

IMF STAFF DISCUSSION NOTE

Securitization: The Road Ahead

Miguel Segoviano, Bradley Jones, Peter Lindner,
and Johannes Blankenheim

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Prepared by Miguel Segoviano, Bradley Jones, Peter Lindner, and Johannes Blankenheim¹

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Authors' E-mail Addresses:

msegoviano@imf.org; bjones@imf.org;
plindner@imf.org; jblankenheim@imf.org

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EXECUTIVE SUMMARY

Placing private securitization markets back on a firm and sustainable footing has never been more important. Financial risk-taking has resurfaced, but securitization has yet to retake its instrumental role in rekindling credit flows and diversifying risks. Clearly, securitization must be managed in a way that supports financial stability rather than posing risks to it. Many reforms have focused on mitigating these risks. They need to be complemented by further policy actions to secure a thriving financial ecosystem for securitization.

Proposed reforms along the four-stage financial intermediation chain should be strengthened. First, the quality of underlying *loan origination practices* should be further beefed up to restore the appetite for securitization. Second, *securitization intermediaries* must be encouraged to develop structures that are transparent, straightforward to value, and primarily designed to finance the real economy. Legal ambiguities related to the rights and obligations of servicers, trustees, and investors should be avoided. Establishing the secure, transparent, and cost-effective transfer of claims on collateral will be paramount. Third, *credit ratings* can be put to better use. Standardized definitions of securitization characteristics and full disclosure of the rating process would increase transparency and confidence. The practice of rating shopping should be disclosed and the removal of references to external ratings in regulations accelerated. Fourth, *investors* can be galvanized by ensuring consistent application of capital charges across asset classes and borders. It will be beneficial to avoid large step-changes in charges (the so-called “cliff effects”) between classes of securitized assets that do not differ much in underlying quality.

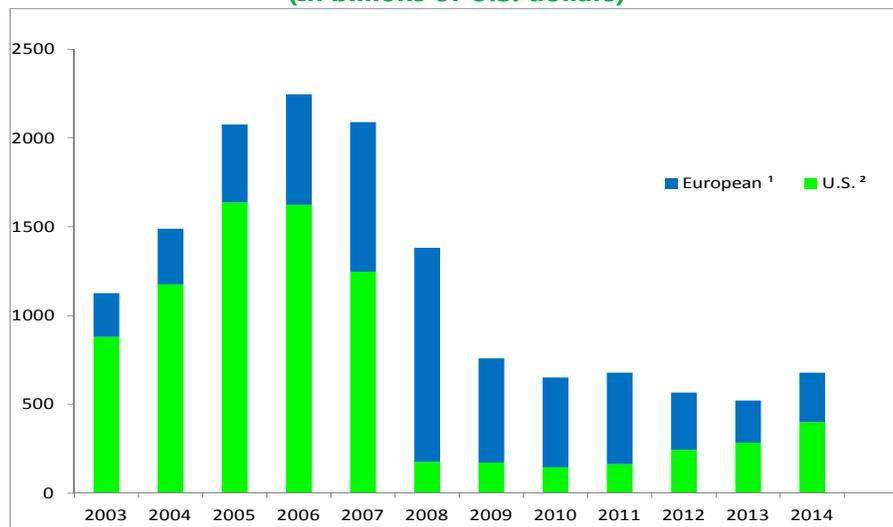
More granular application of industry standards for the classification of risk would preserve the benefits of those standards while mitigating due diligence problems encountered during the crisis. A single aggregate label for risk tends to act as a credit rating, encouraging investors to shirk on their due diligence. Changes in the rating can create forced buying and selling pressure independent of the variation in investor tolerances for risk. Proposals for a binary (high-low quality) aggregate classification system risk creating a fragmented market with significant pricing discontinuities. Instead, standardization across individual risk factors (i.e., duration, prepayment risk, collateral fungibility, track record of credit performance, etc.) could mitigate these concerns.

Finally, securitization markets would be strengthened by fostering a diversified nonbank institutional investor base with a long time horizon. In the case of Europe, for instance, the development of a suitable nonbank investor base will likely require the pan-European harmonization of loan-level reporting standards, documentation standards, insolvency regimes, and taxation treatment of securitizations. Regulatory, institutional, and product design obstacles will also need to be overcome to encourage greater sponsorship from European insurers and pension funds, both of which are underutilized potential sources of patient, long-term capital. These efforts could also contribute to the broader aim of diversifying the sources of financing for the European economy.

INTRODUCTION

1. **The rehabilitation of private securitization markets has emerged as a key area of focus for policymakers.** When operating efficiently, securitization supports economic growth and financial stability by enabling issuers and investors to diversify and manage risk. By transforming a pool of illiquid assets into tradable securities, securitization frees up bank capital, allowing banks to extend new credit to the real economy, and supports the transmission of monetary policy. However, securitization has the capacity to amplify the flow of credit inside or outside the banking system, increase leverage, exacerbate misaligned incentives in the financial intermediation chain, and, thus, ultimately amplify systemic risk. Therefore, strong reasons exist to make the asset class as simple, transparent, and robust as possible.²
2. **The time has never been more right to complete the task of ensuring securitization markets are placed on a firm and sustainable footing.** Aggressive forms of risk-taking are creeping back into select areas of corporate credit markets (IMF, 2014a; Jones, 2014), while signs of fragmentation have emerged in securitization issuance patterns within and across jurisdictions—selective signs of recovery are visible for certain asset classes and in certain regions, but activity in other classes and regions is moribund. As a whole, securitization issuance in the United States and Europe is currently running at less than half the levels observed in 2003 (Figure 1).

**Figure 1. Total Private European and U.S. Securitization Issuance
(In billions of U.S. dollars)**



Sources: Association for Financial Markets in Europe; Bloomberg; IMF staff calculations; and the Securities Industry and Financial Markets Association.

Note: Figures for 2014 are annualized based on data to September.

¹ European securitization includes asset-backed securities (ABS), collateralized debt obligations, mortgage-backed securities, small and medium enterprise securitizations, public finance initiatives, and wholesale business securitizations.

² U.S. securitization includes ABS, commercial mortgage-backed securities, and residential mortgage-backed securities.

² For a review of the ways in which securitization can both improve and threaten financial stability, see Segoviano and others (2013).

3. **In Europe, total securitization issuance declined to a 10-year low in 2013, more than 40 percent below the post-1999 average.** With the marked reduction in securitization issuance unfolding at a time when the regional banking system has faced considerable pressure to deleverage, tight credit conditions have hampered the recovery of the European economy, particularly affecting small and medium enterprises (SMEs). Much of the issuance in Europe since the crisis has been retained by issuing banks for the primary purpose of using it as collateral with the European Central Bank and the Bank of England (Figure 2a). Pronounced declines have been recorded in residential and commercial mortgage-backed securities (RMBS and CMBS), collateralized debt obligations (CDOs), and SME securitizations. In the case of asset-backed securities (ABS) and wholesale business securitizations (WBS), volumes have recovered back to or above long-term averages, though these product types have historically accounted for only a fifth of European securitization issuance (Figure 2b).³

Figure 2a. Placed and Retained European Securitization Issuance (In percent)

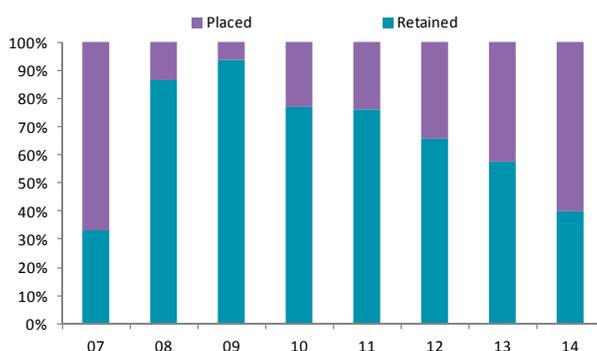
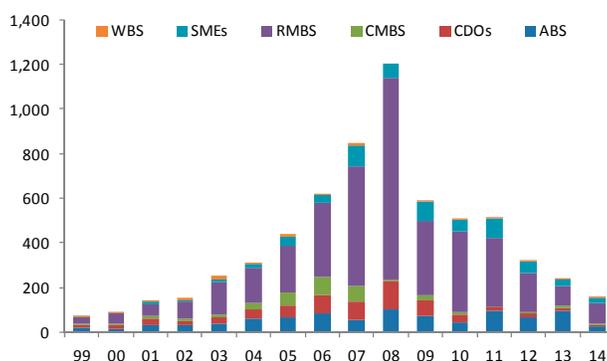


Figure 2b. Total European Securitization Issuance (In billions of U.S. dollars)

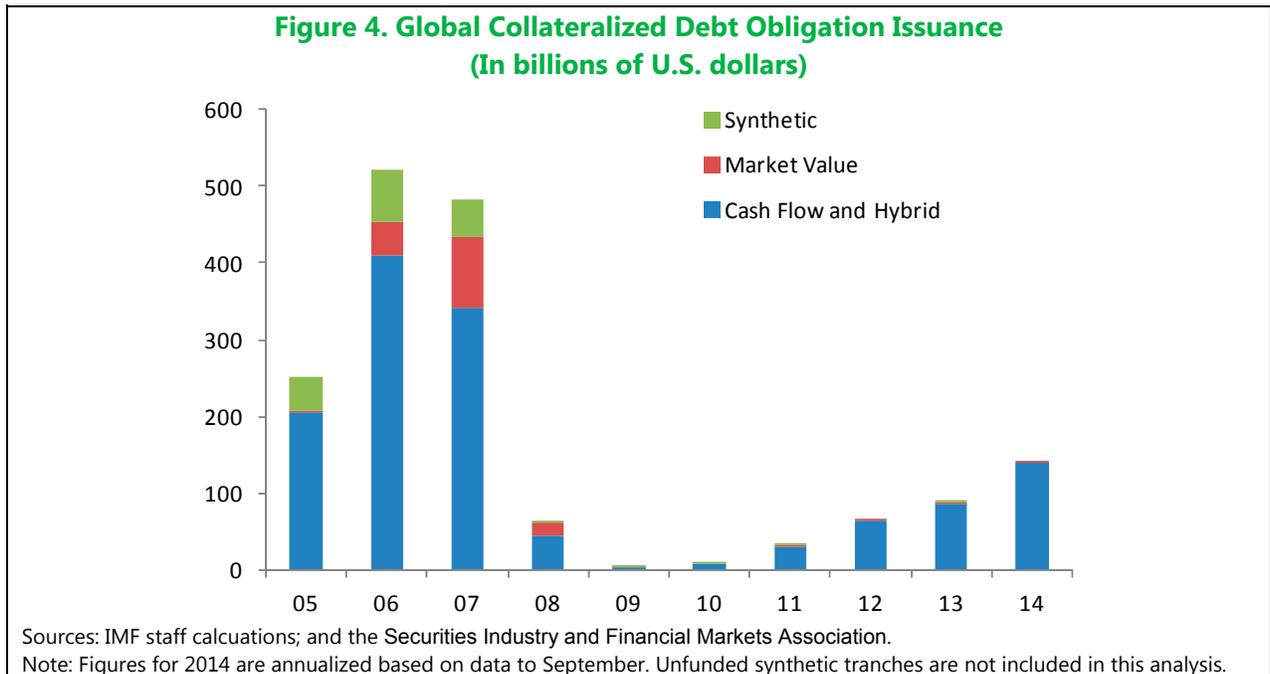
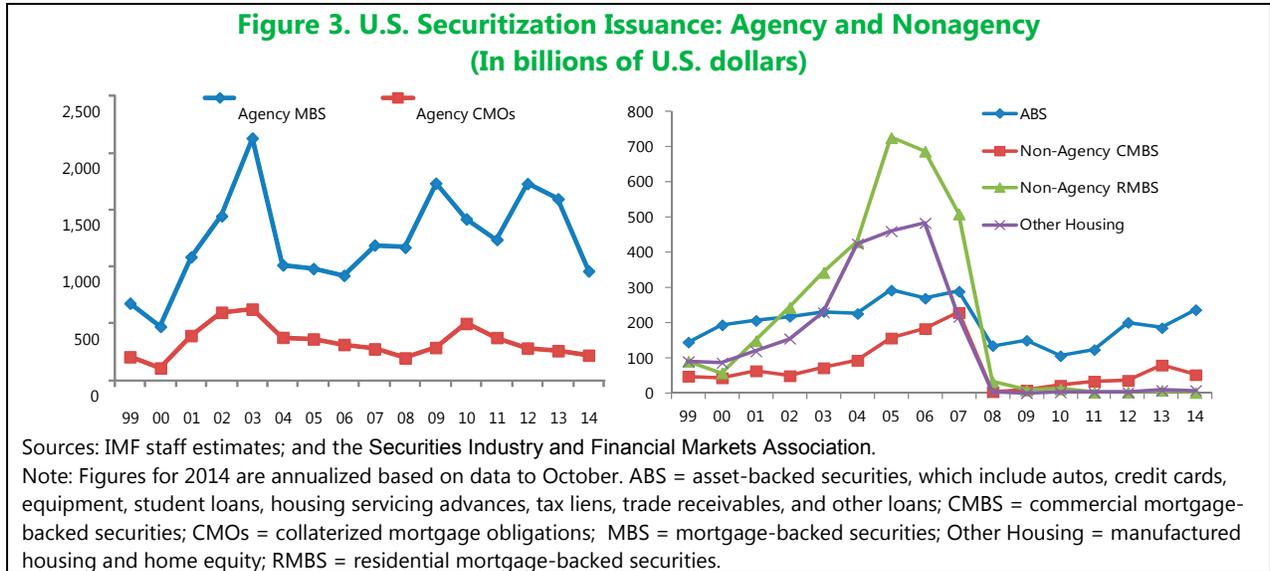


Sources: IMF staff calculations; and the Securities Industry and Financial Markets Association.

Notes: Figures for placed and retained European securitization issuance for 2014 are based on June data. Figures for total European securitization issuance for 2014 are annualized based on data to September. WBS = wholesale business securitizations; SME = small and medium enterprise securitizations, RMBS = residential mortgage-backed securities; CMBS = commercial mortgage-backed securities; CDO = collateralized debt obligation (unfunded synthetic tranches are not included in this analysis); ABS = asset-backed securities.

³ Since 1999, the average composition of European securitization issuance was as follows: RMBS (54 percent), ABS (17 percent), CDOs (10 percent), SMEs (9 percent), CMBS (7 percent), and WBS (3 percent).

4. **Meanwhile in the United States, broader signs of a pick-up in securitization activity have emerged.** Agency-related issuance was little affected by the global financial crisis and remains firm. In the nonagency securitization market, issuance of ABS and CMBS is slowly recovering back to long-term averages (Figure 3). Globally, CDO issuance is also now picking up (Figure 4). With spreads in corporate credit markets now approaching historic lows amidst a prolonged period of unusually low interest rates, vigilance will be required to ensure that “the reach for yield” does not embody some of the excesses and characteristics that played an important role in the global financial crisis (see Segoviano and others, 2013).



5. **This Staff Discussion Note proposes a set of policy measures aimed at strengthening and enhancing the functioning of securitization markets.** First, we depart from others in proposing a suite of measures in the context of a multi-dimensional financial intermediation chain, within which securitization is one component. Drawing on lessons from the global financial crisis, we outline a set of broad principles encompassing loan originators, securitization intermediaries, credit rating agencies (CRAs), and end-investors. After identifying where policymakers have already made substantial progress, we then propose measures to address remaining impediments in each of the stages of financial intermediation. Second, while acknowledging the substantial gains associated with more consistent industry standards for the risk classification, we argue that standardization should be applied at a granular rather than overarching level in order to discourage undue reliance (“shirking”) by investors on a single summary metric of risk, and to allow them to more closely calibrate their individual objectives and risk tolerances to deal and tranche specific attributes. Third, highlighting differences between Europe and the United States, we discuss how various initiatives could foster the development of a diversified nonbank investor base for securitization. The bottom line is that the revitalization of securitization markets will require a comprehensive suite of measures to ensure they make a contribution to economic growth and financial stability in the years ahead.

POLICY RECOMMENDATIONS

A. Building a Sound Framework for the Financial Intermediation Chain

6. **In the years leading up to the global financial crisis, vulnerabilities rippled throughout the financial intermediation chain.** While global securitization markets expanded without causing economic or market disruptions over the three decades leading up to the late 1990s, in the years immediately preceding the global financial crisis, issuance patterns changed dramatically.⁴ Many elements of the industry became intertwined in a powerful self-reinforcing cycle. At its core, this system was comprised of four key elements—loan originators, securitization intermediaries, CRAs, and investors—and against the backdrop of highly accommodative monetary policies, culminated in systemic risk that proved extremely difficult to manage (Figure 5).

⁴ Prior to the 2000s, securitized debt was typically backed by “plain vanilla” high-quality (residential and commercial) mortgages, auto loans, credit card receivables, and student loans, among others. However, in the early 2000s, demand for low-quality loans started generating its own supply as broker-dealers increasingly utilized advanced structuring techniques to transform this collateral into highly rated structured securities. This was an attractive proposition for broker/dealers, as many of these products generated higher fees than the “plain vanilla” and increasingly commoditized earlier incarnations of securitized products. Re-securitizations of ABS into CDOs, and of CDOs into CDO-squareds, as well as synthetic securitizations, allowed the creation of ever greater amounts of highly rated, (relatively) high-yielding securitized bonds. Beyond primary issuance, broker/dealers also generated revenue by making markets in these securities, as well as in various ABS-based derivatives, and financing transactions for loan originators and investors.

7. **Reforms aimed at developing a more robust system in which securitization markets operate have become a key area of focus for policymakers, regulators, and industry participants.**⁵ The marked variation in the performance of securitized assets during and after the crisis suggests that securitizations are characterized by material differences in risk characteristics (i.e., in term of underlying assets and product structures). However, by identifying the features common to securitizations with a track record of success,⁶ and drawing on the related lessons of the global financial crisis, policy recommendations can be distilled for each element of the financial intermediation chain. These measures can be viewed as preconditions for strengthening securitization practices over the longer term.⁷

Figure 5. Self-Reinforcing Financial Intermediation during the 2000–07 Cycle



Source: IMF staff calculations.

1. Loan Origination

8. **The deterioration in loan origination practices was a central contributing factor to the financial crisis.** In particular, (i) faulty loan origination practices were common in some mortgage

⁵ We do not discuss the government-sponsored enterprise (GSE) sector in the United States, which is beyond the scope of this paper.

⁶ As defined by relatively modest default histories and secondary markets characterized by a robust and diversified ecosystem of borrowers, lenders, intermediaries, and service providers.

⁷ Table 1 presents a summary of critical shortcomings in the financial intermediation chain, which became apparent during the crisis, a concise stock-take of new and proposed regulations to address these issues, and remaining open issues.

markets; (ii) lending standards deteriorated sharply; (iii) origination of mortgages and other consumer debt was not well regulated;⁸ and (iv) mortgage documentation and registration practices were inappropriate.

9. **A comprehensive regulatory and supervisory framework can help to ensure robust loan origination standards.** Such a framework is necessary to both guard against the typical late-cycle deterioration in underwriting quality, and to reduce the risk that unregulated entities (including “shadow banks”) come to dominate origination (as occurred in the United States during the housing bubble). Furthermore, safeguards need to ensure that sound intermediation is not compromised by volume-based compensation practices (with little regard for quality).

10. **In both the United States and Europe, authorities have taken measures to improve supervision and practices in mortgage origination.** The passage of the Dodd-Frank Act and the qualified mortgage and ability-to-repay rules in the United States are all welcome regulatory responses designed to strengthen the overall system of loan origination practices.⁹ These measures include the establishment of the Consumer Financial Protection Bureau to regulate the offering and provision of consumer financial products or services under federal consumer financial laws and restrictions in the compensation terms of mortgage originators. Moreover, new regulations in the United States and Europe’s recent Mortgage Credit Directive require that loan originators assess borrowers’ creditworthiness based on verified and documented information.

Policy Recommendations

- Broad-based regulatory measures to secure the high quality of underlying loan origination practices are essential.
- Some of the stipulations in the Dodd-Frank Act, designed to enhance supervision of the home appraisal process are promising and may be applicable in other jurisdictions. Having loan officers (rather than mortgage brokers) select appraisers and maintain records on appraiser performance via a property value registry (with a focus on identifying consistently inflated valuations) should assist in restoring integrity to the appraisal process.

⁸ For example, compensation practices were tied to origination volumes and high fee products—so called “predatory lending.” Also, property appraisers selected by mortgage originators often inflated real estate valuations.

⁹ Qualified mortgage rules aim to protect consumers from being sold inappropriate loans or assuming debt burdens that are unlikely to be serviceable. The ineligibility of certain types of loans for the qualified mortgage designation (e.g., balloon, negative amortization, exotic loan products), as well as explicit limits on credit metrics (such as debt-to-income ratios), should help to ensure that the performance of such loans is satisfactory. A mortgage must meet a number of standards outlined by both the Dodd-Frank Act and the ability-to-repay rule to qualify as a qualified mortgage. Once the qualified mortgage status is granted to a mortgage, the mortgage originators obtain certain protections from lawsuits by borrowers. While the qualified mortgage rule applies at the loan origination level, the qualified residential mortgage designation applies to mortgages in a securitization pool. The final rule from the U.S. authorities (October 2014), aligns the qualified residential mortgage definition with that of the qualified mortgage as defined by the Consumer Financial Protection Bureau. If all mortgages in a securitization fulfill the qualified residential mortgage designation, the originator is not subjected to risk retention requirements.

- Prudential policies could be implemented to complement loan origination practices. These might include (i) risk-based frameworks to define regulatory provision and capital requirements;¹⁰ (ii) regulation to ensure that collateral accepted as the basis for additional new borrowing emphasizes cash and income relative to unrealized capital gains in asset prices; (iii) a focus on borrowers' maximum loan-to-value (LTV) ratios and debt-to-income ratios, limits on second liens, and hypothecation of unrealized capital gains.

2. Securitization Intermediaries

11. **The practices employed by securitization intermediaries over the 2000–07 period amplified the financial crisis.**

Misaligned incentives for originators and broker dealers,¹¹ the emergence of complex and nontransparent products (where risks were difficult to assess), and problems with the operational infrastructure used by securitization intermediaries surfaced over the course of the crisis, particularly where U.S. subprime mortgages were involved.

12. **Regulators in the United States and Europe have taken important steps to address incentive problems due to asymmetric information.**

This has been principally achieved through the requirement that originators retain an economic interest ("skin-in-the-game") in the performance of the underlying loans.¹² Securitizations that are idiosyncratic or complex in nature have also been discouraged by the Basel Committee on Banking Supervision (BCBS). Furthermore, regulators in the United States and Europe have introduced measures requiring issuers of ABS to enhance disclosure of information pertaining to the underlying assets.¹³ The promotion of simple, generic, and standardized financing vehicles can help address many of the remaining impediments.

13. **Three key problems emerged in the operational infrastructure of mortgage securitization markets during the financial crisis.**

These were (i) ambiguity and lack of enforcement of representations and warranties; (ii) conflicts of interest affecting quality-control firms; and (iii) deficient technological infrastructure.¹⁴

¹⁰ Such frameworks estimate parameters (probabilities of default, exposure at default, and loss given default), which should be a function of the riskiness of loans issued by banks. Hence, if risk parameters are properly calibrated, provision and capital requirements should increase when risks taken by banks begin to rise but before losses materialize.

¹¹ It has been noted that the originate-to-distribute (OTD) model associated with the boom in securitization meant that originators often had little or no economic interest in the loans they underwrote and, hence, did not always originate loans that borrowers could realistically repay.

¹² In the United States, the formulation of these rules is yet to be finalized, while in Europe this has been enacted through the CRD IV (which entered into force at the national level in early 2014).

¹³ The rules were finalized in the United States by the Securities and Exchange Commission (SEC) on August 27, 2014. For details, see paragraph 17.

¹⁴ Representations and warranties are standards that loans pooled in a securitization structure have to meet. Clear rules to assign rights and obligations between investors, issuers, and originators, as well as clear enforcement mechanisms, should be an integral part of the operational infrastructure of securitization. Quality-control firms were hired by the originating banks to test samples of to-be securitized mortgages to ascertain their compliance with

(continued)

14. **Hence, efforts have been made to minimize uncertainty related to operational infrastructure.** New regulations in the United States require CRAs and issuers of ABS to disclose information on representations and warranties. Additionally, Fannie Mae and Freddie Mac have announced a new framework to address concerns of lenders over vaguely worded representations and warranties. Both government-sponsored entities have also clarified their enforcement procedures and extended relief to originators from an obligation to remedy mortgage loans that are in breach of representations and warranties if specific requirements are met. Nevertheless, the policy recommendations that follow could contribute to overcoming many remaining obstacles.

Policy Recommendations

- Policymakers' attention should be focused on aligning incentives, in a comprehensive and consistent manner, across the entire financial intermediation chain. Ensuring that originators retain an economic interest in the securitization ("skin in the game") should be viewed as a crucial, though not sufficient condition for a healthy functioning securitization market.¹⁵
- Regulators should provide guidance regarding the timely disclosure of up-to-date underlying loan-level performance data from servicers to investors, regulators, and other interested parties.¹⁶ Data need to be sufficiently granular to allow proper independent investment and risk evaluation.
- The development of relatively simple and standardized "plain vanilla" securitizations (with a direct and transparent transfer of cash flows from borrowers to lenders) should be encouraged, relative to securitizations that are idiosyncratic or complex in nature. The latter should be held to relatively higher regulatory and capital standards, and made robust to changes in parameter assumptions.
- The securitization market is likely to be strengthened where timely information on changes in quality and composition of the collateral pool is provided to investors (to reduce uncertainty in times of market stress); and where underlying collateral consists of a claim on real assets (not another financial security), is valued on the basis of conservative recovery rates, and offers the benefits of fungibility (where the underlying collateral can be repossessed and sold at low cost).

underwriting guidelines and other factors that determined their eligibility for a particular securitization. Issues over rule clarity and proper enforcement of representations and warranties and conflicts of interest of quality-control firms surfaced mainly in U.S. mortgage markets.

¹⁵ It is important to note that the financial sectors of countries other than the United States, which did not employ the originate-to-distribute model, and hence had "skin in the game," also suffered significant turmoil (e.g., Spain was adversely impacted by a real estate bubble). This suggests that poor loan origination standards were more critical than the originate-to-distribute model in and of itself. It should also be noted that European and U.S. loan originators often retained exposure to a securitization's risk either via ownership of specific tranches, put-back options owned by the investors, or contingent funding lines provided to structured product investors (Segoviano and others, 2013).

¹⁶ The SEC regulations regarding securitizations, disseminated on August 27, 2014, do this.

- Efforts must be made in all jurisdictions to minimize legal ambiguities related to the rights of and obligations between servicers, trustees, and investors.
- Regulators must be mindful of the conflicts of interest that can arise in cases where servicers are owned by banks and, where possible, assist in enforcing existing contracts between bank-owned servicing firms, trustees, and the investors in the securitization vehicles.¹⁷
- Conflicts of interest with quality-control firms should be minimized through the regulation of payment models and enforcement of transparency of business practices.¹⁸
- Regulators and supervisors must ensure that the legal foundation and operations of any mortgage transfer system are robust. A centralized electronic system would be preferable to ensure the secure, transparent, and cost-effective transfer of claims on collateral.¹⁹
- The provision of adequate technical infrastructure and resources by industry participants should be regulated in order to guarantee the efficient processing of large amounts of foreclosures in case of market distress.²⁰

3. Credit Rating Agencies

15. **The recent crisis challenged the assumption that CRA ratings were independent and accurate gauges of underlying risks.** The problems with CRAs were characterized by (i) misaligned incentives generated by the “issuer pays model,” which can lead to an upward bias in credit ratings;²¹ (ii) inappropriate methodologies for assessing complex structured securities; and (iii) insufficient disclosure of analytical techniques and model limitations.

¹⁷ When banks owned second liens, by foreclosing on a house the probability of a full loss of the second lien increased significantly. Thus, in cases where banks owned servicers, there may have been an incentive to avoid foreclosure. Moreover, in the postcrisis period, nonbank servicing firms have grown in market share, with potential issues due to lack of supervision (National Conference of State Legislatures, 2014). Hence, regulations should pay special attention to ensuring that servicing firms act in an objective manner and perform their role adequately.

¹⁸ During the U.S. subprime mortgage crisis, quality-control firms may have had conflicts of interest, as they were paid by issuers whose employees had an incentive to maximize securitization origination. Hence, quality-control firms sometimes were pressured to minimize the incidence of substandard mortgages (Muolo and Padilla, 2008).

¹⁹ Mortgage Electronic Registration Systems, Inc. (MERS) in the United States experienced significant legal and operational challenges in the aftermath of the global financial crisis. However, Germany’s refinancing register, and mortgage-transfer legislation in France, provide examples of cost-efficient systems fully supported by robust legal frameworks.

²⁰ Servicers’ business models in the United States were usually calibrated to “normal times” of low defaults. Once the U.S. mortgage crisis intensified, both servicers and trustees of securitizations were insufficiently resourced to properly address the ensuing flood of foreclosures. The contracts between special-purpose vehicle investors, trustees, and servicers should make room for such contingencies, and allow for appropriate cost recovery.

²¹ In some cases, issuers worked closely with CRAs to engineer specific credit ratings to ensure demand for their securitized bonds. Based on modifications in deal structure, products could be optimized to attract ratings that would maximize issuer revenues. Also, rating agencies were under pressure to conform their ratings to those of rival

(continued)

16. **Thus, eliminating statutory references to credit ratings has been a key focus of regulators and the Financial Stability Board in the aftermath of the crisis.** With the passage of the Dodd-Frank Act and publication of a final ruling, U.S. regulators have removed most statutory references to credit ratings, including for securitizations. The introduction of the formula-based approach is a key component of this effort. However, within the Basel framework, the standardized approach still makes reference to CRAs. In Europe, new regulations require financial institutions to derive their own credit risk assessment rather than rely mechanistically on external credit ratings.

17. **Regulators have also undertaken steps to improve corporate governance at CRAs.**²² The European Union has implemented the Credit Rating Agency Regulation to (i) ensure greater transparency regarding the commercial relationship between issuers and rating agencies, including the separation of CRAs' sales and analysis units; and (ii) provide investors with access to the results of stress tests and risk scenario analyses, as well as the underlying modeling assumptions used by rating agencies in arriving at their assessments of creditworthiness.²³ According to the European Union's Capital Requirements Directive IV (CRD IV), banks are strictly required to use ratings only if certain quality, disclosure, and independence criteria for CRAs are met. In the United States, rules to enhance disclosure of credit ratings have been finalized. Under those rules, CRAs are required to publicly disclose information relating to conflicts of interest and the main assumptions, methods, and processes underlying all ratings. CRAs are also required to have an effective structure of internal controls governing the methodologies to determine credit ratings. The European Union's CRA regulation provides for similar transparency while requiring the engagement of two CRAs for structured products and mandatory CRA rotation in the case of re-securitizations.

Policy Recommendations

- Statutory references to credit ratings for securitization need to be eliminated.
- Where not yet complete, regulators should finalize rules for CRAs to ensure transparency regarding the commercial relationship between the CRAs and issuers. Issuers should disclose the extent of any "ratings shopping" in which they may have engaged.
- The industry should embrace standardized definitions for the underlying characteristics of securitizations (i.e., simplicity, transparency, collateral features, track record of underlying asset quality, etc.) as opposed to a simple aggregate classification (like credit ratings), which can lead

CRAs as issuers had the ability to "ratings shop"—a situation in which an issuer engages with a number of rating agencies before awarding its business to the firm offering the desired credit ratings for its securities.

²² In addition, the International Organization of Securities Commissions (IOSCO) has also recommended several measures to mitigate misaligned incentives in CRAs' business activities, including risk retention rules for issuers and enhanced data disclosures.

²³ U.S. regulators have been asked to draft a set of rules to achieve broadly similar objectives via Section 932 of the Dodd-Frank Act.

to investor “shirking” of due diligence responsibilities and forced buying and selling (see Section II.B).

4. Investors

18. **Investors, including investment conduits and banks, experienced significant, unexpected losses in securitizations during the global financial crisis.** Investment conduits (mainly structured investment vehicles [SIVs], SIV-lites, and asset-backed commercial paper [ABCP] conduits) were exposed to significant maturity mismatches between their assets and liabilities, implying large rollover risks because much of their funding consisted of short-term commercial paper. Additionally, banks retained explicit or implicit contingent exposure to these entities in a number of cases. When illiquid funding markets resulted in the inability of investment conduits to roll over maturing liabilities, a number of banks took the assets of their sponsored entities onto their balance sheet (thereby subjecting themselves to material and untimely concentration risk).²⁴ Regulatory arbitrage was exploited in the prevailing regulatory regime (by having low risk weights to apply to structures, with high embedded leverage), which worsened the procyclicality inherent in banks’ capital requirements and cliff effects.²⁵

19. **In response, regulators have made a significant effort to strengthen the regulatory environment in which securitization investors operate.** A case in point is the increased capital charge (under Basel 2.5) imposed on banks that provide credit lines to conduits—an effort to better align banks’ capital requirements with potential increases in risk due to contingent liabilities. Various measures embedded in the revised BCBS (2014b) regulatory framework also aim to enhance risk sensitivity, with the objective of reducing regulatory arbitrage, cliff effects, and the mechanistic reliance on external ratings (Box 1). Additional steps have been taken by regulators and supervisors to provide investors with incentives to conduct adequate risk surveillance. For example, the “due diligence” obligation that been implemented in the European Union (CRD IV) requires investors to perform thorough due diligence of their securitization investments (i.e., they are requested to show that they understand the risk profile of their securitization investments and have the capacity to monitor ongoing risks).²⁶ Furthermore, in the United States, new regulatory capital rules require banks to conduct due diligence for securitization exposures. However, some unintended consequences have compounded remaining impediments. In certain circumstances, capital arbitrage and cliff effects persist, while asymmetric regulatory treatment and complexity have emerged as a by-product of new regulatory frameworks.

²⁴ Prominent cases are Citigroup (US\$49 billion worth of SIV assets) and State Street Bank (US\$23 billion of ABCP conduit assets); see Gallagher (2007) and State Street (2009), respectively.

²⁵ Cliff effects refer to the potential for significant and sudden changes to capital requirements when ratings are slightly modified.

²⁶ This framework complements changes in the regulatory framework to reduce the reliance on external CRAs discussed in the previous section.

Capital Arbitrage and Cliff Effects

20. **Incentives for capital arbitrage have been reduced but not fully eliminated.** Capital arbitrage can occur under the three risk-weighting approaches for capital charges proposed by the BCBS (2014b)—the Internal Ratings-Based Approach (IRBA), the External Ratings-Based Approach (ERBA), and the Standardized Approach (SA)—because risk weights can be minimized irrespective of the underlying risk of the structure by (i) optimizing certain parameters of the regulatory formulae (e.g., manipulating tranche size or engineering risk transfers above the maximum maturity of five years captured by the regulatory formulae;²⁷ (ii) or exploiting differences across regulatory formulae and jurisdictions.²⁸ Cliff effects are primarily an issue for the ERBA framework, which relies on external ratings for the estimation of capital charges.

21. **Limitations remain in terms of characterizing relevant structural features of securitizations in the capital charge formulae.** Under the new framework proposed by the BCBS (2014b), relevant features to assess the risk of securitization products have been taken into account (such as capital charges and types of underlying assets, granularity of collateral pool, etc.). However, limitations still remain in terms of incorporating some cash flow features that affect the risk characteristics of securitizations, potentially giving rise to regulatory arbitrage opportunities. For example, waterfall structures,²⁹ risk mitigation mechanisms, interest-rate hedges, prepayment penalties, and loss allocations are not incorporated.³⁰ Also, due to the prepayable characteristics of many types of debt, the use of the “legal final maturity” terminology might deviate significantly from actual maturities, making “tranche maturity” inconsistent with the actual characteristics of the underlying debt instruments.³¹

²⁷ Capital arbitrage becomes an issue when the capital charge applied to the most junior (equity or nonrated) tranche is many multiples of that applied to the highest-rated tranche. While the aforementioned BCBS (2014b) approaches impose the requirement of a 1,250 percent risk weight on a fixed proportion of junior tranches (with the exact proportion changes depending on the specific approach used and the risk weights of the securitized underlying assets), there remains a possibility for originators to optimize tranche sizes higher up the capital structure (with risk weights below 1,250 percent) in order to minimize capital charges, while selling junior tranches to nonbank investors.

²⁸ As an example, Table 2 in Appendix 1 shows that for a highly leveraged transaction, risk weights and capital charges in the top three tranches can be very different under the IRBA, SA, and the U.S. Simplified Standardized Formula Approach (SSFA). Risk weights show a fast and significant increase with a decrease in tranche thickness.

²⁹ The “waterfall” depicts the allocation of a securitization’s incoming cash flows across its different tranches, starting with the most senior, descending to the equity tranche. The aforementioned structural features of a transaction, such as loss allocations, triggers, and prepayment penalty allocations, are not taken into account in the SSFA-based formulae of the BCBS’s IRBA and SA methodologies.

³⁰ Many securitizations contain features such as retaining some cash inflows (which are only paid out late, if at all) as a buffer against losses. Examples of other structural features relate to the priority of pay downs across tranches, and how the costs of running the special-purpose vehicle are allocated. By not appropriately incorporating the cash flow characteristics of the tranches, the potential for risk mispricing remains, as does, therefore, arbitrage opportunities.

³¹ In order to smooth the impact of maturity on capital charges when legal maturity is used, the BCBS (2014b) framework now applies a haircut.

Policy Recommendations

- Regulators have made efforts to improve the consistency of capital charges applied to the underlying risk characteristics of tranches. However, greater coordination between the BCBS and local authorities could help to mitigate the remaining differences in capital charges across methods and jurisdictions.
- The ERBA should be phased out as practically as possible, since it is the method that in terms of capital charges differs most significantly from the BCBS alternative methods, and that also creates the biggest issues related to cliff effects.
- Relevant features of cash flow characteristics and risk mitigation mechanisms embedded in securitizations should be recognized in the future works of standard setters. The BCBS and the International Organization of Securities Commissions (IOSCO) are currently reviewing securitization markets to identify factors that may be hindering the development of sustainable securitization markets (BCBS, 2014c). The BCBS and IOSCO have developed criteria to identify and assist in the development of simple, transparent, and comparable securitization structures, which is a welcome step forward. However, it would be useful for standard setting-bodies to recognize relevant structural features of securitizations that are not addressed in the capital charge formulae.
- Regulators should establish fora with key market participants in order to keep abreast of important industry trends (including improved quantitative techniques), which will allow them to act more swiftly in the event of any potential risks to financial stability.

Asymmetric Regulatory Treatment

22. **Securitizations need to be treated comparably to securities with broadly similar risk characteristics to avoid unintended adverse consequences, including the concentration of risk in new areas and regulatory arbitrage.** Examples of asymmetric regulatory treatment arise between securitized products and covered bonds in Europe, and recent steps by policymakers to revisit this issue are welcomed.³² In order to avoid unnecessary distortions in funding and capital markets, including the concentration of risk in new areas, a case exists for establishing a more symmetric treatment of securitization exposures and covered bonds across the various regulatory frameworks for financial institutions.

³² While the dual-recourse nature of covered bonds may offer a higher degree of security than securitizations, a number of risk factors exist that reduce this potential advantage. Segoviano and others (2013) discuss the similarities and differences between the two asset classes.

Policy Recommendations

- Special attention should be focused on addressing asymmetric capital treatment in the instances outlined below.
 - The CRD IV stipulates that covered bonds meeting certain criteria attract a significantly lower risk weight than the risk weights applied to comparable securitization exposures.
 - The proposed EU Solvency II capital requirements for the insurance sector also raise the prospect of heavily skewing capital charges in favor of covered bonds over securitized products with similar credit, duration and liquidity risk characteristics (see Section II.C).
 - The new framework under BCBS (2014b) is welcome insofar as it reduces the gap in capital charges between covered bonds and securitizations by lowering those for the latter from 20 to 15 percent. Nevertheless, significant differences in capital charges remain in certain cases.³³
 - The proposed calculation methodologies for the liquidity coverage ratio (LCR) provide more favorable treatment for covered bonds relative to securitized assets with similar risk characteristics. While industry participants have welcomed the move by the BCBS (2013) to allow certain RMBS to be included in the calculation of the LCR as part of the adequate stock of unencumbered high-quality liquid assets (HQLA),³⁴ the divergent treatment of covered bonds and securitizations remains an issue.³⁵
 - The net stable funding ratio (NSFR), calculated as the proportion of long-term assets that are funded by long-term and stable funding (such as customer deposits), effectively incentivizes the issuance of covered bonds relative to securitizations (BCBS, 2014a).

³³ The reduction in the minimum risk weight of the lowest-risk tranches of a securitization (which usually contain the bulk of a securitization's liabilities) could lead to a notable reduction in the difference in capital charges between covered bonds and securitizations for certain high-quality collateral (e.g., mortgages). Different conclusions might emerge for collateral carrying higher risk weights.

³⁴ The LCR requires banks to hold a sufficient buffer of HQLA to cover net liquidity outflows during a 30-day period of stress. The stock of HQLA (numerator) should include assets of high credit quality and liquidity. The stress scenario to determine the net cash outflows (denominator) reflects both institution-specific and systemic shocks. The LCR will be introduced by 2015 after an observation period. A general requirement for banks to maintain appropriate liquidity coverage began in 2013.

³⁵ For instance, the LCR classifies covered bonds with an AA rating or higher as a Level 2A asset (second only to cash reserves and sovereign debt), attracting a haircut of just 15 percent. By contrast, RMBS are classified as Level 2B assets, in which case a 25 percent haircut applies. Moreover, to be classified as a Level 2B asset, RMBS need to meet a number of conditions, including full recourse for mortgages and LTVs at or below 80 percent for each loan. However, high-quality RMBS usually have at least some high-LTV mortgages backing them (including most Dutch RMBS). In addition, mortgages are rarely full recourse in many U.S. states. As a consequence, in both instances these RMBS would be ineligible for inclusion in the LCR. Furthermore, the European Commission issued a delegated act in October 2014 improving the treatment of "extremely high quality covered bonds" in the LCR, which are introduced as a new classification of qualifying Level 1 asset (with a cap of 70 percent and a minimum haircut of 7 percent).

Regulatory Complexity

23. **Regulatory complexity (particularly where overlapping requirements exist) and uncertainty are obstacles to the efficient functioning of securitization markets.** In order to instill confidence across the industry, the “rules of the game” need to be clear, concise, and consistent. The recommendations below could contribute to progress toward this end.

Policy Recommendations

- The relief for securitization vehicles from compliance with swap clearing rules should be formalized and made permanent as soon as possible.³⁶
- Clarification on tranche maturity boundaries should be provided, as arbitrary minimum and maximum maturity boundaries remain in the BCBS (2014b).³⁷ This opens up the potential for regulatory arbitrage by market participants, who would see tranche maturities capped at five years for the purposes of capital charges for tranches with much longer maturities.³⁸
- A final designation of capital requirement rules under Solvency II (for European insurers) is important in restoring support for securitized assets in Europe, while the formal application of the qualified residential mortgage (QRM) rule is similarly relevant for securitization markets in the United States.³⁹

B. Harmonization of Industry Standards for Risk and Data Disclosure

24. **Preserving the benefits while minimizing the negative externalities associated with standardization in securitization markets is a key challenge for regulators and policymakers.** As a heterogeneous asset class, securitization stands to benefit from a framework allowing investors, regulators, and other participants (such as central banks lending against securitizations as collateral) to distinguish between deals on an objective, consistent basis. Greater standardization can also contribute to better liquidity in the secondary market. This said, however, the global financial crisis

³⁶ In 2013, the Commodity Futures Trading Commission (CFTC) announced that standard swaps entered into by securitization vehicles would be exempted from clearing requirements. This rule was issued verbally for an undefined period (Stroock & Stroock & Lavan, 2013).

³⁷ Minimum maturities of one year and maximum maturities of five years are imposed.

³⁸ Such assumptions have the potential to make very short (thus safe tranches) unattractive for banks. On the other hand, if a tranche under the prevailing conditions and reasonable forecasts of the factors driving its cash flows has an expected maturity notably greater than five years, it would be capped at five years for risk-weight purposes.

³⁹ The final rule on QRM (October 2014) will be effective one year after publication in the Federal Register for RMBS and two years after publication for all other securitization types.

demonstrated there can be significant issues with holistic risk labels.⁴⁰ Labels applied at the aggregate level entail various other problems:

- They tend to encourage investor “shirking” of due diligence responsibilities. As a result, they can exacerbate investor herding and the propagation of CRA modeling errors.
- They can create forced buying and selling pressure independent of differences in investor risk tolerance, objectives, and constraints. For instance, a pension fund may have a greater ability to bear illiquidity and credit risk than a hedge fund, but share a similar disposition toward duration risk. Aggregate labels make the task of calibrating individual risk preferences to securitization characteristics more difficult.
- A binary two-tier, high/low-quality, classification system at the aggregate level risks creating a fragmented market. Significant “cliff effects” or discontinuities between similar product offerings might result where a slightly lower-quality loan pool attracts drastically lower investor interest if it barely fails to meet the qualifying “high-quality” requirement. Significant pricing and liquidity distortions between tiers may well be exploited by product originators where there is a strong incentive to have deals barely meet the minimum requirement in order to attract the “high-quality” designation.
- If the official sector is involved in the creation of aggregate risk labels (which may, for all practical purposes, be considered by market participants as analogous to credit ratings), moral hazard risks naturally arise. For instance, if securitizations are awarded a high-quality aggregate label only to perform poorly, considerable political pressure to provide recourse to investors may arise.

Policy Recommendations

- The goal of maximizing the benefits of standardization while mitigating the associated shortcomings may therefore be best pursued by encouraging standardization along different risk dimensions.⁴¹ Aggregate risk labels need not preclude the use of standardized classifications at the level of duration risk, prepayment risk, collateral fungibility, and track record of credit performance. Standardized and granular tiering at the individual risk dimension level could: (i) encourage participants to arrive at their own assessment of overall risk; (ii) allow investors to better calibrate the specific features of investment products (based on duration risk, liquidity risk, credit risk, etc.) to their individual preferences and constraints; and (iii) mitigate fragmentation/cliff effects and ensure a more continuous pricing structure.

⁴⁰ Wide divergence in product performance has been observed within the same rating classes. Simple distinctions based on the type of underlying assets can also miss the point, as demonstrated by the significant variation in performance of European and U.S. RMBS (EIOPA, 2013).

⁴¹ If authorities are intent on pursuing a classification system at an aggregate level, great care will need to be taken to address the aforementioned issues.

- Various classification proposals drawing on similar themes have already been made and could form the basis of efforts to advance this agenda. For instance, the Prime Collateralised Securities (2013) labeling initiative attempts to distinguish securitizations on the basis of quality, simplicity, transparency, and liquidity considerations. EIOPA (2013) proposes the classification of capital charges on the basis of structural features, asset level requirements, and transparency requirements. Meanwhile the Bank of England and European Central Bank (2014) and the European Banking Authority (2014) have similarly outlined underlying features of a classification system resting upon the concepts of simplicity, structural robustness, and transparency. Central bank eligibility criteria have also provided a filter to exclude overly complex and less transparent transactions in Europe.

C. Development of Nonbank Institutional Investor Bases for Securitization

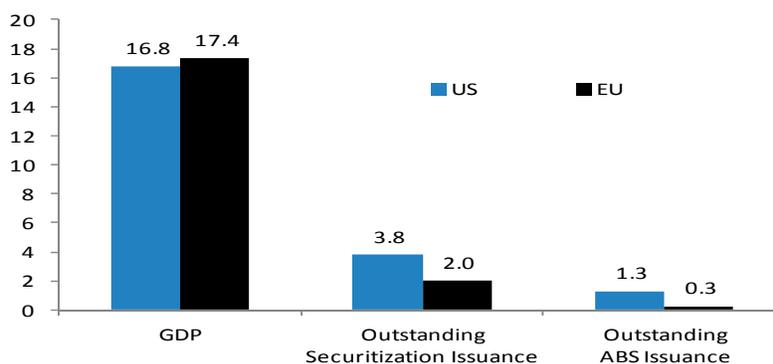
25. **If securitization is to make a contribution to financial deepening and economic growth, it may require the development of a suitable nonbank investor base.** While the structure of the economy and the stage of economic development will always be key determinants of the size and shape of the investor base, a diversified ecosystem of investors and stable sources of funding in the long term are key elements of balanced financial growth. This may be illustrated by contrasting the financial systems of the United States and Europe.

26. **Two of the more striking differences between U.S. and European securitization markets relate to size and composition of the investor base.** Despite the fact the EU economy is slightly larger than the economy the United States, the outstanding stock of both securitization and ABS product in the United States is five times larger than Europe (Figure 6). Outstanding securitization issuance comprises 59 percent of U.S. GDP, vis-à-vis just 11 percent in Europe. Furthermore, within this considerably smaller European market, banks play a dominant investment role: pension and insurance funds comprise a fairly trivial share of demand for select classes of European securitizations, while in the United States it is the other way around (Figure 7). Measures to help establish a vibrant institutional investor base for securitization in Europe could play an important role not only in reviving securitization activity, but more broadly, in remedying the region's over-reliance on the banking sector for funding.⁴² The diversification of funding to include more capital markets-based financing is important both in the short run, to improve the availability of financing, and in the long run, to increase the robustness of the European economy (European Commission, 2014; Hill, 2014).

⁴² As part of its initiative to improve the long-term financing of the European economy, the European Commission has identified, within the set of the most pressing priorities, investment in energy, transport and communication infrastructure, as well as in SMEs, education, and research and development. Europe faces large-scale and long-term investment needs, which are crucial to support sustainable growth. Investment needs for transport, energy and telecom networks of EU importance alone are estimated at €1 trillion for the period up to 2020 (European Commission, 2014).

27. **There are obstacles impeding European insurers playing a more prominent investment role in securitizations, albeit the precise magnitude of the impact is somewhat unclear.** The Solvency II regime is designed to strengthen the regulation and supervision of the European insurance sector, improve its contribution to economic growth in the Union, and enhance the protection of policyholders. However, the proposed capital charges for spread risk for certain securitizations have been higher compared to other fixed income instruments (corporate and covered bonds) with comparable credit ratings and duration. In some cases, whole loans are also treated considerably more favorably than an AAA-rated securitization tranche on the same underlying loan pool (Standard and Poor’s, 2014). This has made it uneconomic for insurers to hold securitizations relative to corporate and covered bonds or whole loans. Encouragingly, in October 2014 the European Commission, building on recommendations from the European Insurance and Occupational Pensions Authority (EIOPA), adopted a Delegated Act which aims to result in a relatively less punitive treatment for certain types of high quality securitizations than had been previously outlined.⁴³ Effective capital charges under Solvency II could also be lower than initially envisaged depending on the use of internal models, reductions in capital charges for asset-liability mismatches, and possible capital relief via matching adjustments.⁴⁴

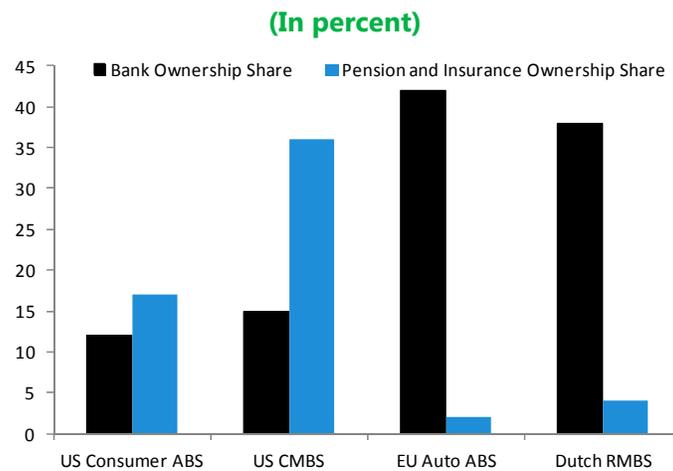
Figure 6. GDP vs. Outstanding Securitization and Asset-backed Securities Issuance in the United States and European Union, 2013
(In trillions of U.S. dollars)



Sources: Federal Reserve Board, IMF staff calculations; and the Securities Industry and Financial Markets Association.
Notes: European securitization issuance includes asset-backed securities (ABS), collateralized debt obligations (CDOs), residential and commercial mortgage-backed securities (RMBS and CMBS), small and medium enterprises, and wholesale business securities; U.S. securitization includes ABS, CDOs, collateralized mortgage obligations, and private-label RMBS and CMBS.

⁴³ The Delegated Act enters into force only once approved by both the European Parliament and Council.

⁴⁴ Aside from Solvency II considerations, insurers may find it challenging to manage their asset-liability position with securitizations, as prepayment risk shortens the duration of the assets while the duration of liabilities becomes longer in a low interest rate environment. A similar issue exists for pension funds.

Figure 7. Ownership Shares of Select Securitization Classes: United States and Europe, 2013

Sources: Citi Research; Concept ABS; and IMF staff calculations.

Notes: ABS = asset-backed securities; CMBS = commercial mortgage-backed securities; RMBS = residential mortgage-backed securities.

28. **Pension funds have played an underwhelming role on the demand side because of the structural makeup of Europe's pension systems.** With a large proportion of assets in defined benefit systems,⁴⁵ European pension funds have an ongoing need for long-duration assets (in order to avoid duration mismatches) with limited prepayment.⁴⁶ Currently, however, market-placed ABS tend to have short maturities, amortizing in around two to five years as the underlying assets are repaid, while securitizations with longer duration, like RMBS, are often subject to substantial prepayment risk.⁴⁷ An additional obstacle has been the channeling of continental retirement savings through the insurance industry, which then fall under the purview of Solvency II regulation. As discussed above, this renders securitization an unattractive asset class because of the associated capital charges.

⁴⁵ The United Kingdom (US\$3.3 trillion in assets) and the Netherlands (US\$1.4 trillion) are the dominant pools of pension fund capital (accounting for around 85 percent of European pension fund assets), with their systems largely defined-benefit in nature (72 and 95 percent, respectively), based on data from EIOPA (2014) and Towers Watson (2014). Relative to GDP, pension fund assets stand at 170 percent for the Netherlands and 131 percent for the United Kingdom. In contrast, the ratio of pension fund assets to GDP is below 15 percent for the relatively large economies of Germany, France, Italy, and Spain. For a discussion of country differences in EU pension systems, see European Parliament (2011).

⁴⁶ Prepayment risk describes the risk of receiving all or part of the underlying debt before it is due. For certain types of assets, such as residential mortgages, increasing prepayment activity is linked to declines in market interest rates; principal may be returned early and must therefore be reinvested at lower rates than prevailed at the time of the original investment.

⁴⁷ The pay-as-you-go principle prevalent in continental Europe, where contributions from workers contemporaneously fund current retirees' pensions, has also led to a lack of pension fund investment being made available for long-term investment in the regional capital markets, including those for securitization.

Policy Recommendations

- Loan-level reporting standards and documentation standards should be harmonized.⁴⁸ This could address concerns over the paucity of consistent information on securitizations, and the associated operational requirements for investors—the complexity of information and differences in reporting requirements across countries makes it difficult for investors to adequately assess credit risk, hence, encouraging a home bias. Greater consistency and transparency in the reporting of credit histories could be of particular support to direct lending vehicles aimed at providing SME and infrastructure financing (European Commission, 2014).
- Centralized information platforms and exchanges should be developed. Credit registers and other public databases could improve the availability and quality of underlying loans as well as deal information that could, in principle, benefit securitization markets by providing investors with a stronger platform on which to conduct their own due diligence analysis.
- In addition to harmonizing national insolvency regimes (in order to avoid recovery uncertainty), possible revisions to European corporate law could look to more closely embrace the spirit of U.S. insolvency laws, where insolvency is often declared on a preemptive basis by corporate managers, so as to allow viable entities sufficient time to be reorganized.
- Harmonization of the tax treatment of securitization vehicles is also desirable. In the absence of a more uniform and harmonized taxation system, the cost and complexity associated with cross-border transactions can hamper the use of securitization versus other financing instruments.
- Credit enhancement features on securitizations (including limited public sector guarantees) such as those offered by the European Investment Fund (EIF) and by entities for SME securitizations in Germany and Spain have been introduced, but to date have tended to be too small in size, idiosyncratic, or too narrowly focused to have a broad impact (IMF, 2014a). They also need to be carefully weighed against moral hazard risks (Segoviano and others, 2013).
- To provide investors with a better 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 (Bank of England and European Central Bank,

⁴⁸ In terms of data availability and standardization of disclosure, the ECB and Bank of England loan-level transparency requirements (which require reporting of loan-level data for ABS, including SME securitizations) already provide a significant step forward compared with the past (Bank of England and European Central Bank, 2014). 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 standardization of prospectuses and investor reports.

2014). 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.⁴⁹

- A more level playing for capital charges (such as that recently proposed by the European Commission) would help to ameliorate the prospect of forced sales and runoffs of securitizations by European insurers, possibly turning this sector into a key source of demand. Outside of capital charges, other factors are relevant in the decision for insurers over whether to alter their exposure to securitization: the risk-adjusted yield, transparency, duration-matching, and diversification properties.
- Working in conjunction with regulators and relevant authorities, industry participants aiming to implement market-based initiatives that could invite greater participation from Europe's defined-benefit pension funds will need to focus on creating low-credit-risk and long-duration cash flows in the context of existing regulatory and accounting frameworks. Lengthening the duration of ABS, and allowing investors to better hedge prepayment risk on existing long-duration assets like mortgages, can play important roles in this process.

CONCLUSIONS

29. **Though significant progress has been made in reconfiguring securitization markets in the aftermath of the global financial crisis, the task of ensuring that these markets contribute to economic growth and financial stability is unfinished.** This Staff Discussion Note outlines recommendations to advance this aim, distilled along three lines, as outlined below.

30. **Proposed reforms to the financial intermediation chain can be further strengthened in various respects.** First, given that securitization depends heavily on the quality of underlying loan origination practices, the intermediation chain would benefit from the imposition of metrics and approaches that reduce the probability of stress at both the loan level (i.e., through the imposition of maximum loan-to-value and debt-to-income ratios) and the system-wide level (through the use of countercyclical macroprudential policy). Second, securitization intermediaries have a critical role to play in developing transparent securitization structures with low complexity; minimizing legal ambiguities related to the rights of and obligations between services, trustees, and investors; and implementing a secure, transparent, and automated claims transfer system. Third, with respect to credit ratings, standardized definitions of securitization characteristics and full disclosure of the ratings process for bonds would help to increase transparency. Rule makers should provide

⁴⁹ The imposition of structured finance credit rating caps on ABS has had a negative impact on the securitization 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 preclude otherwise potential investors (i.e., those with strict rating-based mandates; see Segoviano and others, 2013) and also undermine transparency around the inherent credit quality of securitizations.

guidance on granular loan data information disclosure, the process of ratings shopping should be disclosed (and possibly prohibited), and the removal of reference to external ratings in the European Union and under the BCBS should be accelerated as fast as reasonably possible. Fourth, addressing remaining cliff effects and the inconsistent application of capital charges (across borders and asset classes) would be valuable contributions to restoring active investor participation in securitization markets.

31. **The application of consistent industry standards for the classification of risk at a granular (rather than holistic) level could preserve the benefits of standardization while mitigating some of the problems encountered during the global financial crisis.** Aggregate risk labels tend to encourage investor “shirking” of due diligence responsibilities; precipitate forced buying and selling pressure irrespective of investor tolerances for the different risk dimensions; and introduce the possibility of creating a fragmented market with significant pricing discontinuities. Standardization for each of the individual risk dimensions embedded in deal structures (duration risk, credit risk, collateral fungibility, etc.) could help to address these issues.

32. **Finally, securitization markets could be strengthened in the future to the extent that they are underpinned by a diversified institutional investor base (beyond just banks) with long-term capital.** In focusing on the case study of continental Europe, this Note has argued that while measures to rehabilitate securitization markets will not, in and of themselves, be a panacea for restoring growth, initiatives to make securitization more attractive for European institutional investors could contribute to the broader aim of diversifying the sources of financing for the European economy.

Table 1. Financial Intermediation Chain: Changes to the Regulatory Framework

EU: Blue
US: Red
Principles: Green

	Loan Origination	Securitization intermediaries	Credit Rating Agencies	Investors
Issues to be addressed 	<p>Loan Origination Practices</p> <ul style="list-style-type: none"> Faulty loan origination practices. Deterioration in lending standards: <ul style="list-style-type: none"> Relaxed Loan-to-Value & Debt-to-Income limits. Re-leveraging of residential real estate after price gains. Insufficiently regulated origination of mortgages and other consumer debt: <ul style="list-style-type: none"> Compensation practices and (un)suitability. High fee products (predatory lending). Mortgage originators selected appraisers. Mortgage documentation & registration. 	<p>Issuers</p> <ul style="list-style-type: none"> Miss-Aligned Incentives: Reliance on new issuance. → Quantity over quality. Issuance of complex products: CDOs, CDO², synthetic CDOs. <p>Operational Infrastructure</p> <ul style="list-style-type: none"> Quality Control Firms: <ul style="list-style-type: none"> Misaligned incentives: issuer pays model. Issuers and CRAs did not use information properly. Securitization Trustees, Mortgage Servicers, & Bond Insurers: <ul style="list-style-type: none"> Insufficient resources once crisis had erupted. Conflicts-of-interest: The largest servicers were owned by banks. → Servicers may not have acted in the interests of the SPVs. RWs need to be clear and enforceable. 	<p>Credit Ratings Agencies</p> <ul style="list-style-type: none"> Misaligned incentives: <ul style="list-style-type: none"> Issuer pays model. Non-robust methodologies for complex structured securities. Insufficient disclosure of conflicts-of-interest & analytical approaches. Dependence of revenue on rating structured product & on the issuers. 	<p>Real Money/Insurers/Hedge Funds/SIVs & ABCP Conduits</p> <ul style="list-style-type: none"> Risk concentration and leverage at banks. Excessive leverage by SIVs, conduits, and others. Deficient reporting by banks regarding their exposures to SIVs and conduits. Deficient credit analysis on part of many investors. Regulatory and capital arbitrage. Over-reliance on CRAs.
New regulations 	<p>US: Improvement in supervision and practices in mortgage origination</p> <ul style="list-style-type: none"> Establishment of the Consumer Financial Protection Bureau. (DFA Sec. 1011) Definition of Qualified Mortgage (QM) & the Ability-to-Repay rule. Loan originators to assess a consumer's ability to repay a mortgage loan. Restrictions on mortgage originator's compensation. (DFA Sec. 1411, 1412; CFPB final rules: May 2013) 	<p>G20: Risk retention - Originators to retain part of the credit risk of the underlying assets.</p> <p>FSB: Removal of statutory references to ratings.</p> <p>IOSCO Principles: - Mitigation of misaligned incentives via risk retention of arrangers. - Enhanced disclosure regarding securitization's underlying assets & their performance → Reduction of reliance on credit ratings agencies.</p> <p>BCBS: Higher capital charges on securitization holdings of banks.</p>	<p>US: Reduction of reliance on external credit ratings</p> <ul style="list-style-type: none"> Removal of statutory reference to credit ratings. Introduction of formula based risk weighting approach SSFA. Investors to conduct due diligence for securitization exposures. (DFA Sec. 939, 939A; FED/OCC/FDIC final rules: Jul. 2013 (Regulatory Capital Rules)) 	<p>US: Enhanced disclosure of credit ratings</p> <ul style="list-style-type: none"> CRAs to disclose the main assumptions, methods, & processes underlying all ratings/ information relating to conflict of interest. Require CRAs to have effective internal controls with regard to processes. (DFA Sec. 932; SEC final rules: Aug. 2014)
	<p>US: Risk retention and Qualified Residential Mortgage (QRM)</p> <ul style="list-style-type: none"> Issuers to retain an economic interest in a material portion of the credit risk for any asset that it transfers, sells, or conveys to a third party if not all underlying assets are QRMs. Aligns the QRM definition with that of a qualified mortgage as defined by the Consumer Financial Protection Bureau. (DFA Sec. 941; final rule of Treasury/FED/FDIC/FHFA/SEC/HUD: Oct. 2014) 	<p>US: Enhanced disclosure of credit ratings</p> <ul style="list-style-type: none"> CRAs to disclose the main assumptions, methods, & processes underlying all ratings/ information relating to conflict of interest. Require CRAs to have effective internal controls with regard to processes. (DFA Sec. 932; SEC final rules: Aug. 2014) 	<p>EU: Reduction of reliance on external credit ratings</p> <ul style="list-style-type: none"> Financial institutions to make their own credit risk assessment and not solely and mechanically rely on credit ratings (CRA3 Art. 5a), banks only to use a rating if strict quality criteria are met, and to apply consistent credit assessment consistently and not selectively. (CRR Art. 268, 269) 	<p>EU: Due diligence obligation</p> <ul style="list-style-type: none"> Investors to: <ul style="list-style-type: none"> Demonstrate a comprehensive understanding of risk characteristics and structural feature of securitizations investments. Monitor ongoing risk (performance information of exposure and regular stress tests). Check that originator is retaining risk. (CRR Art. 406, Solvency II Art. 135, AIFMD Art. 17, UCITS Art. 50)
	<p>EU: Improvement in practices in mortgage origination</p> <ul style="list-style-type: none"> Loan originators to: <ul style="list-style-type: none"> Make a thorough assessment of the consumer's credit-worthiness; and the procedures and information on which the assessment is based to be established, documented and maintained, (Mortgage Credit Directive Art. 18) Assesses a borrower's creditworthiness on the basis of sufficient information, (Consumer Credit Directive Art. 8) Apply the same sound and well-defined criteria for credit-granting to to-be securitized loans as to exposures to be held on the originator's book, (CRR Art. 408) Ensure that investors have access to all materially relevant data. (CRR Art. 409) 	<p>US: Enhancement in RWs</p> <ul style="list-style-type: none"> CRAs and issuers to disclose information on RWs. (DFA Sec. 943; SEC final rules: Jan. 2011) New RW-clauses. (e.g., Fanny Mae, Freddy Mac) 	<p>EU: Risk retention</p> <ul style="list-style-type: none"> Issuers to retain material net economic interest of at least 5%. (CRR Art. 405) 	<p>EU: Enhanced disclosure of credit ratings</p> <ul style="list-style-type: none"> CRAs to disclose interconnectedness with clients and changes in rating methodologies. (CRA3, Annex I)
		<p>EU: Enhanced disclosure of securitization</p> <ul style="list-style-type: none"> Issuers to enhance disclosure of any information necessary to conduct comprehensive stress tests on cash flows and collateral values supporting the underlying exposures. (CRA3 Art. 8b) Mitigation of conflicts of interest from issuer pays model. (Rotation of CRAs in re-securitizations; issuer has to use two CRAs), (CRA3 Art. 6b, 8c) 		

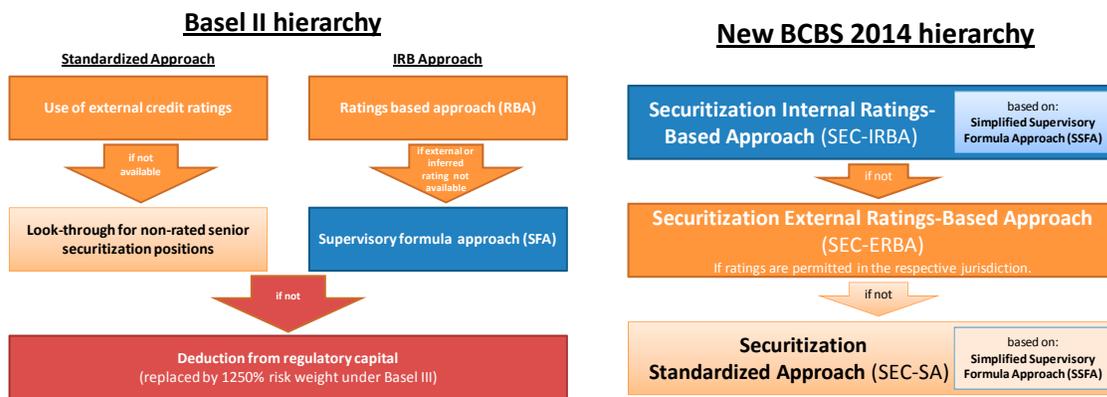
Table 1 (continued)

EU: Blue
US: Red
Principles: Green

	Loan Origination	Securitization intermediaries	Credit Rating Agencies	Investors
<p>Regulations to be Implemented</p> 			<p>EU: Remove all references to CRAs for regulatory purposes by 2020. (CRA3 Art. 5c)</p>	<p>BCBS (Revision of securitization framework, Dec. 2014, coming into effect in January 2018):</p> <ul style="list-style-type: none"> • Reduction of reliance on external ratings through formula-based approaches. • Minimum Risk Weight floor 15%. • Increased Risk Weights for highly-rated exposures, reduced ones for low-rated ones.
<p>Remaining Open Issues</p>	<ul style="list-style-type: none"> • Include Maximum loan-to-value (LTV) and debt-to-income (DTI) ratios in the QRM, QM, and similar measures. • Introduce counter-cyclical macroprudential policies (for instance, variation of LTVs or DTIs across the cycle). 	<ul style="list-style-type: none"> • Promote securitization structures of low complexity. • Minimize legal ambiguities related to the rights of and obligations between servicers, trustees and investors. • Implement secure, transparent, and automated claims transfer. 	<ul style="list-style-type: none"> • Standardized definitions of securitization characteristics and full disclosure of the ratings process for bond. • Regulators and rule makers should provide guidance on granular loan data information disclosure. • The removal of reference to external ratings in the EU and under the BCBS should be accelerated as reasonably as possible. • U.S. regulators should implement rules preventing ratings shopping in accordance with DFA 939F. 	<ul style="list-style-type: none"> • Address possible capital arbitrage & cliff effects. • Avoid unfavorable treatment of securitizations compared to products with similar risk features. • A more realistic definition of maturity is desirable. • Authorities should consider use of the actual cash flow waterfall. • The BCBS and local authorities should coordinate that the formulae and assumptions and implementation of capital charge estimates are consistent across jurisdictions. • The removal of reference to external ratings in the EU and under the BCBS should proceed as reasonably as possible. • U.S.: Provide relief for securitization vehicles from compliance with swap clearing rules.

Box 1. Basel Committee on Banking Supervision Framework on Capital Charges

- In December 2014, the Basel Committee on Banking Supervision published “Revisions to the Securitisation Framework”** (BCBS, 2014b). The new concept aims to make capital requirements more prudent and risk-sensitive, reduce mechanistic reliance of the industry on external credit ratings, and reduce cliff effects.
- The BCBS proposes to replace the existing risk-weighting methodologies for securitizations of Basel II (the Standardized Approach [SA] and Internal Ratings-Based [IRB] Approach) by a simple hierarchy of risk-weighted approaches.** Banks having the capacity and supervisory approval may use the Securitization-IRB Approach (SEC-IRBA) to determine capital requirements. Where banks cannot employ the SEC-IRBA and the respective jurisdiction allows the use of ratings, the Securitization-External Ratings-Based Approach (SEC-ERBA) has to be applied. If neither the SEC-IRBA nor the SEC-ERBA can be used, the Securitization Standardized Approach (SEC-SA) needs to be employed. All approaches include a risk-weight floor of 15 percent for any securitization tranche.



- Both the SEC-IRBA and the SEC-SA are based on the Simplified Standardized Formula Approach (SSFA), which has already been introduced in the United States.**^{1,2} The SSFA does not depend on external ratings, but is based on four main inputs: (i) capital charge of the underlying pool; (ii) tranche thickness; (iii) credit enhancement; (iv) and a supervisory adjustment factor p .
- The supervisory adjustment parameter p determines the level of capital required for a securitization compared to the capital charges that the underlying exposures would attract.** Under the SEC-IRBA, p is subject to a 0.3 floor; additionally, p is determined by several inputs such as the number of loans of the underlying pool, loss given default of the underlying loans, and tranche maturity. Under the SEC-SA, the parameter p is uniformly set to one.
- The new SEC-ERBA requires one eligible credit rating for securitization exposures and can only be employed in jurisdictions allowing the use of external ratings.** This approach also distinguishes between senior and nonsenior tranches and reflects maturity and tranche

thickness. Loan pool data are not used to compute the capital requirements, in contrast to the two formula-based approaches, SEC-IRBA and SEC-SA.

6. **The new framework employs further adjustments.** Inferred ratings of subordinated tranches may be applied to unrated senior securitizations positions. The maximum capital charge for a retained securitization is not supposed to exceed the exposures of the pool of underlying assets. “Retained securitization” refers to a securitization that remains 100 percent with the originating bank; no part of it is sold to a third party.

¹ Proposed in June 2012 and issued as a set of final rules in July 2013 by the Board of Governors of the Federal Reserve Board (2013), the Office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC) designed to implement the Basel III capital standards in the United States.

² In December 2012 the BCBS published the first version of the consultative document, which has been significantly revised after the comments received from stakeholders.

Appendix 1. Calculation of Bank Capital Requirements

1. **Tables 2 and 3 show illustrative calculations of bank capital requirements under the current and proposed risk-weighting approaches for a U.S. high-quality mortgage deal and for a hypothetical consumer deal.** Displayed are the risk weights for (i) the Standardized Approach (SA), and the Ratings-Based Approach (RBA) under the current Basel II securitization framework; (ii) the new securitization framework as proposed by the Basel Committee on Banking Supervision (BCBS, 2014b), consisting of the Internal Ratings-Based Approach (IRBA), the External Ratings-Based Approach (ERBA), and the SA; iii) and the most relevant U.S. risk-weighting approach, the Simplified Standardized Formula Approach (SSFA).
2. **The tables further show the weighted average risk weight of the whole transaction under each risk-weighting approach, as well as its aggregated capital charge.** The last row displays the multiple of the latter in comparison to the capital charge of the underlying loan portfolio.

**Table 2. Calculation of Bank Capital Requirements:
U.S. High-Quality Mortgage Securitization^{1,2}
(In percent)**

Example of Bank Capital Requirements under Basel II and Basel III (US High-Quality Mortgage Deal)																						
Rating	Fitch	Probability of Default	Basel II				BCBS 2013 proposals ³								U.S.							
			SA		IRB		IRBA (maturity=1)		IRBA (maturity=5)		ERBA (maturity=1)		ERBA (maturity=5)		SA		SSFA					
			RW	CCR ⁴	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR				
A1	AAA	92.95%	20%	149	7%	0.52	6%	1.2	37%	2.74	6%	1.2	25%	186	25%	187	20%	149				
B1	AA	2.65%	20%	0.04	8%	0.02	378%	0.80	926%	196	29%	0.06	127%	0.27	827%	175	567%	120				
B2	A	140%	50%	0.06	12%	0.01	199%	134	1237%	139	79%	0.09	187%	0.21	1233%	138	1217%	136				
B3	BBB	1.6%	100%	0.09	60%	0.06	1250%	1.5	1250%	1.5	217%	0.20	316%	0.29	1250%	1.5	1250%	1.5				
B4	BB	0.80%	350%	0.22	425%	0.27	1250%	0.80	1250%	0.80	615%	0.39	764%	0.49	1250%	0.80	1250%	0.80				
B5	NR	105%	1250%	105	1250%	105	1250%	105	1250%	105	1237%	104	1237%	104	1250%	105	1250%	105				
Weighted Average Risk-Weight			37%		24%		78%		114%		36%		52%		100%		88%					
Total Capital Charge (\$mn) on \$100mn Deal			2.95		193		6.26		9.09		2.90		4.6		8.00		7.05					
Multiple of Capital Charge on Deal vis-à-vis if Loans Held On-Balance Sheet			0.74		0.48		157		2.27		0.72		104		2.00		176					
RW of underlying loans regulatory capital			50%		4.00																	

Sources: Fitch Ratings; and IMF staff calculations.

¹ A US\$100 million transaction involving high-quality U.S. mortgages is assumed.

² The risk weight of the underlying loans is set at 50 percent, implying a total capital charge for the underlying loans of 4 percent (i.e., 50 percent of 8 percent), or US\$4 million.

³ At origination, mortgages will usually have a maturity closer to five years than to one year. The Internal Ratings-Based Approach (IRBA) and the External Ratings-Based Approach (ERBA), using a maturity of five years, would therefore apply.

⁴ Contribution to capital requirement (CCR) denotes the U.S. dollar amount that each tranche contributes to the capital requirement of the whole deal, based on a US\$100 million securitization.

**Table 3. Calculation of Bank Capital Requirements:
Consumer Securitization^{1,2}
(In percent)**

Example of Bank Capital Requirements under Basel II and Basel III (Hypothetical Consumer Deal)																		
Tranche	Rating	Weighted Average Risk-Weight	Basel II				BCBS 2013 proposals ³								U.S.			
			SA		IRB		IRBA (maturity=1)		IRBA (maturity=5)		ERBA (maturity=1)		ERBA (maturity=5)		SA		SSFA	
			RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR	RW	CCR
A1	AAA	5.39%	20%	0.25	7%	0.09	5%	0.18	5%	0.18	5%	0.18	25%	0.31	5%	0.18	20%	0.25
B1	AA	5.73%	20%	0.25	8%	0.10	5%	0.19	5%	0.19	25%	0.32	10%	1.38	5%	0.19	20%	0.25
B2	A	25.87%	50%	1.03	12%	0.25	5%	0.31	5%	0.31	59%	1.23	14%	2.91	5%	0.31	20%	0.41
B3	BBB	24.48%	100%	1.96	60%	1.18	5%	0.29	73%	1.44	106%	3.25	242%	4.73	37%	0.73	20%	0.39
B4	BB	5.94%	350%	1.66	425%	2.02	5%	0.07	368%	1.75	583%	2.77	724%	3.44	265%	1.26	60%	0.29
B5	NR	12.58%	1250%	2.58	1250%	2.58	769%	7.74	1035%	10.41	1093%	11.00	1093%	11.00	993%	9.99	860%	8.66
Weighted Average Risk-Weight			222%		203%		110%		179%		234%		297%		158%		128%	
Total Capital Charge (\$mn) on \$100mn Deal			17.73		16.21		8.79		14.28		18.75		23.77		12.66		10.25	
Multiple of Capital Charge on Deal vis-à-vis if Loans Held On-Balance Sheet			2.96		2.70		1.47		2.38		3.13		3.96		2.11		1.71	

RW of underlying loans 75%
regulatory capital 6.00

Sources: Fitch Ratings; and IMF staff calculations.

¹ A US\$100 million transaction involving U.S. consumer loans is assumed.

² The risk weight of the underlying loans is set at 75 percent, implying a total capital charge for the underlying loans of 6 percent (i.e., 75 percent of 8 percent), or US\$6 million.

³ Contribution to capital requirement (CCR) denotes the U.S. dollar amount that each tranche contributes to the capital requirement of the whole deal, based on a US\$100 million securitization.

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