranches suit investors' requirements. For example, certain life insurers and pension funds have strong preferences for matching long-dated liabilities with assets that have predictable or fixed cash flows. Of course, securitisations with long-dated,

predictable cash flows can be manufactured out of revolving pools of underlying shorter term assets, but this potentially increases complexity and cost.

Do respondents agree with the impediments to and economic concerns of investors that have been identified? Do respondents think that there are any additional impediments to investors, and if so, what are they?

Impediments to issuers Regulatory considerations

83. The requirement that issuers retain some portion of the securitisations that they originate has a clear rationale from a financial stability viewpoint, to ensure the incentives of the originator and investors are aligned. That said, retention requirements have the potential to act indirectly as a deterrent to some issuers, particularly those experiencing difficulty in funding retained portions. This may be particularly true of some non-bank issuers, including some CLO managers.

84. The BCBS revisions to the securitisation framework for banks have not yet been finalised and so there remains some uncertainty around how much regulatory capital relief banks will be able to achieve when issuing securitisations. This uncertainty may act as a deterrent to some issuers.

Availability of underlying loans and facilities

85. Issuers are likely to require a large granular pool of diversified⁸ eligible loans to attract investors, which may act as an impediment to regional lenders and non-banks that may operate in niche markets and undertake more opportunistic forms of lending. At the same time, depending on the prevailing economic environment, there may be less need and scope to securitise such assets if there is low underlying demand for loans from real economy borrowers.

86. Moreover, some loan types are more amenable to securitisation than others. In general, investors are likely to prefer loans: with cash flows that are easier to predict; for which substantial historical data exists to allow default behaviour to be analysed; and where credit risk can be easily summarised using standard metrics.

87. Some potential issuers may be reliant on other firms to fund their warehousing of loans prior to securitisation. In general, this should not act as an impediment for banks with access to significant funding. However, non-bank lenders may need to source this warehousing funding from banks and broker-dealers. This funding may be subject to strict conditions and access may be restricted during times of financial sector stress.

⁸ Diversified in terms of geography (retail loans), and by name and industry sector (corporate loans).

Systems and credibility

88. The structuring of securitisation requires systems that are capable of capturing and processing data in order to produce meaningful management information for use by investors and credit rating agencies. Larger issuers may already have these systems in place but, for smaller banks and non-bank companies, the fixed costs of installing the necessary systems may be prohibitive. New entrants to the market and smaller originators may further suffer from a lack of track record.

Reliance on credit rating agencies

89. As a result of the crisis and the widespread weakening in economic conditions, credit rating agencies now require far greater levels of credit enhancement to achieve a given rating, which consequently makes it more costly to issue structured finance assets. This problem is exacerbated in countries subject to rating caps where to obtain the maximum achievable rating agencies demand “AAA” credit enhancement levels. In addition, rating actions taken on sovereigns indirectly lead to ABS downgrades. In some EU countries, rating agencies currently also apply maximum rating caps to ABS that are not related to the underlying collateral quality itself, but to sovereign rating levels. In those countries, a triple-A rating for a securitisation – the benchmark in ABS markets – is no longer achievable without a guarantee from a supranational institution like the EIF, regardless of the credit support built into the structure.

90. The imposition of structured finance rating caps on ABS in certain EU countries has had a negative impact on the securitisation market. First, the rating caps may prevent certain investors from buying such transactions, as the ratings are below their internal investment guidelines for this asset class. Second, ratings still play a significant role in the capital and liquidity regulatory frameworks, so sovereign rating-capped ABS may be more harshly treated than their likely credit performance would imply. Third, the rating caps reduce the information content of the rating itself, such that an investor cannot easily distinguish between, for example, a true single-A rated bond and a rating-capped single-A bond.

Availability of ancillary facilities

91. One potential barrier relates to the availability of ancillary facilities necessary to arrange and service a securitisation, which raises risks and direct costs. These include:

- *Swaps.* Most securitisations require a swap contract to transform cash flows on the underlying assets into cash flows demanded by investors (the key exception is a pure ‘pass-through’ security, such as US Agency fixed-rate MBS backed by fixed-rate loans). The swap counterparty has to meet certain rating agency requirements in order for the securitisation bonds to achieve a given rating, and there are now fewer high quality swap providers that meet these requirements. In the event that a swap counterparty is downgraded below a certain rating

trigger, they are typically required to first post additional collateral and then, if downgraded further, to replace itself as swap provider.

- *Issuer Accounts and Guaranteed Investment Contracts (GICs).* Each securitisation requires an issuer bank account to collect and distribute cash flows, while GIC accounts guarantee a return (such as Libor–25bps) on monies held by the SPV. These monies include reserve funds (e.g. 1-2% of the securitisation) to provide liquidity and/or credit enhancement for the notes. Credit rating agencies have requirements regarding the acceptable ratings of the issuer and GIC account providers. There are relatively few providers that meet these requirements, a concentration that may be unhelpful from a systemic risk standpoint. Moreover, the incentives to provide accounts are currently low, given limited allowable opportunities to reinvest the cash profitably (although account providers have adjusted downwards their interest obligations to SPVs as a result of the low interest environment, which partly mitigates this disincentive). And the provision of such accounts may further be limited by large exposure and counterparty concentration considerations, which constrain the level of exposure individual banks can maintain to a given securitisation, group of related securitisations, originators and/or sponsors. As with the swap providers, originators face the risk that they will have to find a new account provider if their current one is downgraded, which may be more likely in times of stress.
- *Liquidity/credit facilities:* Similar considerations apply to the providers of liquidity/credit facilities to SPVs. These are essentially back-up lines that can be drawn in the event that, for example, there are substantial arrears on loans and there is not enough interest income from the assets to pay interest on the securitisation notes.

Further considerations affecting costs

92. From the point of view of an issuer, it is worth recalling the key motivations for issuing securitisations: credit risk transfer and funding. Factors affecting these objectives determine whether or not the economics of the transaction are acceptable to them, including:

- *Issuers’ views of economic risk transfer.* The cost of issuance must be outweighed by the value to the issuer of the economic protection achieved.
- *Regulations affecting capital relief:* If the capital relief available is considered low compared to the risk that is transferred, an issuer may be dis-incentivised to undertake credit risk transfer.
- *Alternative funding conditions.* It may be that securitisation is relatively expensive compared to other sources of funding, including via official sector schemes such as the Funding for Lending Scheme (FLS) in the United Kingdom and the ECB’s Long Term Refinancing Operations (LTROs). The progressive withdrawal of such schemes should begin to normalise these effects. And securitisation may remain more attractive to non-bank companies that cannot access official sector schemes.

Additionally, the extent to which a bank is considered 'too-big-to-fail' by investors may disadvantage securitisations relative to its other wholesale liabilities. Investors may assess a certain amount of implicit guarantee of some liabilities, whereas securitisations are often bankruptcy-remote and so are not considered to benefit from such guarantees. The international community, via the Financial Stability Board (FSB), is taking steps to ending distortions created by some entities being perceived as too-big-to-fail.

- *Realisation of losses.* If issuers sell loans to the SPV for a securitisation, these may need to be valued at 'market prices' and thus may cause the issuer to immediately realise a loss.
- *Cost pressures.* Reduced reliance on credit rating agency assessments may have introduced more uncertainty over pricing.

granting as they cannot be serviced from the underlying asset receipts. In addition, prevailing market and economic conditions have important implications for both the incentives of loan originators to issue securitisations, and for investors to buy them. For example, ongoing macroeconomic weakness in several EU countries may be aggravating investors' concerns about future asset quality deterioration of the ABS collateral pools.

Do respondents agree with the impediments to and economic concerns of issuers that have been identified? Do respondents agree that the infrastructure concerns raised above affect the economics of securitisation? Do respondents think that there are any additional impediments to issuers, and if so, what are they?

Market liquidity

93. Securitised assets tend to be traded in OTC markets, liquidity in which is typically provided by broker-dealers. Evidence suggests that trading volumes tend to be relatively low and that illiquidity is a key determinant of pricing.⁹

94. The low secondary market trading of ABS may be related to a number of specific features of the market: (i) in contrast to government and corporate bonds, which pay fixed rate coupons, ABS is primarily a floating rate product that in normal market conditions can lead to lower price volatility and fewer trading opportunities; and (ii) the market tends to be dominated by buy and hold investors, partly due to the high idiosyncratic nature of the structures; and this buy and hold trend has further strengthened in recent years as the weighted average life of ABS has shortened.

Do respondents agree that market liquidity may be a barrier to a well-functioning securitisation market?

Economics of securitisation

95. For the reasons outlined above, it may not be possible to construct transactions that meet the demands of both issuers and investors. In particular, the so-called 'deal economics' would often not work: given regulatory treatment, risk considerations and other factors, investors would require yield levels on securitisation tranches that the issuer is not capable of

⁹ For example, Hollifield et al (2012) find that trading in securitisation markets is fragmented and there is little or no trading in most individual securities. Also, Perraudin and Wu (2008) find that liquidity risk premia – as proxied by a measure of price stickiness – contributes a sizeable share to cross-sectional variation of ABS prices.

4 Policy Options

96. In considering options for transforming securitisation markets in the EU, it is vitally important to be cognisant not only of the advantages such markets confer, but also the potential risks they pose to financial stability. Such considerations point towards various desirable properties of simple, transparent and robust securitisation markets, including:

- **Limiting tendency to concentrate risk in systemic institutions:** Simple, transparent and robust securitisation markets require investors that are resilient to changes in economic conditions. It would therefore be desirable to achieve a distribution of risk across the financial sector that is transparent and diverse, with ABS ultimately being held by less leveraged investors. Commensurate with that, it would be desirable to ensure that banks did not hold an excessive proportion of the market. This would mitigate the impact on securitisation markets of uncertainties around banking sector balance sheets and reduce the risk that negative feedback loops take hold during times of stress because of unhelpful concentrations and interconnections.
- **Embodying features that improve the chances of predictable performance:** A number of features could contribute to predictable performance of securitisation, which in turn could support demand from investors. An alignment of interest between issuers and investors, which is the objective of regulatory requirements on retention, distances the market from the pure originate-to-distribute model. And securitisations backed only by real economy loans are often less complex, and therefore easier to understand than, for example, re-securitisations. It is also important that the relationship between the securitisation vehicle and the issuer is well understood and controlled. Finally, synthetic forms of risk transfer may be more opaque than cash forms.

97. Consistent with the discussion above, authorities should be aware of the ways in which securitisation could potentially increase concentrations of risk and interconnectedness amongst financial institutions. Examples include if a bank provides swap facilities or GIC accounts to another bank's securitisation vehicle, or accepts securitisations as collateral but is exposed to similar risks to the issuing or pledging bank's balance sheet.

98. The FSB has been undertaking work with the aim of ensuring a more resilient shadow banking system internationally, including securitisation markets. In line with this objective, the FSB has developed a monitoring framework to enhance national authorities' ability to track developments in the shadow banking system, enabling identification of the build-up of systemic risks and leading to corrective actions where necessary. The FSB has also coordinated the development of policies to reduce systemic risks,

including *inter alia* policies improving transparency and aligning incentives in securitisation.

99. The remainder of this section outlines potential initiatives in which authorities could be involved and seeks feedback from respondents. Such initiatives would aim to remove some of the impediments set out in Section 3, taking into consideration risks to financial stability.

Identification of high-level principles of 'Qualifying securitisation'

100. It may be beneficial for the authorities to support the development of high-level principles that identify 'qualifying securitisations'. Such securitisations should be simpler, more structurally robust and transparent, enabling investors to model and understand with confidence the risks incurred. They could also potentially be less risky, due to higher quality of underwriting standards. Due to retention requirements, incentives for adverse selection should further be reduced. In consequence, 'qualifying securitisations' could benefit from an increase in liquidity, as investors could be more confident as to the behaviour of their investments in a wide variety of economic and market conditions.

101. Nevertheless, it is important to note that 'qualifying securitisations' would not be 'risk free' and investors would still need to conduct proper due diligence around them. The principles that identify such securities would not aim to provide an opinion on credit or other risks. Rather, such a framework could promote securitisations where risk and payoffs could be more consistently and predictably understood and therefore make it more straightforward for investors to conduct their due diligence.

102. It is important to recognise that the use of 'qualifying securitisation' should not be regarded as a one-size-fits-all approach. For example, the characteristics that would warrant specific capital requirements for 'qualifying securitisations' might not necessarily be the same as those required for the inclusion of securitisations in banks' liquidity buffers. The features described in **Box 3** summarise those principles regarding simplicity, structural robustness and transparency that are likely to be common to most uses. Depending on the intended use of 'qualifying securitisations', additional requirements are likely necessary that build upon those principles.

The view of the Bank of England and the ECB is that a 'qualifying securitisation' should be defined as a security where risk and pay-offs can be consistently and predictably understood. Do respondents agree with this definition? What characteristics of a 'qualifying securitisation' not already included in the principles in Box 3 should warrant such treatments? Do respondents have any comments on the principles in Box 3?

103. A genuinely liquid market for 'qualifying securitisations' available for funding purposes could result from the following observations, which are self-reinforcing:

- Secondary market liquidity for 'qualifying securitisations' would be supported due to increased transparency and predictability of pay-offs;
- Improved liquidity and reduced credit risk of the securitisation may justify a different regulatory capital and liquidity treatment for some or all of its tranches;
- To the extent that the risk characteristics of some assets are successfully improved, these may naturally be reflected in haircuts for central bank liquidity operations that already accept securitisations as collateral;
- A reduction in the perceived post-crisis stigma towards securitisation will act to further support market liquidity for 'qualifying securitisations';

Do respondents think that a liquid market for 'qualifying securitisations' available for funding would benefit from a 'qualifying certification'?

104. These principles could provide a framework to aid various authorities (such as central banks and regulators) and market participants (such as credit rating agencies and investors) to set their own eligibility criteria. For example, a similar regime could be established to that applied to covered bonds, whereby compliance with certain criteria in the CRR leads to specific capital treatment. It would aid investors if compliance with the principles could be verified in a relatively straightforward manner, or would be carried out by an independent body. At the same time, it is important that any such qualifications were not seen by investors as a means of avoiding conducting their own due diligence.

How might such a framework be developed? What role could the appropriate authorities play in the process of certifying that a transaction is a 'qualifying securitisation'? What are the associated risks?

Standardisation of information disclosure

105. Markets for riskier and less mainstream securitisations may benefit from improvements to the availability of data that prospective investors can use to assess and manage risks. Contacts report that the ECB and Bank of England's efforts in reforming loan level reporting have been very helpful in this regard and harmonised standards may bring further benefits.

106. The ECB and Bank of England loan level reporting templates are closely aligned, but some minor differences do exist. There is software available to convert between the ECB templates and those used by the Bank of England, but currently only for RMBS collateral. In future updates of the templates, the ECB and Bank of England will be mindful to ensure consistencies and synergies to minimise the operational burden on issuers.

107. There may also be scope to improve the ability of investors and other market participants to access loan level data. Additionally, as described in paragraph 116 below, steps could be taken to encourage the industry to develop performance indices by ABS asset type and jurisdiction for benchmarking purposes.

Do respondents think that harmonisation and further conversion software could bring benefits to securitisation markets? If so, which asset classes should be targeted? How can accessibility to the existing loan level data be improved, so that it provides most value to investors?

108. The authorities could also investigate whether there may be scope to further simplify and standardise prospectuses, and standardise investor reports. ESMA is already working in this direction. Some industry bodies, such as the Dutch Securitisation Association, have embarked on similar initiatives.

109. Going a step further, investors may find it useful if all relevant prospectuses, standardised investor reports, and other relevant information were available via a single portal.

110. ESMA is also working on initiatives to ensure pre and post-trade transparency in OTC trades. This could contribute to better liquidity of securitisations.

Do respondents think that initiatives currently undertaken by authorities in this domain are sufficient or is there scope for further improvements? Would the availability of prospectuses and standardised investor reports in a single location be helpful to securitisation markets?

111. By transforming low-risk assets into more liquid products, investors will naturally have access to more information, including through market prices. But investors will still need to develop the necessary expertise to assess the associated risks. A track record will also need to be established to attract investors. Lack of comprehensive and reliable historical performance information on a specific asset class may hamper investors' risk assessment and, as a result, raise the spread required to invest, or deter investment altogether. As already mentioned, ABS loan level data, some of which has been publicly available since December 2011 and January 2013 for the United Kingdom and for the Eurosystem respectively, will over time provide a significantly improved information base for analysing risk of a broader range of products, such as SME loans.

112. This could be complemented by information from credit registers. A credit register, usually pooled with a business register, could provide greater information on underlying borrower credit history and financial health. A separate Bank of England Discussion Paper considers whether the availability of credit information should be improved, including to

investors in securitisations. It also considers how these improvements might best be delivered, including through the United Kingdom's existing credit reporting infrastructure or through the establishment of a central credit register.¹⁰

113. Access to granular harmonised data in credit registers is currently often limited to regulators, supervisors and reporting agents.

114. Facilitating investors' access to credit data could be especially beneficial for securitisations of asset classes such as SME loans where the level of historical performance information available between incumbents and new entrants is most obviously uneven and generally lacking. Harmonisation of requirements and definitions could also facilitate broader investor participation. Investors' access to credit data could, however, only be granted in a manner that is consistent with applicable national data protection, confidentiality and professional secrecy laws. The current absence of uniform national practices in this regard or, indeed, of any credit registers in some jurisdictions would also imply a significant delay before any such credit registers were established and harmonised at national and European level, respectively.

115. A wider availability of credit data could aid the development of standardised metrics that are strong predictors of borrower performance. Examples of such metrics for mortgage pools include loan-to-value (LTV) and FICO or other credit scores. There may also be ways to create similar metrics of credit risk from other sources, e.g. building on statistical data.

Do respondents agree that facilitating investors' access to credit data in an appropriate manner could support the emergence of securitisation markets? Would credit registers be helpful in this respect? If so, which asset classes should be targeted? In what form could access be granted to ensure that borrowers' confidentiality is preserved?

In order to aid performance measurement and to provide investors with industry-level data, would it be helpful if certain macro-economic data were disclosed or if banks/ non-banks published certain aggregated standardised data? What are the challenges of providing potential investors with sufficient borrower and loan-level data to enable them to model credit risk, and how can these be overcome? What other elements would in your view help to improve secondary market functioning for securitisations?

116. Benchmark indices of underlying borrower, loan and tranche performance could help to support securitisation markets. Such indices could use credit data, as mentioned above. Underlying loan

performance data can be used to develop improved risk transfer products, including by separating asset types into "index" risk and institution- and security-specific "basis" risk, which are important for investors to help align their exposures with their risk appetite. A handful of tradable indices may, however, encourage imperfect hedging or damage confidence if sold heavily during a period of market turmoil.

Do respondents think that authorities should consider encouraging the industry to develop such benchmark indices? What risks might these give rise to? What indices would be most useful and which could be easily produced?

Enhanced transparency of credit ratings

117. To promote greater transparency and understanding amongst investors around ABS credit ratings that are subject to a sovereign ceiling and ancillary facilities rating caps, credit rating agencies should be encouraged to publish additional information to complement the headline rating. For example, grids could be published to show the rating of the various tranches that would be achieved if the sovereign and ancillary facilities rating caps were to be set at higher levels than currently. Increased transparency would also improve investor understanding around the evolving risks of the securitisation and may also help in the secondary market liquidity of these instruments. For instance, such rating grids may help overcome minimum rating requirements in the internal investment guidelines of the investors, if investors wish to filter out the effect of the sovereign ceiling.

Do respondents agree that additional information in the form of a matrix showing implied ratings if the sovereign and ancillary facilities rating caps were to be set at higher levels would be helpful in supporting the investment process and contribute to increased transparency and liquidity?

Design of ancillary facilities

118. To mitigate a securitisation SPV's credit risk, credit rating agencies require that institutions acting as swap counterparties and/or providing issuer and GIC accounts and liquidity/credit facilities meet certain rating requirements.

119. But the availability of counterparties eligible to provide such ancillary services is constrained by a combination of: (i) ratings requirements; (ii) regulatory large exposures and connected counterparty considerations; and (iii) systems capabilities, particularly around analytics and risk management.

120. Regulatory large exposures limits could be a constraint if sponsors and/or originators of securitisation transactions are required to aggregate exposures to third parties – on SPV swaps and bank accounts – with their own direct exposures to such third parties.

121. The provision of swaps is a critical aspect of an SPV's risk management procedures. Typically, they are

¹⁰ Discussion Paper: Should the availability of UK credit data be improved, available at: http://www.bankofengland.co.uk/publications/Documents/new_s/2014/dp300514.pdf

structured as balance-guaranteed swaps in which the notional principal amount adjusts to match the balance of a reference obligation - namely, a pool of receivables or a bond issued by the SPV. The matching of the notional mitigates the SPV's exposure to basis risk as well as unmatched notional balances. These swaps require considerable investment in systems, analytics and risk management capabilities.

122. GIC accounts and issuer bank accounts are also critical to the functioning of the SPV but they tend to be simpler to provide than the swaps. The provision of these accounts by a rated counterparty help to mitigate risks associated with funds collected, for the benefit of the securitisation debt holders by, amongst other benefits, segregating collections from the originator's accounts.

123. It may be beneficial to investigate ways of facilitating SPV bank accounts that fall outside the account provider's insolvency estate, and so are fully protected in the event of the account provider's default. This would mean that a larger number of originating banks would be able to provide the key accounts to the SPV, avoiding a concentration of such providers among a small group of higher-rated banks. It would also enable third party service providers to focus on the provision of swaps, which tend to be more complex to provide than GIC accounts and banks accounts. But there are a number of hurdles to such an initiative that would not be straightforward to overcome. In particular, national insolvency law in the jurisdiction in which a bank is subject to insolvency procedures dictates the relative strength/preference of creditors' claims, and therefore the establishment of preferred treatment for SPVs would have to be implemented on a jurisdiction-by-jurisdiction basis. As such, potential benefits and costs of such an initiative need to be carefully weighed.

How important do respondents see the impediment related to the availability of ancillary facilities? Would the benefits of facilitating SPV bank accounts that fall outside the originator's insolvency estate outweigh the costs of such an initiative?

Are there other initiatives in this area that would be beneficial?

Broader questions:

With regard to the policy options mentioned, are there any other considerations authorities should be mindful of?

Do respondents think there are other policy options authorities should consider to support the emergence of simple, transparent and robust securitisation markets? Beyond securitisation, might there be other ways of achieving (some of) the benefits of securitisation as outlined in Section 2? What might be the associated risks of such options?

Box 3**Principles of a ‘qualifying securitisation’**

124. There is evidence that securitisations with particular features — with respect to underlying assets and structural safeguards — have performed better than for the structured finance market as a whole.

125. In Europe, central bank eligibility criteria have provided a robust filter to exclude overly complex and less transparent transactions. It is noteworthy, for example, that these criteria ruled out those segments of the structured finance market that performed badly during the crisis, including synthetic CDOs, re-securitisations and whole business securitisations. At the same time, US subprime RMBS, although representing true sale securitisation of granular consumer assets, also performed badly. This was driven by several well-known anomalies, including lax underwriting standards accompanied by little risk retention, which have largely now been corrected by legislation in Europe.

126. The aim of designating securitisations that conform to certain principles is to identify securitisations where their simplicity, structural robustness and transparency enable investors to model risk with confidence. Such a designation is not intended to provide an opinion on credit or other risks, but make the assessment of these risks more straightforward. The designation would apply to all tranches of the securitisation.

127. The following high level principles could be considered for this purpose. These principles do not intend to provide detailed prescriptive criteria. They are general, given the range of potential applications, and might serve as a platform from which more detailed criteria could be built as appropriate (e.g. regulatory capital and liquidity treatment, credit rating assessment, etc.)

128. **Nature of assets:** The receivables or assets underlying the securitisation must be credit claims or receivables with defined terms relating to rental payments or principal and interest payment. Any referenced interest payments should be based on commonly encountered market interest rates and may include terms for caps and floors, but should not reference complex formulae or exotic derivatives.

129. **Underlying asset performance history:** Verifiable loan loss performance should be made available for substantially similar receivables to those being securitised, for a sufficient time period of at least the effective life cycle of the receivables and covering at least one period of significant market stress.

130. **Primary obligors:** The securitisation will have recourse to the ultimate obligors for the underlying receivables, i.e. it may not rely upon contingent or

derivative-linked claims or be a securitisation of other securitisations.

131. **Expectation of payment:** The originator must demonstrate that any receivables being transferred to the securitisation are loans, advances or financings that are homogenous in respect of their asset type and consistently originated in the ordinary course of the originator’s business. These can be loans, advances or financings to:

- obligors who have satisfied prudent and consistent underwriting criteria and have been assessed as having ability and volition to make timely payments on obligations; or
- granular pools of retail consumers for which the expected cash flows have been modelled to meet stated obligations of the securitisation under prudently stressed loan loss scenarios.

132. **Current and self-liquidating:** Any receivables being transferred to the securitisation should be current in payment, i.e. they should not include delinquent obligations. In addition they should be self-liquidating from intrinsic cash flows, i.e. they may not rely on future borrowings, or asset sales to pay timely interest and principal.

133. **Security:** Where underlying receivables are secured on specified tangible assets, such security must be first-ranking or, if lower ranking, rights associated with all prior ranking security shall also be transferred to the securitisation.

134. A non-exhaustive list of examples of underlying assets that may comply with the above principles, (subject to meeting all other criteria) could include: residential mortgages, certain commercial real estate mortgages, loans to SMEs, automobile loans/leases, consumer finance loans, credit card receivables and leasing receivables.

Structure

135. **Perfection of interest:** The securitisation should effect true sale in its transfer of underlying receivables from the seller on terms such that the transfer of these assets:

- is enforceable against any third party; and
- is beyond the reach of the seller, its creditors or liquidators; and
- is not effected through credit default swaps or derivatives; and
- is not subject to identifiable re-characterisation or claw-back risks.

Legal opinion should confirm these.

136. **Observability:** To aid risk assessment, the securitisation must be able to distinguish and report all income and disbursements, i.e. scheduled principal, scheduled interest, prepaid principal, past due interest and fees and charges.

137. **Debtor payments:** Definitions, remedies and actions relating to delinquency and default of underlying debtors must be given, in clear and consistent terms.

138. **Payment priorities:** The priorities of payments for all liabilities in all circumstances must be clearly defined at the time of securitisation.

139. **Rights:** All voting and enforcement rights related to the assets must be transferred to the securitisation and the rights associated with liabilities of the securitisation under all circumstances must be clearly defined, with the most senior rights afforded to the most senior liabilities.

Transparency

140. **Initial data:** Sufficient loan-level or granular pool stratification data should be available at the time of securitisation to potential investors in order to permit construction and analysis of cash flow models. Cash flow models should also be made available.

141. **Ongoing data and information:** Updated loan-level performance data and standardised investor reports should be made available to current and potential investors on a monthly/quarterly basis throughout the life of the securitisation.

142. **Conformance with Prospectus Directive:** Notes should provide investors with access to the full range of disclosure of legal and commercial information, along with comprehensive risk factors, in conformance with those required in the Prospectus Directive.

143. **Servicing and counterparties:** Transaction level information, such as servicing responsibilities (and special servicing responsibilities), as well as the identity, roles, and responsibilities of all parties to the transactions should be clearly set out in the transaction documentation. The servicer should apply the same servicing policies, procedures and standards to the underlying assets that it applies to other similar non-securitised assets. Provisions should be documented for the replacement of servicers, derivative counterparties and liquidity providers in the event of failure or non-performance or insolvency (or other deterioration of creditworthiness) of any such counterparty to the securitisation.

External parties

144. The securitisation should be subject to ongoing independent credit assessment, for example, by two recognised external credit assessment institution (ECAIs).

145. The terms and documentation of the securitisation should be reviewed and verified by an authorised legal practice.

146. The initial and ongoing terms and reports for the securitisation should be reviewed by an authorised accounting practice or the Calculation Agent of the transaction.

Do these principles seem broadly sensible given the objective of encouraging a set of securitisations that are more amenable to risk assessment? Are there any obvious unintended consequences?

5 Feedback on the Discussion Paper

147. The ECB and Bank of England would welcome comments from interested parties on the different considerations for transforming the securitisation market as set out in this Paper. In gathering information to help to consider the case for transforming the securitisation market, the two central banks hope to engage with a broad range of stakeholders, including other public authorities, banks, credit rating agencies, credit reference agencies, industry bodies, market participants, academics, foreign regulators and other interested parties. Although the ECB and Bank of England are keen to elicit views on all aspects of this Paper, feedback on the following questions is particularly welcomed:

- Do respondents agree with the benefits of a well-functioning securitisation market as outlined in Section 2?
- Do respondents agree with the impediments to and economic concerns of investors that have been identified? Do respondents think that there are any additional impediments to investors, and if so, what are they?
- Do respondents agree with the impediments to and economic concerns of issuers that have been identified? Do respondents agree that the infrastructure concerns raised above affect the economics of securitisation? Do respondents think that there are any additional impediments to issuers, and if so, what are they?
- Do respondents agree that market liquidity may be a barrier to a well-functioning securitisation market?
- The view of the Bank of England and the ECB is that a 'qualifying securitisation' should be defined as a security where risk and pay-offs can be consistently and predictably understood. Do respondents agree with this definition? What characteristics of a 'qualifying securitisation' not already included in the principles in Box 3 should warrant such treatments? Do respondents have any comments on the principles in Box 3?
- Do respondents think that a liquid market for 'qualifying' securitisations used for funding would result from a 'qualifying certification'?
- These principles may then provide a framework to aid various authorities and market participants to set their own eligibility criteria. How might such a framework be developed? What role could the appropriate authorities play in the process of certifying that a transaction is a 'qualifying securitisation'? What are the associated risks?
- Do respondents think that harmonisation and further conversion software could bring benefits to securitisation markets? If so, which asset classes should be targeted? How can accessibility to the existing loan level data be improved, so that it provides most value to investors?
- Do respondents think that initiatives currently undertaken by authorities in the area of standardisation of prospectuses and investor reports and trade transparency are sufficient or is there scope for further improvements? Would the availability of prospectuses and standardised investor reports in a single location be helpful to securitisation markets?
- Do respondents agree that facilitating investors' access to credit data in an appropriate manner could support the emergence of securitisation markets? Would credit registers be helpful in this respect? If so, which asset classes should be targeted? In what form could access be granted to ensure that borrowers' confidentiality is preserved?
- In order to aid performance measurement and to provide investors with industry-level data, would it be helpful if certain macro-economic data were disclosed or if banks/ non-banks published certain aggregated standardised data? What are the challenges of providing potential investors with sufficient borrower and loan-level data to enable them to model credit risk, and how can these be overcome? What other elements would in your view help to improve secondary market functioning for high-quality securitisation?
- Do respondents think that authorities should consider encouraging the industry to develop such benchmark indices? What risks might these give rise to? What indices would be useful and which could be easily produced?
- Do respondents agree that additional information in the form of a matrix showing implied ratings if the sovereign and ancillary facilities rating caps were to be set at higher levels would be helpful in supporting the investment process and contribute to increased transparency and liquidity?
- How important do respondents see the impediment related to the availability of ancillary facilities? Would the benefits of facilitating SPV bank accounts that fall outside the originator's insolvency estate outweigh the costs of such an initiative? Are there other initiatives in this area that would be beneficial?
- With regard to the policy options mentioned, are there any other considerations authorities should be mindful of?
- Do respondents think there are other policy options authorities should consider to support the emergence of simple, transparent and robust securitisation markets?
- Beyond securitisation, might there be other ways of achieving (some of) the benefits of securitisation as outlined in Section 2? What might be the associated risks of such options?
- Do the principles set out in Box 3 seem broadly sensible given the objective of encouraging a set of securitisations that are more amenable to risk assessment? Are there any obvious unintended consequences?

Box 4

Securitisation and the financial crisis

148. This box provides an overview of the key failings of the securitisation market leading up to the financial crisis and how they contributed to the amplification of losses in the sub-prime mortgage market. In the years running up to the 2007-09 financial crisis the United States underwent a credit boom, largely funded by a huge expansion in securitisation issuance. However, the growth in securitisation **did not lead to a diverse distribution of risk across the system**. Much of the risk resided with banks in the form of: large portfolios of ABS held in their trading books, hedged against monoline insurers (i.e. the so-called negative basis trade portfolios); off-balance sheet exposures via banks' support for securities-arbitrage ABCP conduits and SIVs; and banks' holdings of retained tranches (often the low-yielding senior tranches which were most susceptible to tail risks).

149. In the years running up to the crisis, securitisation became increasingly **complex and opaque**. CDOs of ABS were created in order to bundle-up and re-securitise mezzanine tranches, for which there were no natural buyers; and CDO-squared and leveraged super-senior products were engineered to enhance the potential returns on senior tranches that were trading at very narrow spreads. These innovations were partly the result of investors' **over-reliance on credit ratings**. But the assumptions used by credit rating agencies (and banks) to model credit risk proved to be inadequate. In particular, the assumptions significantly underestimated the correlation of the performance of mezzanine RMBS tranches underlying CDOs of ABS and over-estimated the quality of underlying sub-prime loans. As a result, the majority of AAA-rated tranches that were linked to sub-prime mortgages were downgraded as the crisis took hold.

150. Loose regulatory treatment helped fuel the securitisation boom and bust. The **absence of retention requirements** allowed loans to be originated solely for the purpose of securitisation. This weakened lenders' incentives to apply stringent underwriting standards, with these incentives compromised further by investors' over-reliance on credit ratings. **Loose capital requirements** allowed investment banks to hold near-zero capital against 'hedged' multi-billion dollar negative basis trade books of ABS. And a **lack of disclosure requirements** on banks' exposures to securitisations, coupled with accounting rules that allowed many exposures to be **held off balance sheet**, added to the uncertainty around the creditworthiness of many banks as the crisis unfolded.

151. In 2007, markets began to perceive that US house prices were at risk of falling and that the **poor quality of underwriting standards** of US sub-prime mortgages would therefore lead to significant falls in their values. Previously it had been well known that the underwriting standards were weak but market

participants felt that this did not matter in a world of ever increasing house prices. The reappraisal, which began in 2007, exposed a chain of vulnerabilities in funding markets that would bring the global financial system to the brink of failure. Following the bankruptcy of several US sub-prime mortgage lenders and a series of sharp ratings downgrades of US sub-prime MBS in August 2007, uncertainty around banks' exposures to losses caused money markets to freeze. ABCP conduits were the first to see their funding dry up. These conduits, which were off-balance sheet vehicles sponsored by banks, had issued around US\$1.2 trillion of short-term ABCP, and a portion of this was invested in securitisations of longer-term assets (including mortgages, credit card receivables and other loans).

152. The run on the ABCP market in the second half of 2007 led to a 29% fall in outstanding ABCP and forced sales of their underlying assets, worsening liquidity in the US mortgage market. Banks' sponsorship of MMFs, who were large holders of ABCP, amplified uncertainty and potential losses in the banking sector. Credit rating downgrades of monoline insurers in June 2008 marked the start of the demise, leaving banks' ABS hedges transacted with them worthless. Money market conditions worsened, with haircuts rising on a wide range of repo collateral types, contributing to the failure of Lehman Brothers in September 2008. This led to Reserve Prime 'breaking the buck' and a subsequent run on MMFs, which left at least 43 MMFs requiring support from their bank sponsors. Haircuts rose further across a broad range of collateral types, draining liquidity from the financial system and fuelling the crisis.

Box 5

Determinants of market liquidity

153. Market liquidity is vital to well-functioning markets and is a key driver of bond yields (Chen, Lesmond and Wei, 2007; Bao et al (2011)). This box sets out how to define and measure market liquidity and the causes of market illiquidity.

Definition and measurement

154. A market is liquid if there is little difference between the transaction price and the fundamental value (Brunnermeier and Pederson, 2008). This is likely to be the case when transactions can take place rapidly with little impact on price (Borio, 2000). Measures of liquidity include: bid-ask spread; market depth (quantity of limit orders at a bid-ask spread); inverse of trading volume; number of non-trading days; market resiliency (speed at which liquidity recovers from shocks); price impact (regression coefficient of returns on signed volume); and price reversal (minus the autocovariance of returns).

Causes of market illiquidity

155. Market illiquidity is the result of market imperfections (Vayanos and Wang, 2013). Below are nine (related) imperfections that can reduce market liquidity. Costs of participation include buying trading infrastructure or membership of a financial exchange, having capital available at short notice, monitoring market movements and learning about an asset. Agents participating in a market incur these costs even if they do not trade.

- **Transactions costs.** These costs drive a wedge between the buying and selling price of an asset. They include brokerage commissions, exchange fees, transaction taxes, bid-ask spreads and the price impact of a trade.
- **Asymmetric information.** Agents can have different information (or have different abilities to process the same information). Asymmetric information reduces liquidity if buyers anticipate that sellers are more likely to sell an asset when their private information implies a low value for the security. At one extreme, adverse selection can cause markets to breakdown (Akerlof, 1970).
- **Imperfect competition.** This includes competition between agents or between intermediaries such as market makers. For example, some investors might be large relative to others and have the ability to influence prices and market makers might increase bid-ask spreads if there is a lack of competition.
- **Funding constraints.** Actual or expected limits on investors' ability to borrow and fund their positions can reduce market liquidity. Brunnermeier and Pederson (2009) show that when funding liquidity is tight, traders become reluctant to take on positions, especially 'capital intensive' positions in high-margin securities. This lowers market liquidity and prices become driven more by funding liquidity than by movements in fundamentals. They cite

Mitchell, Pedersen, and Pulvino (2007) who find significant liquidity-driven divergence of prices from fundamentals in the convertible bond markets after capital shocks to the main liquidity providers (convertible arbitrage hedge funds).

- **Search costs.** Locating suitable counterparties in decentralised markets can take time and involve search costs (intermediaries reduce these costs by creating a central marketplace).
- **Strategic trading motives.** Holders of assets accounted for at historical cost (rather than at fair value) may refuse to sell them in downturns so that they can gamble for resurrection (selling would mean taking a loss). Alternatively, potential buyers may play a 'waiting game' to buy fire-sale assets even cheaper in the future.
- **Crowded markets (homogenous strategies).** The continuity of the market tends to break down if many traders use similar strategies (Buchanan, 2012). One example of crowded strategies is mechanistic defensive responses by market participants in times of stress, such as, dynamic hedging, value-at-risk limits or stop-loss strategies which could reinforce market movements (as in the 1987 stock market crash).
- **Short-termism.** Traders may have sub-optimally short trading horizons. For example, Vayanos (2004) builds a theory in which investors are fund managers and are subject to withdrawals that depend on the fund's performance. During volatile times, the probability that performance falls below an exogenous threshold increases, and withdrawals become more likely. This reduces the managers' willingness to hold illiquid assets, and raises the liquidity premia. In De Long et al (1990) arbitrageurs do not trade aggressively against price discrepancies between assets for fear that they might widen in the short term.

156. In summary, a liquid market requires well-funded buyers, widely available information on the asset being traded and a mechanism for buyers and sellers to meet and trade in a competitive, low-cost environment.

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