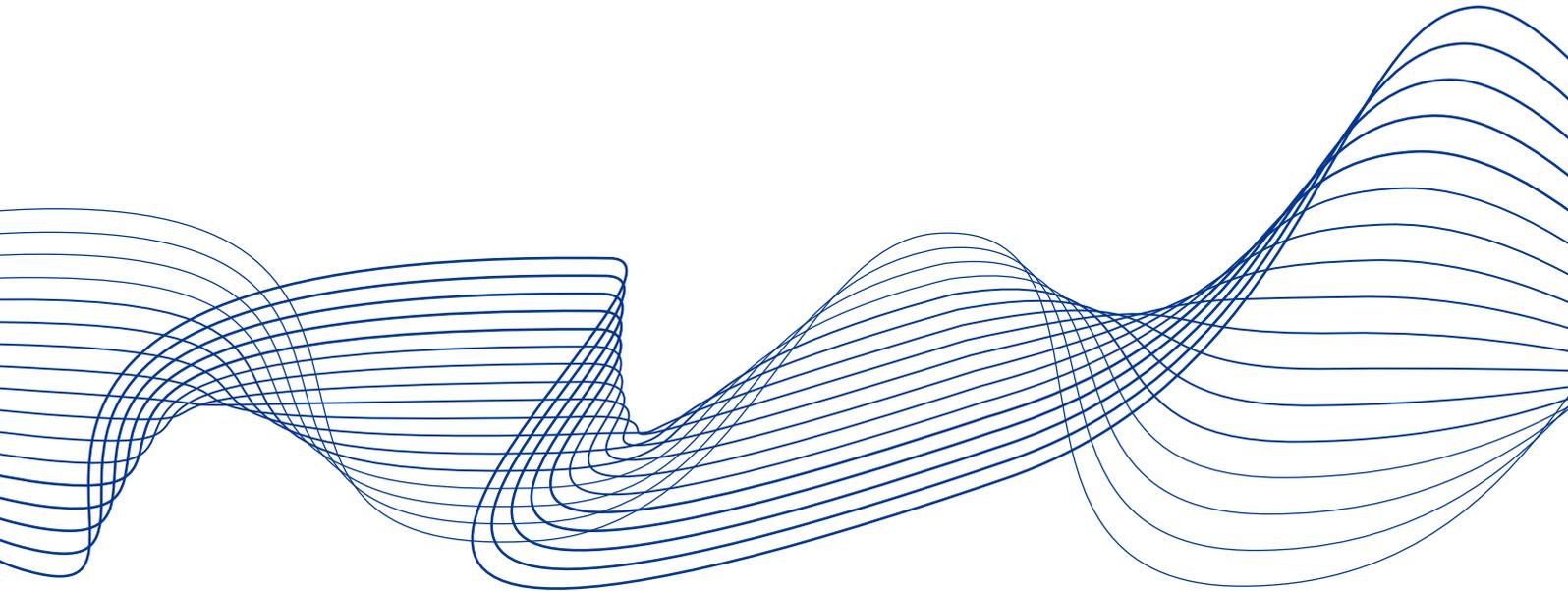


Monitoring systemic risks in the EU securitisation market

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ESRB
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Contents

Executive summary	2
1 Introduction	7
Box 1 Securitisation	10
Box 2 Prudential treatment of securitisation under financial regulation	13
Box 3 Securitisation markets and the global financial crisis	16
Box 4 The EU Securitisation Regulation	17
2 Overview of the EU securitisation market – key facts and figures	19
Box 5 Eligibility criteria for asset-backed securities under the Eurosystem collateral framework	28
Box 6 Collateralised debt obligations	36
3 A monitoring framework for macroprudential oversight of the EU securitisation market	39
3.1 Conceptual framework	39
3.2 Systemic risk indicators by category	40
Box 7 Data considerations	41
3.3 Sensitivity analyses	56
References	61
Imprint and acknowledgements	65



Executive summary

This Report has been produced in the light of the responsibility of the European Systemic Risk Board (ESRB) for macroprudential oversight of the EU securitisation market and it is the ESRB's first report of this kind. Article 31 of Regulation (EU) 2017/2402¹ (also known as the EU Securitisation Regulation or SECR) states that in order to highlight financial stability risks the ESRB should, in collaboration with the European Banking Authority (EBA), publish a report on the financial stability implications of the EU securitisation market at least every three years.² The first edition of this report focuses on traditional (i.e. off-balance sheet) securitisations. By the end of 2022 the ESRB, in collaboration with all the European Supervisory Authorities (ESAs), should also publish another report assessing the impact on financial stability of the introduction of simple, transparent and standardised (STS) on-balance-sheet (i.e. synthetic) securitisations.

The report shows that the EU securitisation market is small compared with that of the United States and that it has shrunk since the global financial crisis (GFC) of 2008. At around €0.7 trillion in the second quarter of 2021 (in terms of notional amounts), the EU securitisation market is small viewed against the US market of around €9.8 trillion.³ This difference reflects structural features of the US securitisation market. For example, in the United States, securitisation plays a more important role for market-based funding than in the EU, where banks often use securitised loans as collateral to access central bank funding. Moreover, in the United States, a large share of securitisations, in particular mortgage-backed securities, is guaranteed by US government agencies such as the Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac), whereas in the EU such guarantees are not widespread. Over the past ten years the EU securitisation market has shrunk by around 40% (from €1.2 trillion in 2012). This is also reflected in the size of new issuances before and after the GFC, which were as high as €819 billion in 2008 compared with €181 billion in 2013. By the second quarter of 2021 new issuances amounted (on an annualised basis) to €171 billion. Compared with the total assets of the EU banking system, which is the main source of origination for EU securitisations, the size of the EU securitisation market is small at around 2% in the second quarter of 2021. In terms of the types of assets that are securitised, the EU securitisation market is largely composed of residential mortgage-backed securities (RMBSs), but has recently become more diverse. For example, the share of RMBSs in the total EU outstanding decreased from 68% in 2017 to 61% in the second quarter of 2021, while the shares of securitisations backed by loans to small and medium-sized enterprises (SMEs) loans and other asset-backed securities (ABSs) increased from 9% to 12% and from 21% to 26% respectively over the same period.

The EU securitisation market is concentrated in a few Member States and banks are the main holders of securitisations. In the second quarter of 2021 almost 80% of total outstanding

¹ **Regulation (EU) 2017/2402** of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012 (*OJ L 347, 28.12.2017, p. 35*).

² This report does not cover third-country securitisations held by EU financial firms given that the scope only extends to securitisations originating in the EU and regulated by the SECR.

³ The EU data do not include collateralised debt obligations (CDOs), whereas the US data do.



securitisations in the EU were backed with loans located in Spain, France, Italy and the Netherlands, reflecting the active and extensive use of securitisation in these Member States. EU banks remain the main holders of EU securitisations. Nonetheless, EU banks retain securitisations mostly for use as collateral in central bank operations. In the second quarter of 2021 euro area banks held 84% of the total market value of euro area securitisations. Of these, 40% of securitisations held by euro area banks had an AAA external credit rating. The next largest holders of euro area securitisations were investment funds (including money market funds or MMFs) and insurance corporations, with 7% and 5% of the total market value respectively.

Most tranches of EU securitisations are rated as investment grade, although the impact of the coronavirus (COVID-19) pandemic and its aftermath on the securitisation market remains to be seen.

In the year following the start of the COVID-19 pandemic, the share of securitisations with an investment grade rating stood at 96% in the second quarter of 2021 compared with 93% in 2014. In addition, the number of rating upgrades have outnumbered rating downgrades since the start of the pandemic. The introduction of a cross-sectoral securitisation framework in the EU including a more risk-sensitive prudential framework and the introduction of the simple, transparent and standardised (STS) label may have contributed to the overall quality of securitisations, in particular those fulfilling the STS criteria, which is also reflected by a preferential risk weight treatment. However, the economic outlook for the EU economy remains uncertain and depends among other things on the effectiveness of vaccination programmes, the time and speed with which government support will be scaled back and geopolitical developments following Russia's invasion of Ukraine.

This report focuses on EU RMBSs. The focus on EU RMBSs reflects three main considerations. First, RMBSs are the largest segment of the EU securitisation market, representing more than 60% of total outstanding securitisations in the EU at the second quarter of 2021. Second, housing represents a major part of household wealth, while residential mortgages represent a major part of bank lending. Recessions associated with real estate market developments tend to be more harmful than other recessions (Crowe et al., 2012). Third, since 2016 the ESRB has repeatedly warned about vulnerabilities in the residential real estate market in a number of Member States, including some that are important originators of EU RMBSs.

The report sets out a monitoring framework that focuses on systemic risk, in particular owing to excessive leverage and interconnectedness.

The monitoring framework is organised around three groups of indicators that the ESRB deems to be the most relevant from a macroprudential perspective: (i) broad market indicators, (ii) leverage indicators, and (iii) interconnectedness and concentration indicators. For the purpose of monitoring the RMBS market in the EU, this report draws on three data sources: the Centralised Securities Database (CSDB), the European DataWarehouse (EDW) and the ECB's Securities Holdings Statistics (SHS).

The broad market indicators show that the loan balance underlying EU RMBSs has fallen.

Owing to the size of the EU securitisation market, the decrease in EU RMBSs accounted for most developments within it. The total amount of EU RMBSs expressed as the current balance of their underlying loans fell from €745 billion in the fourth quarter of 2014 (the earliest reliable reporting period) to €458 billion in the second quarter of 2021. Compared with loans originated and securitised between 2004 and 2008 (€227 billion) and between 2015 and 2018 (€191 billion), loans



originated and securitised in 2020 – which saw the onset of the COVID-19 pandemic – represented a small amount of the total underlying loans (€17 billion).

The leverage indicators show that the loan-to-value (LTV) ratio of the loans underlying EU RMBSs is on average below 100% (collateral values exceeding the loan amount), but that the share of riskier loans has risen since the early 2000s. Based on an unweighted average taken across loans and across origination years, the average LTV ratio of the original balance of loans underlying EU RMBSs was 72% at the second quarter of 2021. This means that, on average, the mortgage exposure represented 72% of the value of the property at origination. Considering the size of the loans, the weighted LTV ratio of the original balance of loans underlying EU RMBSs was almost 80% at the second quarter of 2021. Broken down by the years in which loans were originated, the weighted LTV ratio was lower during earlier years of origination compared with more recent years of origination: below 60% before 1998, above 75% from 2003 and around 80% between 2005 and 2019. In 2020 and in the first half of 2021, the weighted LTV ratio was 76% and 75% respectively. The distribution of loans across LTV buckets shows that the share of riskier loans, that is to say loans with an LTV ratio above 100%, increased from 5% of loans originated in 1999 to 22% of loans originated in 2013 and then decreased to 9% for loans generated in 2020 and the second quarter of 2021. Across loan origination years, without differentiating across loan origination years, the share of loans with an LTV above 100% was 13%.

The leverage indicators show an average debt-to-income (DTI) ratio of 5.3 across all loans, with almost 34% of borrowers having a DTI ratio above five. Based on an unweighted average taken across loans and across origination years, the average DTI ratio of the original balance of loans underlying EU RMBSs was 4.3 at the second quarter of 2021. This means that the loans granted to borrowers at origination represented four times their annual income. Considering the size of the loans, the weighted DTI ratio of the original balance of loans underlying EU RMBSs was 5.3. Broken down by the years in which loans were originated, the weighted DTI ratio increased from 4.0 in 1998 to 8.5 in 2008. Thereafter, the ratio fell to 4.0 in 2013 to increase slightly to 4.4 between 2017 and 2020. For loans originated in the first half of 2021, the weighted DTI ratio was 4.9. By distribution of loans across DTI buckets for all EU RMBSs at the second quarter of 2021, 35% of the total original loan balance had a DTI ratio higher than five. By combining DTI buckets with the year of origination, the share of loans with a DTI ratio above five also reached its highest in 2006 at 55%.

The interconnectedness and concentration indicators show that origination and holding of EU RMBSs are concentrated in a small number of banks domiciled in a few Member States. Based on data linking the originators of EU RMBSs with the holders of EU RMBSs, 75% of EU RMBSs were backed with mortgages in Spain, Italy, France and the Netherlands, while 72% of EU RMBSs were held by institutional sectors in the same Member States over the same period. Moreover, ten banking groups headquartered in Spain, France, Germany, Italy and the Netherlands originated 66% of EU RMBSs in the second quarter of 2021. At the same time, ten banking groups held 84% of the total holdings of EU RBMSs in the euro area. From a financial stability perspective, two of the intended benefits of traditional securitisations are the transfer of assets out of the originators' balance sheet (and hence the transfer of credit risk) and the distribution of risk across the financial system. The concentration observed across and within Member States, including of retained self-securitised loans, indicates that these benefits are not being reaped.



The ESRB does not see any substantial systemic risks emanating from EU RMBSs, but analysis of other asset classes or types of securitisations not covered in this report could reveal sources of risk. This assessment reflects a number of factors. First, the EU RMBS market has shrunk in recent years and remains small within the EU financial system and from a global perspective. Second, the credit quality of EU RMBSs, as reflected by external credit ratings, has remained high and stable even during the COVID-19 pandemic. Third, overall, the leverage indicators for EU RMBSs in the form of DTI, LTV and debt service-to-income (DSTI) ratios do not appear excessive. Fourth, EU banks, which are the main originators and holders of EU securitisations, are better capitalised than before the GFC. This improves their capacity to absorb potential losses stemming from RMBSs.⁴ Although the ESRB does not see substantial systemic risks emanating from EU RMBSs, a crystallisation of risks in the real estate markets that the ESRB has highlighted since 2016 would affect the credit quality of residential real estate loans, regardless of whether or not the loans have been securitised. Consequently, stress originating in the real estate market would also be transmitted through RMBSs. More generally, other asset classes or types of securitisation not covered in this report, including securitisations issued outside the EU, might be a source of risk and should be monitored and assessed.

To ensure that emerging risks to financial stability are identified early, the quality of EU securitisation reporting should be enhanced and the monitoring framework broadened beyond RMBSs. Against this background, the ESRB welcomes the actions taken by the European Securities and Market Authority (ESMA) to enhance the quality of EU securitisation reporting. A consistent, harmonised and rule-based data reporting framework is an important pillar not only for risk monitoring, but also for adequate due diligence checks by investors. Since the adoption of the SECR, ESMA has developed templates, guidelines and validation rules for reporting the underlying exposures of securitisations to data repositories. These efforts should continue and might benefit from the experience gained in developing and maintaining other reporting frameworks, such as the EU supervisory reporting framework for banks and the analytical credit datasets (AnaCredit) programme. This will improve consistent and harmonised reporting of underlying exposures of securitisations giving high data quality. Currently, private securitisations are not required to report via securitisation repositories but to the respective competent authority. Each authority involved must therefore ensure the quality of the data and the monitoring of the reported securitisations. As noted by the Joint Committee of European Supervisory Authorities (JCESA, 2021), this may become an inefficient and expensive requirement for these authorities and may also result in an inconsistent application of data checks across jurisdictions. Moreover, private securitisations are defined as securitisations for which a prospectus does not have to be drawn up. This definition covers various situations, such that some of securitisations might not be relevant for disclosure and investor protection (e.g. private and intra-group transactions). Therefore, the ESRB supports the recommendations made by the JCESA to the European Commission in 2021 suggesting the reporting of private securitisations via data repositories using reporting templates that are suitable for that type of transaction and a less broad definition focusing on the types of transaction that constitute a private securitisation. These suggestions support the appropriate and adequate assessment of private securitisations and their financial stability implications at the EU level. The ESRB will also develop its monitoring framework to cover other classes and types of securitisation.

⁴ For example, the Tier 1 ratio for EU banks increased from 10.2% in the fourth quarter of 2009 to 17.1% in the second quarter of 2021 ([EBA Risk Dashboard](#)).



This includes collateralised debt obligations (CDOs) such as collateralised loan obligations (CLOs), that the ESRB had identified as a potential source of risk and which are briefly considered in Box 6,⁵ and synthetic securitisation, reflecting the ESRB's specific mandate in this area.

⁵ See "**EU Non-bank Financial Intermediation Risk Monitor 2020**", *NBFI Monitor*, No 5, ESRB, Frankfurt am Main, October 2020.



1 Introduction

Securitisation can bring economic benefits and support financial stability. A securitisation is typically a financial instrument⁶ that bundles and transforms a pool of illiquid assets, such as residential mortgage loans, consumer loans or credit card receivables into tradable securities (see Box 1). Banks are the main originators of such loans. By selling loans through securitisation, banks transfer their credit risk outside their balance sheets and hence reduce their capital requirements, which frees up capacity to provide further lending (i.e. risk transfer and capital relief). The sale of securitised loans also diversifies their funding sources and reduces their funding costs by de-linking the rating of the securitisation from the banks' own rating (Deku et al., 2019). For investors, securitisation brings portfolio diversification benefits by providing access to asset classes that might otherwise not be accessible to them. Moreover, securitisation products can be structured in a way that better fits investors' needs, for example by offering more suitable risk and return profiles. For banks that retain and invest in securitisations, these securities may benefit from preferential capital treatment and may also qualify as high-quality liquid assets for the purpose of calculating the liquidity coverage ratio (see Box 2). They may also qualify as collateral for central bank operations to obtain liquidity. Overall, securitisation creates a link between banks and capital markets that may bring benefits for both households and firms in the form of greater access to credit on better terms, thereby improving the financing of the economy. Because of this feature, the EU securitisation market is one of the priorities of the EU's capital markets union.⁷ From a financial stability perspective, securitisation may enhance the resilience of the financial system by redistributing risk across the system.

At the same time, securitisations, if not managed adequately, may also pose risks to financial stability that require government intervention, as seen during the GFC. The GFC highlighted the extent to which securitisation may amplify the impact of a crisis owing to several features (see Box 3). These included (i) poor underwriting standards by originators (i.e. resulting in a worsening of the credit quality of the underlying assets), (ii) complex and opaque products (i.e. preventing investors from exercising adequately due diligence), and (iii) misaligned incentives between participants to a securitisation transaction (i.e. a weakening of the monitoring and quantification of risks by market participants). Securitisation created excessive leverage in the financial system fuelling a rise in asset prices and over-indebtedness across borrowers, as well as interconnectedness and greater concentration risk within the banking sector, all of which contributed to a deepening of the crisis. This caused the benefits of securitisation to be outweighed by the harm it inflicted on the real economy.

In 2017 the EU adopted a new regulatory framework for securitisations designed to reap the benefits of securitisation while mitigating the risks that may arise from this form of finance. The decade following the GFC saw a wide range of regulatory initiatives on the EU securitisation

⁶ Securitisation involves transactions that enable a lender or a creditor – typically a credit institution or a corporation – to refinance a set of loans, exposures or receivables, such as residential loans, auto loans or leases, consumer loans, credit cards or trade receivables, by transforming them into tradable securities (Recital 1 of the SECR). Nonetheless, some types of securitisations are not traded on a regulated market and/or are – in the case of synthetic securitisations – not used to refinance a set of loans, exposures or trade receivables.

⁷ See European Commission, “**EU Capital Markets Union: A plan to unlock funding for Europe's growth**”, Brussels



market. These initiatives were linked to efforts to create an EU capital markets union to improve the financing of the EU economy. They culminated in the adoption of the SECR,⁸ which lays down a harmonised cross-sectoral framework for securitisation applicable to all market participants. This Regulation introduced a specific framework establishing a set of criteria differentiating simple, transparent and standardised securitisations from complex, opaque and risky securitisations, known as the STS criteria (see Box 4). The Regulation also enforced a better alignment of interests and incentives between the participants to securitisation transactions (from originators to investors),⁹ in particular by requiring originators to retain a material economic exposure to the securitisations they sell. In addition, the SECR established a comprehensive reporting framework for public transactions through data repositories to meet the needs of investors and supervisors. Finally, the new regulatory framework also included amendments to the **Capital Requirements Regulation** (CRR),¹⁰ adding a more risk-sensitive prudential framework for securitisations.

The ESRB is responsible for macroprudential oversight of the EU securitisation market.¹¹

The SECR strengthens the microprudential supervision of the securitisation market (including the supervision of the financial institutions participating in this market) and assigns the macroprudential oversight to the ESRB. To this end, the ESRB is mandated to publish a report on the financial stability implications of the EU securitisation market at least every three years in collaboration with the EBA. Recent amendments to the SECR¹² in response to the COVID-19 pandemic extended the STS criteria to certain on-balance sheet securitisations (also known as synthetic securitisation).¹³ Consequently, the ESRB in collaboration with all the ESAs is mandated to assess the impact on financial stability of the introduction of STS for synthetic securitisations and report its findings in a report due in 2022. This includes assessing and reporting on systemic risks created, in particular by concentration and interconnectedness among non-public credit protection sellers.

The ESRB's macroprudential oversight includes monitoring of EU securitisations for the build-up of systemic risk generated by a combination of excessive leverage and interconnectedness.

In the real economy, securitisation may lead to excessive leverage by increasing access to credit to borrowers. In the financial system, securitisation may also lead to excessive financial leverage if financial intermediaries in their search for profits use borrowed money to invest in securitised products. Such products tend to offer higher yields than other similarly rated fixed income products (as seen before the GFC, when interest rates were low). The resulting excessive leverage can act as a financial accelerator for credit growth and rising asset prices (Segoviano et al., 2013) and amplify macroeconomic imbalances. Moreover, securitisation seems to significantly reduce the importance of the bank lending channel and hence erode the transmission of monetary policy (Altunbas et al., 2009). Another source of systemic risk is the transmission of shocks through interconnectedness in securitisations. Such interconnections open

⁸ See Regulation (EU) 2017/2402.

⁹ Prior to the SECR, the CRR already included requirements on retained interest of the issuer.

¹⁰ See **Regulation (EU) 2017/2401** of the European Parliament and of the Council of 12 December 2017 amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms (OJ L 347, 28.12.2017, p. 1).

¹¹ Article 31 of Regulation (EU) 2017/2402.

¹² See **Regulation (EU) 2021/557** of the European Parliament and of the Council of 31 March 2021 amending Regulation (EU) 2017/2402 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation to help the recovery from the COVID-19 crisis (OJ L 116, 6.4.2021, p. 1).

¹³ Instead of selling the underlying assets, originators may transfer the credit risk of the underlying assets alone using credit derivatives, such as credit default swaps, while the actual assets remain on the balance sheet of the originator.



up contagion channels between financial institutions, across sectors and the whole economy, or between banks and securitisation special purpose entities (SSPEs) through sponsor linkages (Fiedor and Killeen, 2019). For example, a large wave of borrower defaults could cause losses for holders of securitisation, trigger collateral calls and a seizing up of wholesale funding markets, which in turn could lead to fire sales of assets. Taking these elements into account, the ESRB's monitoring of the EU securitisation market encompasses the size and credit risk characteristics of the market, the concentration of risk and the potential contagion channels and spillover effects from that market to the wider financial system (for example, investors not being able to bear any losses that materialise).¹⁴ This macroprudential oversight therefore complements microprudential supervision, which, by focusing on individual securitisations, originators and issuers, also helps to strengthen the resilience of the financial system against risks emanating from the securitisation market.

This report is the first ESRB assessment of the financial stability implications of the EU's traditional (i.e. off-balance sheet) securitisation market as mandated under the SECR. It focuses on the market for RMBSs originated in the EU for three main reasons. First, this segment is the largest of the EU securitisation market, given that it represented 61% of the total EU outstanding as at the first half of 2021. Second, housing represents a major part of household wealth in the EU (ECB, 2020), while residential mortgages represent a major part of bank lending. In addition, recessions associated with real estate market developments tend to be more harmful than other recessions (Crowe et al., 2012). Third, since 2016 the ESRB has repeatedly warned about vulnerabilities in the residential real estate market in a number of Member States.¹⁵ This report includes indicators for identifying trends in (i) the quality of the securitised loans (reflecting both the borrower and the assets collateralising the loan), (ii) the risk kept within the banking sector, and (iii) the concentrations of investors and of borrowers including their linkages. In future reports, the ESRB intends to extend and develop the monitoring framework to cover other classes and types of securitisations, and to integrate monitoring of synthetic securitisations. This includes CDOs, such as the CLOs, that the ESRB had identified as a potential source of risk in its Non-bank Financial Intermediation Monitor¹⁶ (and which are briefly considered in Box 6), and synthetic securitisation reflecting the ESRB's specific mandate in this area.

The report is structured as follows. The first part provides an overview of the securitisation market in the EU. The second and final part of the report is divided in two sections. The first section presents a conceptual framework for the macroprudential oversight of the EU securitisation market and includes monitoring indicators focusing on RMBSs. The second section provides a set of sensitivity analyses of risk indicators, measuring how changes in interest rates, unemployment rates and residential real estate prices might affect leverage indicators in EU RMBSs.

¹⁴ This monitoring does not cover third-country securitisations held by EU financial firms given that the scope is limited to securitisations originated in the EU and regulated by the SECR.

¹⁵ See ESRB (2016) "The ESRB issues eight Warnings on medium-term residential real estate vulnerabilities and a Recommendation on closing real estate data gaps", [press release](#), Frankfurt am Main, 28 November; ESRB (2019), "ESRB issues five warnings and six recommendations on medium-term residential real sector vulnerabilities", [press release](#), Frankfurt am Main, 23 September; and ESRB (2022), "ESRB issues new warnings and recommendations on medium-term residential real estate vulnerabilities", [press release](#), Frankfurt am Main, 11 February.

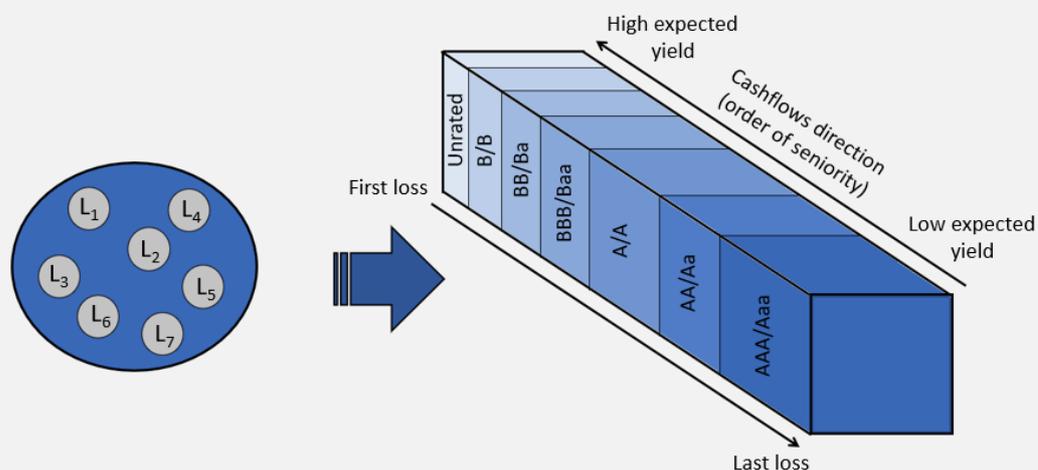
¹⁶ See ESRB (2020), "[EU Non-bank Financial Intermediation Risk Monitor 2020](#)", *NBFI Monitor*, No 5, October.



Box 1 Securitisation

A securitisation is a financial instrument that bundles a pool of assets and splits the cashflows arising from these assets into different risk categories called tranches. The pool consists of similar assets, which all include a contractual obligation to pay. This might relate to residential mortgages, consumer loans, auto loans and credit card receivables among other things. The tranches are typically issued as debt instruments of varying external ratings reflecting their different credit risks. Figure A illustrates the mechanics behind a securitisation. The left-hand side of the figure depicts a pool of assets (in this case, individual mortgage loans) with different levels of quality. The right-hand side shows how the pool is split into different tranches to form a securitisation that contains several credit ratings. These tranches are categorised into different levels of subordination and hence range from the most senior (AAA) to the most junior, unrated tranche (sometimes called the “equity tranche”). The subordination acts as a protection for the most senior tranches. Moreover, the senior tranches are assigned a credit rating that is higher than what could have been obtained based on the credit quality of the underlying pool of assets alone. This difference reflects the so-called credit enhancement, which can be internal, for example through overcollateralisation, excess spread, reserve accounts, the subordination or external through guarantees or letters of credit. The different tranches are sized in order to meet a specific rating profile that meets investor needs.

Figure A
Pooling of underlying assets into a securitised product (simplified illustration)



Source: ESRB, adapted from Martin (2009).

Losses are allocated to the different tranches in increasing order of seniority. The first arrow on the right-hand side of Figure A indicates the sequence in which losses are absorbed. If one or several borrowers fall short of their payments, the resulting losses will first be absorbed by the unrated equity tranche (the lowest tranche). Therefore, the equity tranche is the most exposed to



default risk. If losses exceed the size of the equity tranche, investors in the next most junior tranche participate in the absorption of losses and so on. Senior tranches usually consist of approximately 70% of the notional,¹⁷ which means that if losses amount to more than 30% of the outstanding amount of the underlying mortgages, such losses are absorbed by the senior tranche.

The cashflows (e.g. principal and interest) are distributed to the different tranches in decreasing order of seniority (the cashflow waterfall). The second arrow on the right-hand side of Figure A indicates the direction of cash flows arising from the underlying assets, in this case mortgages. Investors holding the most senior tranches are paid first. Once the senior tranches have been fully redeemed, investors in the next (more junior) tranche are redeemed and so on (known as sequential amortisation). As investors are redeemed in order of decreasing seniority, the last tranche (equity tranche) receives any remaining cash flows.¹⁸ As the equity tranche absorbs losses first and gets paid last, this tranche receives any excess return made from the underlying assets to compensate investors for the higher risk taken.

Any securitisation where the security is offered to the public must disclose a prospectus under the EU Prospectus Regulation¹⁹ and hence is labelled as a public securitisation. The prospectus, which aims to ensure investor protection and market efficiency, contains data to enable investors to make an informed assessment of (i) the assets and liabilities, financial position, profit and losses, and prospects of the issuer and of any guarantor, (ii) the terms and conditions attached to such securities, and (iii) the reasons for the issuance and its impact on the issuer. In addition, a prospectus includes a description of the key risk factors related to the issuer, the securities, and the assets that back the issuance.

The process of a true-sale securitisation involves several market participants along an intermediation chain. This is illustrated in Figure B. The originator²⁰ (for instance, a bank) collects together a pool of similar assets (such as mortgages) and sells them to a securitisation special purpose entity (SSPE).²¹ The originator and the SSPE are economically separate from one another, which means that each is unaffected in the event of the distress or bankruptcy of the other (also known as bankruptcy remoteness). To refinance the purchase of assets, the SSPE (i.e. the issuer) creates tradable securities by collateralising tranches with the assets bought from the originator. These securities are then sold to investors. The cash received is used to buy the assets from the originator. The SSPE is entitled to the cash flows generated by the assets and transmitted by a servicer. The SSPE redistributes these cash flows to the investors based on the seniority of the tranches.

¹⁷ See PineBridge Investments (2019).

¹⁸ Pro-rata amortisation is another type of cash flow allocation within a securitisation, where the tranches are repaid based on the percentage of the entire transaction they represent.

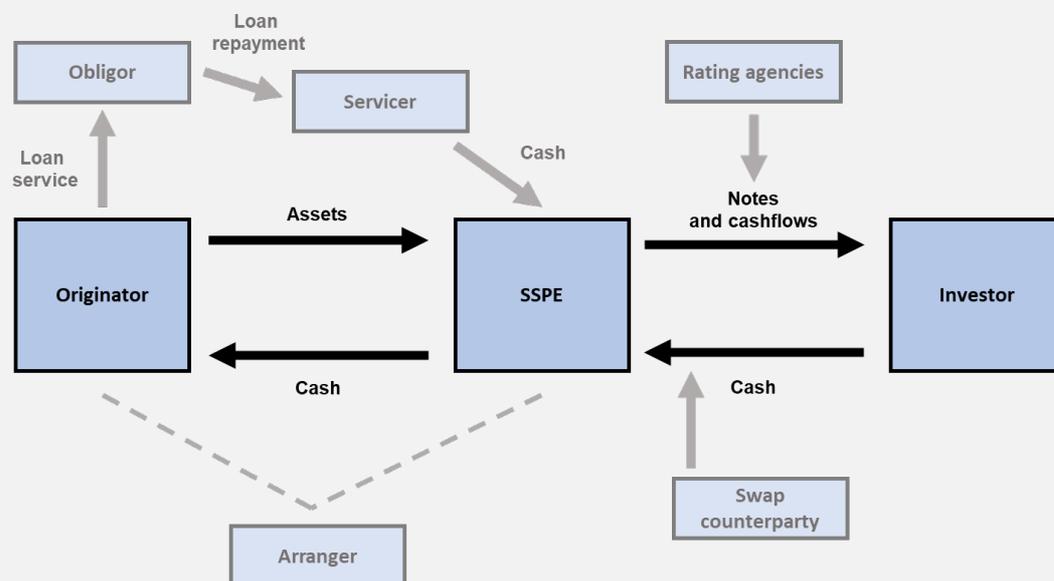
¹⁹ See **Regulation (EU) 2017/1129** of the European Parliament and of the Council of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market, and repealing Directive 2003/71/EC (*OJ L 168, 30.6.2017, p. 12*).

²⁰ Under the SECR, an originator is an entity involved in the original agreement creating the obligations of the debtor giving rise to the exposures being securitised or an entity that purchases a third party's exposures and then securitises them.

²¹ Under the SECR, an SSPE is a corporation, trust or other entity, other than an originator or sponsor, established for the purpose of carrying out one or more securitisations, the activities of which are limited to those appropriate to accomplishing that objective, the structure of which is intended to isolate the obligations of the SSPE from those of the originator.



Figure B
Simplified traditional securitisation process



Source: ESRB, adapted from EPRS (2015).

Securitisations for which no prospectus is required are defined as private securitisations.

These are private agreements between a sponsor (for instance, a bank) and an investor (or a group of investors). They can also be private agreements and supported by the sponsoring institution, and “private and intra-group transactions” for which the only investor is the originator or sponsor or a related or consolidated entity. Private securitisations may provide stable funding to firms by investing in certain asset classes (for example, by buying short-term trade receivables) and finance those investments by issuing commercial paper. The preparation and issuance of private securitisations are less costly, less complex and typically smaller in issuance size than public securitisations. Private securitisations may be a first step towards the issuance of a public securitisation by collecting a large volume of eligible loans in an SSPE in order to reach the critical mass required for a public market securitisation issuance (so-called warehousing). Private securitisations are not required to report the transaction and the underlying exposures to data repositories. Recently, the Joint Committee of the European Supervisory Authorities (JCESA, 2021) noted a significant increase in the number of notifications of private securitisations with a simple, transparent and standardised (STS) label as compared with notifications of public STS securitisations. According to the JCESA, this increase was mainly driven by the increase in the number of private STS asset-backed commercial paper (ABCP) transactions.²² The European Benchmark Exercise, which is a market-led initiative, provides estimations of the aggregate value of

²² ABCP transactions are a type of private securitisation. The increase in private STS securitisations has been due to various factors including (i) difficult liquidity conditions in the public securitisation/bond markets during the COVID-19 pandemic, (ii) in contrast to non-ABCP securitisations, ABCP securitisations usually extend for many years with annual or bi-annual amendments reflecting changing circumstances (i.e. rechargeable ABCP transactions), (iii) compared with the 2020 figures, the small number of ABCP transactions in 2019 reflects the fact that conduit sponsors had been granted a one-year grace period before having to apply the new capital requirements to their conduit liquidity facilities, (iv) the SECR requires each conduit wishing to obtain STS status for a transaction to notify the ESMA separately. More on these developments can be found in JCESA (2021).



private securitisations. This exercise collects information on a voluntary basis from 12 banks in the EU and the United Kingdom.²³ At the second quarter of 2021 the overall market for private securitisations in Europe was estimated at €189 billion.²⁴

Box 2

Prudential treatment of securitisation under financial regulation

Under the Capital Requirements Regulation (CRR), banks are required to calculate capital charges on their securitisation exposures, when they act as originator, sponsor, or as other players (including investors) in the securitisation transaction.²⁵ With the adoption of an EU securitisation framework, the capital treatment of securitisations was substantially amended in 2017²⁶ taking into consideration the securitisation framework published by the Basel Committee on Banking Supervision (BCBS).

The revised capital framework includes the following main elements:

- 1. A new hierarchy of approaches to calculating capital requirement for securitisation exposures.** For exposures in the banking book, the hierarchy now consists of three approaches: the securitisation internal ratings based approach (SEC-IRBA), the securitisation standardised approach (SEC-SA) and the securitisation external ratings based approach (SEC-ERBA). The application of the hierarchy depends on whether a bank has the sophistication and sufficient information to perform the required estimates. If an institution is unable to use one of these approaches, it must assign a risk weighting of 1.250% to the securitisation exposure. Under certain circumstances, a reversion of the hierarchy, placing SEC-ERBA before SEC-SA, is allowed. For unrated positions in asset-backed commercial paper (ABCP) programmes or transactions, the internal assessment approach (IAA) may be used. For exposures in the trading book, the same approach applies to securitisation positions as to all other debt instruments with regard to the prudential treatment of the general risk, and the prudential treatment of securitisation positions largely follows their treatment in the banking book with regard to the specific risk. That includes the possible preferential treatment of STS exposures.
- 2. Less mechanistic reliance on external ratings**
The SEC-ERBA is no longer at the top of the hierarchy of approaches. Endogenous risk drivers such as the maturity and the thickness of the tranche have also been incorporated into calculation of capital requirements for securitisation exposures in order to improve risk sensitivity.

²³ See AFME (2021), “**European Benchmarking Exercise for Private Securitisations**”, December.

²⁴ Under the assumption of an average credit enhancement of 15% and an average utilisation rate of 80% (AFME, 2021).

²⁵ See Chapter 5 of Part Three, Title II in the CRR.

²⁶ See Regulation (EU) 2017/2401



3. **Capital charges commensurate with the risk associated with securitisation exposures**

The new approaches for calculating capital requirements for securitisation positions set out in the revised framework account more effectively for agency and modelling risk.²⁷

Overall, the revised capital treatment results in higher capital requirements for securitisation positions relative to the capital levels previously required. These requirements are much higher for non-simple, transparent and standardised (non-STS) securitisations than for STS securitisations. To avoid excessive capital charges, the CRR provides for the possibility, in certain cases, for banks to apply caps to those capital requirements. This may be either by assigning to senior securitisation positions a maximum risk weighting equal to the average risk weight applicable to the underlying exposures in the securitisation (irrespective of the calculation methodology used) or by limiting the total capital charge received by its securitisation exposures compared with the capital charge that the underlying exposures would have received.

The CRR allows originating banks to use securitisation to lower their capital requirements by including the credit risk transfer in the calculation for own funds requirements (also known as significant risk transfer or SRT).²⁸ To fall under the scope of this framework, any transfer of risk (whether via traditional securitisation or via synthetic securitisation) must satisfy the following three conditions:²⁹

1. the transfer of risk is effective, meaning that the originator of the securitised product is not forced to reacquire part or all of this risk under the contractual documentation of the securitisation;
2. the risk transfer is significant, where the amount retained in certain tranches does not exceed an upper threshold. In concrete terms, risk transfer is deemed to be significant when the originator is left with no more than 50% of the total mezzanine tranches or, it does not hold more than 20% of the exposure of the first loss tranche, subject to certain conditions being met;
3. the reduction in capital requirements is commensurate and would thus not lead to an undercapitalisation of the remaining exposure on the retained tranches.

Competent authorities can still derogate from the rules and treat a transfer of risk as an SRT under specific conditions, in particular with regard to the commensurate nature of such risk transfer. The above-mentioned conditions are not relevant if the originator applies a 1.250% risk weighting to all securitisation positions or deducts all the securitisation positions that it retains in that transaction.

Under the Commission Delegated Act supplementing the CRR with regard to liquidity coverage requirement for credit institutions,³⁰ **asset-backed securities are considered as Level 2B assets in the calculation of the liquidity coverage ratio (LCR).** Of the total amount of high-quality liquid assets, Level 2B assets cannot comprise more than 15%. In addition, their

²⁷ Agency risk refers to a situation in which a principal mandates an agent to act on its behalf, but the interest of both parties is not aligned.

²⁸ And further specified in the **EBA Guidelines on Significant Risk Transfer**, available on the European Banking Authority's website.

²⁹ The main purpose of synthetic securitisation is to achieve SRT; see EBA (2020) for further information.

³⁰ See Commission Delegated Act (EU) 2015/61 of 10 October 2014.



eligibility is conditioned by a haircut of 25% when the underlying collateral is, for example, loans secured by residential loans and 35% when the underlying collateral is for example commercial loans. Finally, the asset-backed securities must fulfil the STS criteria and meet a series of eligibility requirements as liquid assets, including that the securitisation is the most senior tranche and have been assigned a credit assessment by a nominated ECAI of at least credit quality step 1 (Article 13 of the Delegated Act).

Under insurance regulation (Solvency II),³¹ insurers as investors in securitisations are subject to prudential rules. Specifically, the credit risk of securitisations must be considered in calculating insurers' solvency capital requirements. The solvency capital requirement (SCR) is the loss in basic own funds that would arise due to a sudden shock leading to a decline in the value of a securitisation position:

1. the shock is based on a value-at-risk measure referring to the minimum loss with a 0.5% probability over one year;
2. the shock depends on the duration of the securitisation position (i.e. the interest rate sensitivity of the securitisation), its credit quality and seniority in receiving cash flows from the underlying assets;
3. for securitisations with an STS label, this shock ranges from only 1% up to 34% for senior tranches and is 100% for long-term junior tranches;
4. for unrated securitisation positions with an STS label, the shock is typically four to five times higher;
5. no capital charge applies to STS securitisation positions that are guaranteed by the European Investment Fund or the European Investment Bank;
6. for securitisations which do not fulfil the STS criteria, the shock is substantially higher and at least 12% for securitisations with the highest credit quality.

Overall, insurers' capital requirements for STS securitisations are higher than for bonds and loans of a similar credit quality. Notwithstanding the different approaches to measure capitalisation for banks and insurers, the capital requirements for STS securitisations are reported to be higher than for banks.³²

Insurers can also originate securitisations by securitising insurance risks. Alongside reinsurance arrangements and derivatives, originating securitisations is treated as a risk-mitigation technique under the Solvency II Regulation. The risk-mitigating effect in respect of insurers' solvency capital requirements is the difference between the hypothetical requirement for underwriting or the market risk without the securitisation and the actual requirement.

³¹ **Directive 2009/138/EC** of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (*OJ L 335, 17.12.2009, p. 1*).

³² See **Securitisations as an asset class for insurance companies**, Deloitte's website.



Box 3

Securitisation markets and the global financial crisis

Securitisation did not trigger the global financial crisis (GFC) but it did play an amplification role. In the United States, subprime mortgage-backed securities contributed to the transmission of losses from an overvalued housing market to the wider financial system.³³ This, together with the complexity and lack of transparency of securitised products and the highly leveraged investor base (including banks), led to a loss of confidence in the banking system and exacerbated the liquidity crisis within the interbank market.

The following specific characteristics of the securitisation market prior to the GFC contributed to the amplification role:³⁴

1. Extensive intermediation chains that increased complexity and instability

A securitisation transaction involves several market participants with different roles. Although the main participants are the originator, the securitisation special purpose entity (SSPE) and the investor, a transaction may also involve original lenders, underwriters, credit rating agencies, third-party credit enhancers and servicers.

2. Misaligned interests and incentives (moral hazard) that weakened the monitoring and quantification of risk

Participants in a securitisation transaction had different incentives and asymmetric information, which enabled them to pursue their own interests. Focusing on short-term profits, they did not consider the interests of the other participants in the transaction or the potential negative consequences to the securitisation market as a whole (e.g. agency problem). Originators reduced their screening and monitoring processes when they transferred risks outside their balance sheet (e.g. originate-to-distribute model), and underwriters and credit rating agencies did not properly assess the risks. In addition, search-for-yield behaviour at that time resulted in investors buying securitised products without understanding the underlying risk.

3. Complexity and opacity behind securitised products that obstructed the proper and adequate assessment of risk

The tranching of securitisation created opacity in terms of the quality of the underlying assets and were difficult to value. In some cases, these products allowed for the creation of extensive obligations tied to the same pool of assets. This amplified (and, indeed, multiplied) the transmission of losses through the system. Re-securitisations are an example of this, as these did not use mortgages but instead mezzanine tranches of residential mortgage-backed securities (RMBSs) as underlying assets to meet the demand for new securitisations.

³³ Subprime mortgages did not meet the minimum requirements on mortgage debtors required by US government-sponsored enterprises such as Fannie Mae and Freddie Mac.

³⁴ For a more in-depth explanation of the role of securitisation during the GFC, see for example Blommestein (2011), Segoviano et al (2013), EBA (2014), EPRS (2016) and Pinto and Alves (2016).



4. Overreliance on mathematical models and external credit rating agencies that created a false sense of security

The securitisation process depended on a series of models for assessing the value of the assets, estimating the cash flows, quantifying the risks inherent in the security and structure the transaction itself (for instance, fulfilling investors' needs). These models relied on false assumptions and the data provided an inaccurate quantification of the risk. At the same time, investors relied heavily on credit rating agencies' assessments, which led to a conflict of interest given that the fees were paid by the issuer and not by the investor. Both the modelling and the external credit rating assessments underestimated the risk in the US credit market.

5. Concentration of risk that not only remained but also accumulated within the banking sector

In order to boost short-term profits, banks also retained the riskiest tranches with higher yields or bought them from non-banking issuers. In addition, banks bought each other's securities with borrowed money (mainly through short-term wholesale funding markets), concentrating the underlying risk and increasing leverage within the banking sector.

Box 4

The EU Securitisation Regulation

The EU Securitisation Regulation (SECR) lays down a harmonised cross-sectoral framework for securitisation in the EU. The Regulation aims to strengthen the legislative framework put in place after the global financial crisis (GFC) by addressing the risks inherent in highly complex, opaque and high-risk securitisations, including the application of a more risk-sensitive prudential framework. It entered into force on 1 January 2019 and is applicable to all market participants. The SECR is designed to stimulate the market for transparent and safe securitisations in order to increase financing to firms.

An important element of the SECR is the introduction of the simple, transparent and standardised framework. This framework lists a set of criteria (the simple, transparent and standardised or STS criteria) aimed at ensuring that securitisations are not structured in an excessively complex way. The criteria facilitate investors' risk assessment and require the disclosure of all necessary information to this end. Compliance with the STS criteria must be notified to the European Securities and Markets Authority (ESMA) by the originators and sponsors (for non-asset-backed commercial paper or non-ABCP securitisations) and by the sponsor for ABCP programmes and ABCP transactions. Securitisations fulfilling the STS criteria receive the STS label (as soon as they are published on the ESMA public register for STS securitisations) and benefit from preferential capital treatment. In addition, only securitisation special purpose entities (SPPEs) located in the EU may issue traditional securitisations with an STS label. Nonetheless, the STS label is not mandatory.



The SECR collected and updated existing requirements. The new Regulation regroups requirements introduced in different legislation introduced in the wake of the GFC. At the same time, it adds new requirements for institutions that are involved in the issuance of securitised products (e.g. originators, sponsors and SSPEs). These new requirements include:

- an update of the risk retention requirement (which had already existed in the Capital Requirements Regulation (CRR)) under which the originator, sponsor or original lender is required to retain a material net economic interest in the securitisation of no less than 5% (a so-called skin-in-the-game);
- transparency requirements, including the disclosure of clearly defined information to (potential) investors and competent authorities through a securitisation repository for public transactions;
- a ban on re-securitisation, although some derogations are possible;
- equal lending standards for securitised and non-securitised loans;
- allowing third parties to check that originators comply with STS criteria and to provide STS certificates.

The SECR also includes requirements for the investors that include:

- checking issuers' compliance with credit-granting standards, risk retention and transparency, and, if relevant, compliance with the STS criteria;
- assessing the risk and other structural characteristics of the securitisation, including that the same sound and well-defined criteria for the grant of credit were applied to both securitised and non-securitised exposures;
- establishing written procedures to continuously conduct due diligence checks.

The SECR was amended in response to the COVID-19 pandemic in order to encourage securitisation activity and hence promote medium-term economic recovery. These amendments consisted of two main elements in addition to making some aspects of the capital treatment and prudential requirements for credit institutions and investment firms (see the CRR) more risk sensitive. First, the STS framework was extended to certain synthetic securitisations. In such synthetic securitisations, the originator retains the underlying exposures on its balance sheet (also known as balance sheet synthetic transactions).³⁵ Banks as loan originators use this form of securitisation mainly to manage the risk from regular lending to corporates (in particular, small and medium-sized enterprises). Second, prudential inconsistencies in the securitisation of non-performing risk positions were removed.

³⁵ Another type of synthetic securitisation is arbitrage synthetic transactions (AST). In this case, the originator objective in an AST is to profit from an arbitrage occurring between the higher spread received on the underlying lower credit quality debt or products indices and the lower spread paid on the resulting structure and credit-enhanced notes (EPRS, 2016).



2 Overview of the EU securitisation market – key facts and figures

The EU securitisation market is the second largest in the world although its volume in notional terms is less than one-tenth of the US securitisation market. Comparable data for the size of the global securitisation market is not available. Estimates derived from different sources indicate that at the end of the second quarter of 2021 the total outstanding volume may have amounted to almost €11 trillion at the global level (Chart 1a).³⁶ With outstanding volumes of €9.8 trillion, the US market accounted for 87% of that total, whereas the European market, at about €0.7 trillion, accounted for 6%. It should be noted that, owing to data constraints, the EU outstanding volumes do not include CLO/CDO volumes, which are included in the US volumes.³⁷ This difference reflects structural features of the US securitisation market. In the United States, securitisation plays a more important role for market-based funding and a large share of securitisations, in particular mortgage-backed securities (MBSs), are guaranteed by US government agencies such as Fannie Mae and Freddie Mac.³⁸ In contrast to the size of the global market, which has grown from €8.7 trillion in 2012 (the most recent period for which data were available for most countries) to €11.3 trillion in the second quarter of 2021, the EU securitisation market has shrunk by around 40% from €1.2 trillion to around €0.7 trillion over the same period (Chart 1b).³⁹ This represents a fall in global market share from 14% in 2012 to 6% in the second quarter of 2021. Likewise, the UK securitisation market decreased by almost 50% in the same period from €0.5 trillion in 2012 to €0.2 trillion in the second quarter of 2021.

³⁶ These numbers do not include asset-backed commercial paper (ABCP). By the end of the second quarter of 2021, the outstanding ABCP in Europe (including the United Kingdom) was €89 billion compared with €182 billion in the United States (AFME, 2021).

³⁷ In the second quarter of 2021, the total US outstanding amount of CDO/CLOs was around USD 785 billion (Securities Industry and Financial Markets Association SIFMA, 2022).

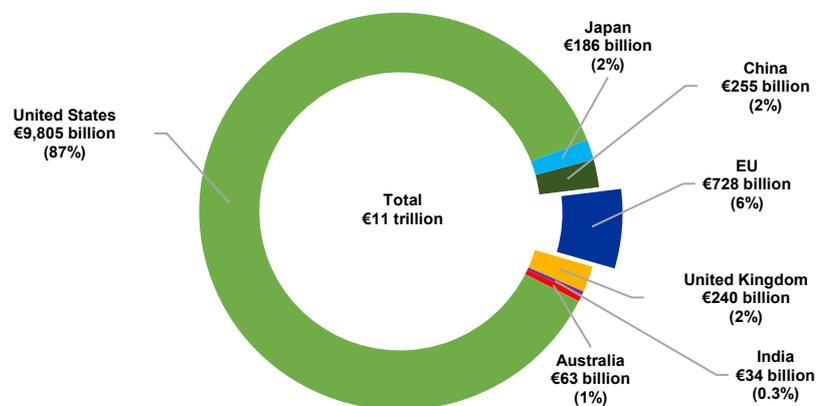
³⁸ In the second quarter of 2021, agency MBSs accounted for almost 80% of the outstanding amount of US securitisations (SIFMA's US Mortgage-Backed Securities Statistics and US Asset-Backed Securities Statistics, 2022).

³⁹ In 2009, the European securitisation market amounted to over €2 trillion following an accelerated increase before the GFC (EBA, 2014).



Chart 1a
Outstanding securitisation by country (Q2 2021)

(EUR billions)

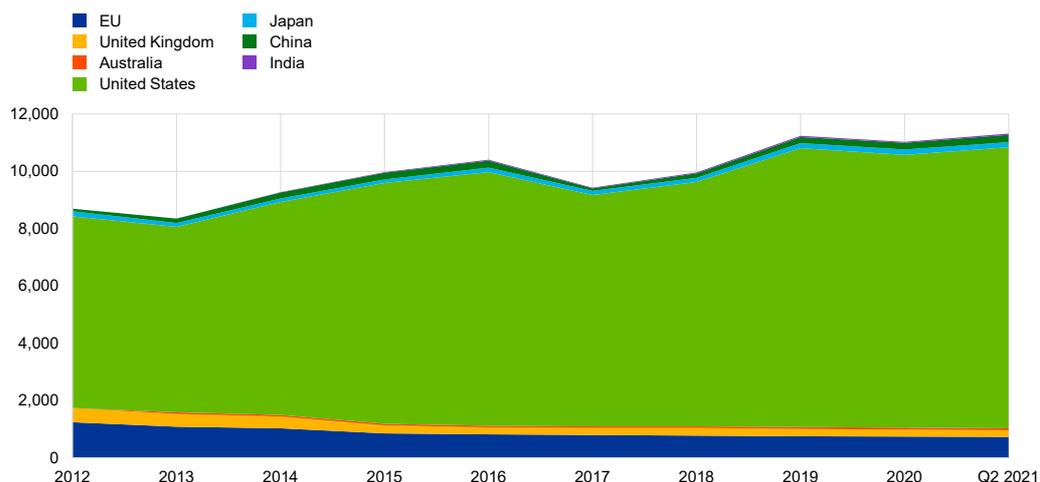


Sources: Association for Financial Markets in Europe (AFME), Japanese Securities Dealers Association, National Australia Bank, Bloomberg, People's Bank of China, Royal Bank of Australia Financial, IMF and ESRB calculations.

Notes: Volumes in currencies other than euro were converted at end-year spot exchange rates published by the ECB. Volumes in Yen were converted at the end-September and end-March spot exchange rates (in line with the period reported from the source). EU also covers EEA countries. Volumes for Europe were calculated based on data on the principal balance outstanding on structured product transactions, including public, private, rated, unrated, listed and unlisted securities, provided by Bloomberg. Volumes for the United States were based on information derived from Bloomberg data for ABSs, non-agency RMBSs, and non-agency CMBSs; agency balance statements for agency MBSs. EU and UK data did not include CLO/CDOs from 2015.

Chart 1b
Development of securitisation volumes by country (2012-Q2 2021)

(EUR billions)



Sources: AFME, Japanese Securities Dealers Association, National Australia Bank, Bloomberg, People's Bank of China, Royal Bank of Australia Financial, IMF and ESRB calculations.

Notes: Volumes in currencies other than euro were converted at end-year spot exchange rates published by the ECB. Volumes in Yen were converted at the end-September and end-March spot exchange rates (in line with the period reported from the source). EU also covers EEA countries. Volumes for Europe were calculated based on data on the principal balance



outstanding on structured product transactions, including public, private, rated, unrated, listed and unlisted securities, provided by Bloomberg. Volumes for the United States were based on information derived from Bloomberg data for ABSs, non-agency RMBSs, and non-agency CMBSs; agency balance statements for agency MBSs. EU and UK data did not include CLO/CDOS from 2015.

In the euro area, banks are the main holders of EU securitisations. Data from the SHS shows that by the second quarter of 2021 euro area banks held €687 billion in securitisation notes issued by euro area residents (Chart 2a).⁴⁰ This amount corresponded to 84% of the total securitisation holdings held in the euro area in the same period. A large share of securitisations originated by EU banks were not placed in the market, but instead retained for use as collateral in central bank operations (see Box 5). Investment funds (including MMFs) held €58 billion (representing 7% of total euro area securitisations), followed by insurance corporations, which held €38 billion (representing 5% of total euro area securitisations). Altogether, these three major institutional sectors held 96% of the total holdings of securitisation in the second quarter of 2021 compared with 94% in 2014. The development of holdings of euro area securitisation mirrors the fall in the total EU outstanding, as shown in Chart 1b. The amount held by euro area institutional sectors fell from €902 billion in 2014 to €816 billion in the second quarter of 2021 (Chart 2b).⁴¹ During this period, banks and non-financial corporations increased their share of holdings in euro area securitisations by 3.3 percentage points and 0.2 percentage points respectively, at the expense of holdings in pension funds (-0.5 percentage points), insurance corporations (-0.9 percentage points), investment funds (-0.7 percentage points), central governments (-0.8 percentage points), other financial corporations (-0.1 percentage points) and households (-0.7 percentage points). By geographical area of issuance, the largest part of the securitisations held by euro area counterparties were issued in the EU, around €818 billion in the second quarter of 2021, representing 84% of total securitisation holdings by euro area counterparties (Chart 2c). In the same period securitisations issued in the United States and the United Kingdom represented 9% and 4% of the total securitisation holdings by euro area counterparties respectively. Securitisations issued from the rest of the world only constituted 3% of the total holdings.

⁴⁰ Volumes derived from the AFME (market) data and the SHS differ although they are close. The former defines the residence according to the location of the asset while the latter defines residence according to the location of the issuer (e.g. SSPE).

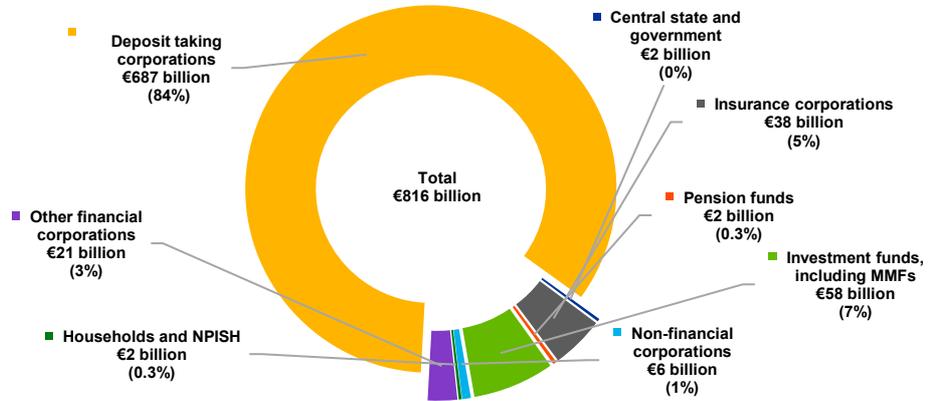
⁴¹ These figures do not distinguish between the subordination of the securitisations held by institutional sectors.



Chart 2a

Holdings of euro area securitisation by euro area institutional sectors (Q2 2021)

(EUR billions)



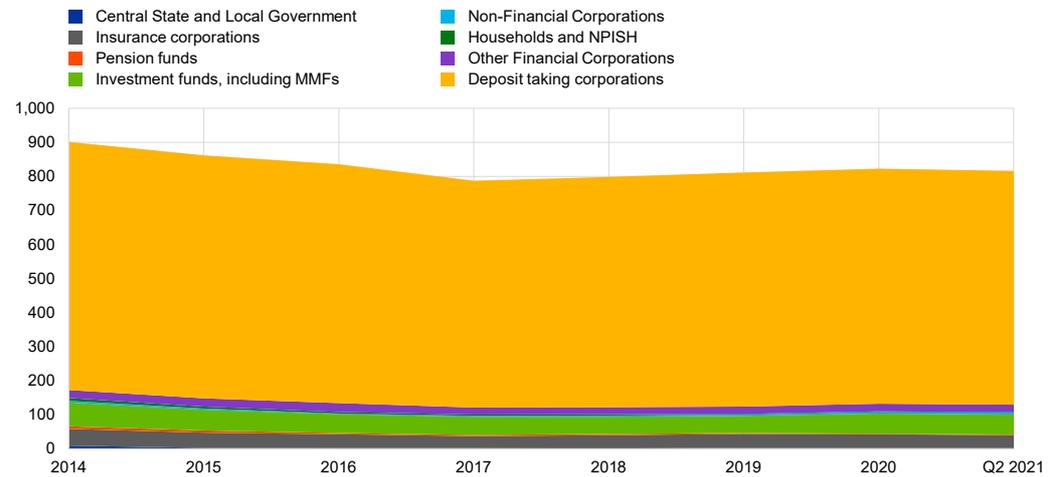
Sources: ECB and ESRB calculations.

Notes: Deposit-taking institutions refers to banks and does not include central banks. NPISH refer to Non-Profit Institutions Serving Households. Holdings correspond to securitisations issued by institutional sectors resident in the euro area and held by institutional euro area residents. The data do not disentangle across tranches. CDOs are excluded. Holdings are at market value.

Chart 2b

Development of holdings of euro area securitisation by euro area institutional sectors (2014-Q2 2021)

(EUR billions)



Sources: ECB and ESRB calculations.

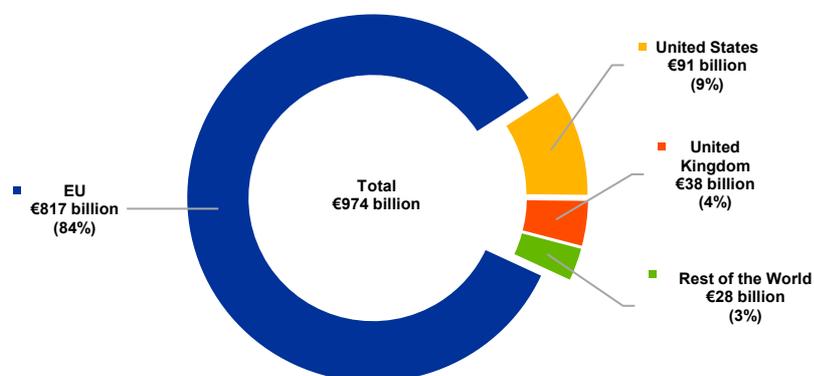
Notes: Deposit-taking institutions refers to banks and does not include central banks. NPISH refer to Non-Profit Institutions Serving Households. Holdings correspond to securitisations issued by institutional sectors resident in the euro area and held within institutional euro -area residents. The data do not disentangle across tranches. CDOs are excluded. Holdings are at market value.



Chart 2c

Holdings of securitisation in the euro area by issuer country (Q2 2021)

(EUR billions)



Sources: ECB and ESRB calculations.

Notes: The data do not disentangle across tranches. CDOs are excluded. Holdings are at market value.

In the euro area, the credit rating quality of holdings of EU securitisations varies across institutional sectors.

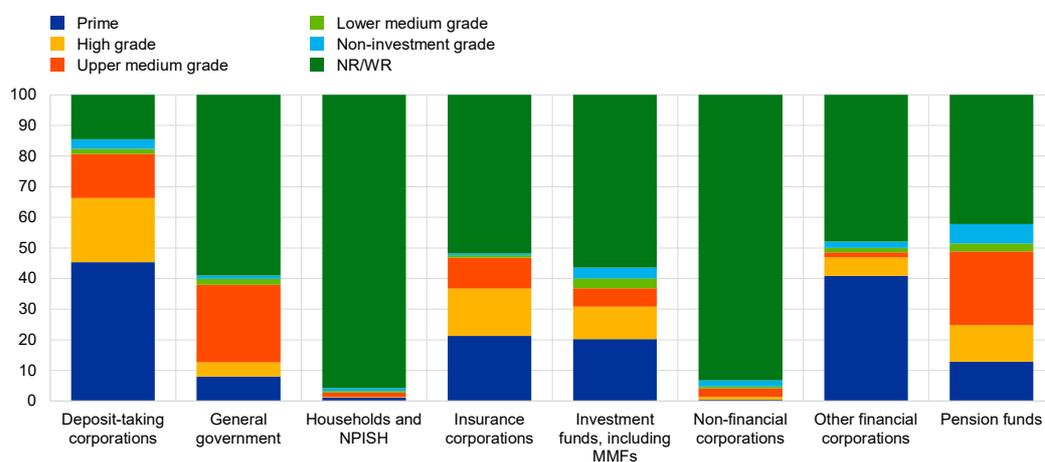
Around 40% of the holdings held by banks and other financial corporations had an AAA rating in the second quarter of 2021 (Chart 3). For general governments, insurance corporations, investment funds (including MMFs) and pension funds, this share was below 21%. On the other hand, EU securitisations with a medium grade represented the most for general governments and pension funds holdings: 27% of their holdings. At the low end of the quality spectrum, 6% and 4% of EU securitisation holdings held by pension funds and investments funds (including MMFs) respectively had a non-investment grade rating.



Chart 3

Holdings of euro area securitisation by euro area institutional sectors by rating grades (Q2 2021)

(percentages)



Sources: ECB and ESRB calculations.

Notes: Deposit-taking institutions refers to banks and does not include central banks. NPISH refer to Non-Profit Institutions Serving Households. Holdings correspond to securitisations issued by institutional sectors resident in the euro area and held by institutional euro area residents. The data do not disentangle across tranches. CDOs are not included. Holdings are at market value. Prime refers to an external rating equivalent to AAA. High Grade refers to an external rating between AA+ and AA-. Upper medium grade refers to an external rating between A+ and A-. Lower medium grade refers to an external rating between BBB+ and BBB-. Non-investment grade refers to an external rating between BB+ and D. NR/WR means not rated or withdrawn rating. The NR/WR category consists, for the most part, of generic ABS products.

Relative to EU banks' overall balance sheets, the total outstanding of EU securitisations is

small. In the second quarter of 2021 the total outstanding of EU securitisations irrespective of whether they are held by banks or other institutional sectors, by size represented only 2% of banks' total assets (Chart 4a).⁴² This is also equivalent to 9% of the amount of EU banks' total risk exposure and almost 60% of their Common Equity Tier1 (CET1) capital.⁴³ One of the main advantages of securitisation is that it helps to reduce funding costs for banks. First, banks can regenerate loans with the proceeds from the sale of loans without the need to issue new debt or equity, which tend to be more expensive. Second, banks can issue less expensive secured debt to fund new loans by using retained securitisations as collateral. For comparison, other sources of bank funding are more important by size. For example, deposits represented 69% of banks' balance sheets in the second quarter of 2021, while wholesale secured and unsecured debt represented 19% and 27% of EU banks' balance sheets.⁴⁴ In addition, the total outstanding of covered bonds represented 7% of banks' balance sheets in the same period. Developments between 2016 and the second quarter of 2021 show that secured wholesale funding and covered bonds increased by 86% and 15% respectively while securitisations decreased by 11%. These developments could indicate that banks prefer other sources of funding to funding through

⁴² In the second quarter of 2021, the US outstanding of securitisation by size represented 61% of US banks' balance sheets (SIFMA, Board of Governors of the Federal Reserve System and ESRB calculations).

⁴³ Risk exposure amount and CET1 capital for EU banks come from the [EBA Risk Dashboard 2021Q2](#).

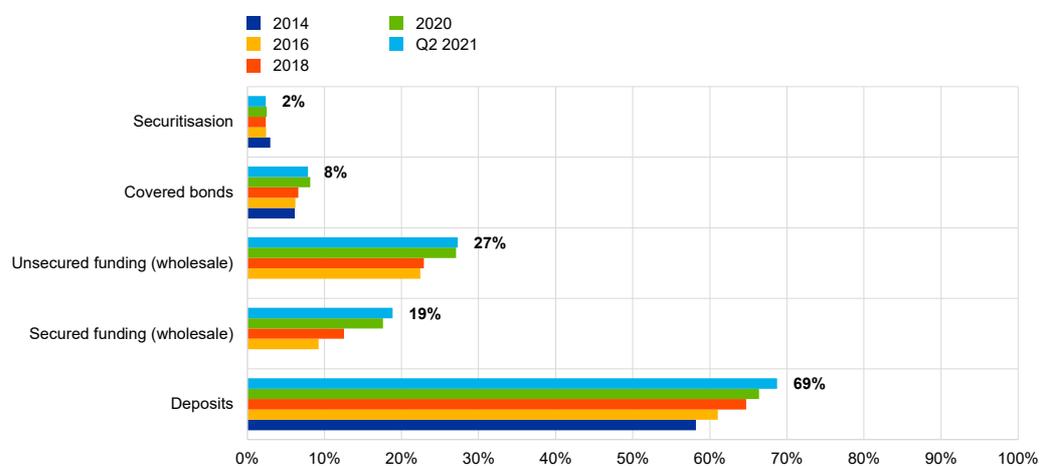
⁴⁴ Wholesale funding also includes deposits.



securitisation (supply side) and/or could illustrate investors' preference for less risky assets, such as covered bonds (demand side). Nonetheless, the developments in EU securitisation cannot be explained solely by cheaper funding available through other funding instruments. For example, although the spreads of most EU RMBSs have tightened considerably since the GFC (Chart 4b), they remained higher for securitisations with AAA ratings than the spreads for EU covered bonds with similar ratings. This could imply that investors consider securitisations riskier than covered bonds with the same external ratings. For some Member States, the RMBSs have higher spreads than EU banks' secured and unsecured debt.

Chart 4a
Securitisations and selected financial funding sources in the EU (2014-Q2 2021)

(percentages of EU banks' balance sheets)



Sources: European Covered Bond Council, AFME, ECB and ESRB calculations.

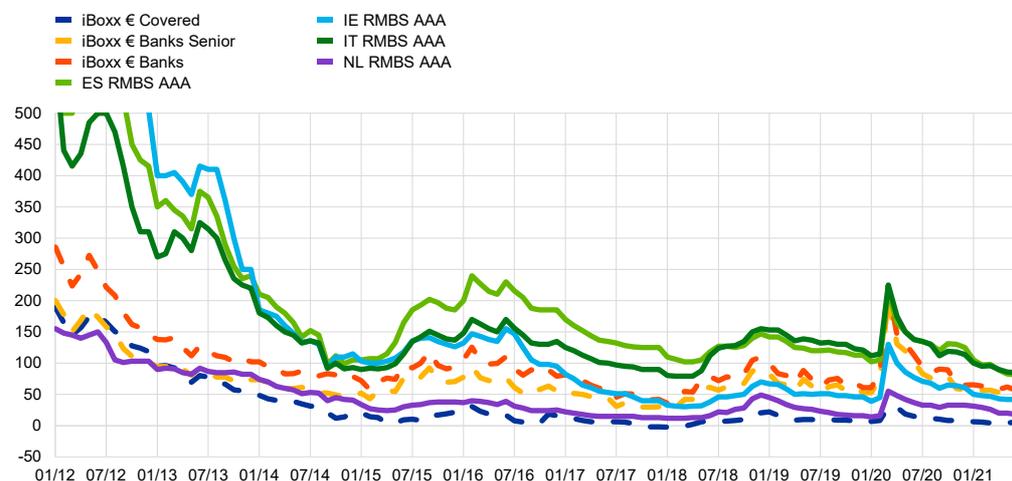
Notes: Deposits, wholesale funding and total assets cover all EU (changing composition) domestic and stand-alone banks included in the ECB's Consolidated Banking Database. Securitisations do not include CLO/CDOs from 2015. Covered bonds covers the EEA area.



Chart 4b

Spreads of covered bonds, unsecured debt and selected RMBSs in the EU (January 2012-June 2021)

(basis points)



Sources: Markit, ECB and ESRB calculations

Notes: Country breakdown of RMBSs covers senior tranches. iBoxx € indices cover worldwide euro and legacy currency denominated bonds. CDOs are not included.

Despite efforts to relaunch the EU securitisation market after the GFC,⁴⁵ its activity remains subdued.

Between 2008 and 2013 new issuances in Europe decreased from €815 billion to €181 billion (Chart 5). Since then, the yearly volume of new issuances has remained, on average, constant at around €220 billion, with a peak in 2018 (€270 billion) and a trough in the second quarter of 2021 (annualised to €171 billion).⁴⁶ To some extent, these low levels of issuances in the EU reflect the loss of confidence (or remaining stigma) in securitised products since the GFC that has affected the expansion of the market.⁴⁷ Another aspect of issuances is the amount placed on the market or retained by the originators. One of the reasons for retaining own securitisation issuances is that ABSs may be used as a collateral for central bank operations if fulfilling certain criteria (see Box 5). Before the GFC, while the market was booming, originators did not retain own issuances. Nonetheless, the collapse of Lehman brothers in 2008 and the subsequent drying-up of interbank money markets changed this trend. In 2008 and 2009 the retention rate (i.e. the share of new issuances retained by originators) was almost 90% and close to 95% respectively (Chart 5).⁴⁸ Since then, this rate has decreased to 34% in the second quarter of 2021⁴⁹ except for a (temporary) hike in 2020 (almost 60%), which was mostly related to the COVID-19 pandemic.

⁴⁵ See Commission's Capital Markets Union Action Plans (2015 and 2020).

⁴⁶ These developments do not consider the activity for EU CLOs, which experienced a record-high issuance in 2021 (see Box 6).

⁴⁷ Other factors affecting this expansion are the low interest rate environment, the availability of central bank funding in large amounts and at relatively low costs, expensive transaction costs and regulatory disadvantages compared to other similar products (i.e. covered bonds).

⁴⁸ The financial turmoil froze the primary market making it difficult to place deals on the market (ECB, 2013).

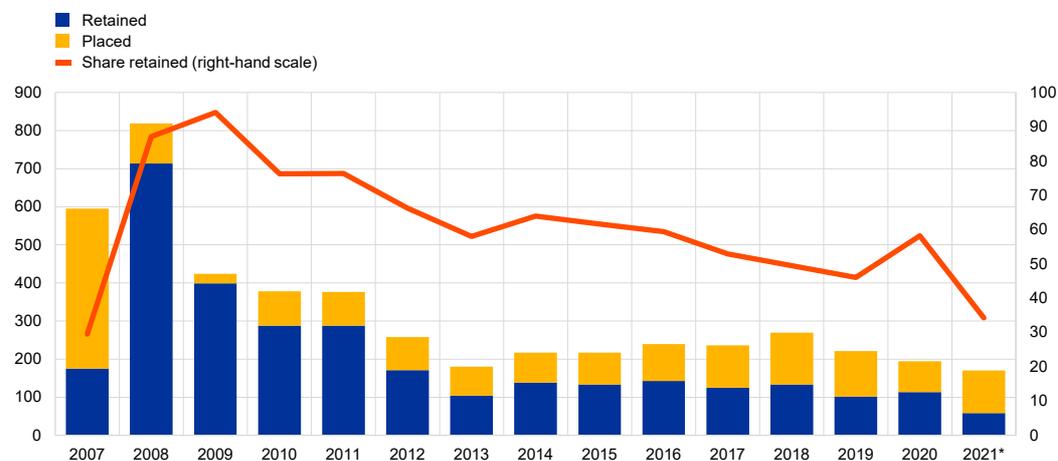
⁴⁹ Annualised retention rate based on figures for the second quarter of 2021.



Chart 5

Issuance of securitised products in Europe by retention status (2007-2021)

(EUR billions, percentages)



Sources: AFME and ESRB calculations

Notes: Europe includes the United Kingdom. The figures for 2021 are annualised based on issuances at the second quarter of 2021.

Securitisations are commonly used as collateral for central bank operations. Within the euro system collateral framework (see box 5), the amount of ABSs eligible for collateral almost doubled between 2007 and 2010: from €0.7 trillion to €1.3 trillion (Chart 6).⁵⁰ This goes hand in hand with the retention rate described above. At the onset of the GFC, the collapse of the securitisation market left originators with significant volumes of newly issued ABSs on their balance sheets. In order to refund these issuances, originators used these assets as collateral for central bank operations. In addition, the need for funding and shortage of collateral forced banks to use retained ABSs as collateral for reverse transactions (ECB, 2013). Since 2010 the eligible amount decreased substantially to €0.6 trillion in the second quarter of 2021. This reduction was also driven by the adoption of stricter measures for the eligibility of ABSs (for example, more stringent rating requirements), applicable from 2011, in the light of the increased number of issuances during a period with high observable market impairments. A similar trend was experienced for the amount actually used for collateral. It increased from €182 billion in 2007 to €490 billion in 2010 and fell to €395 billion in the second quarter of 2021. The downward trend of retentions would probably continue in line with the gradual phase-out of central bank refinancing operations, which would also incentivise existing originators to engage more in securitisation, but also facilitate the return of bank issuers, in order to support the financing of banks' balance sheets.

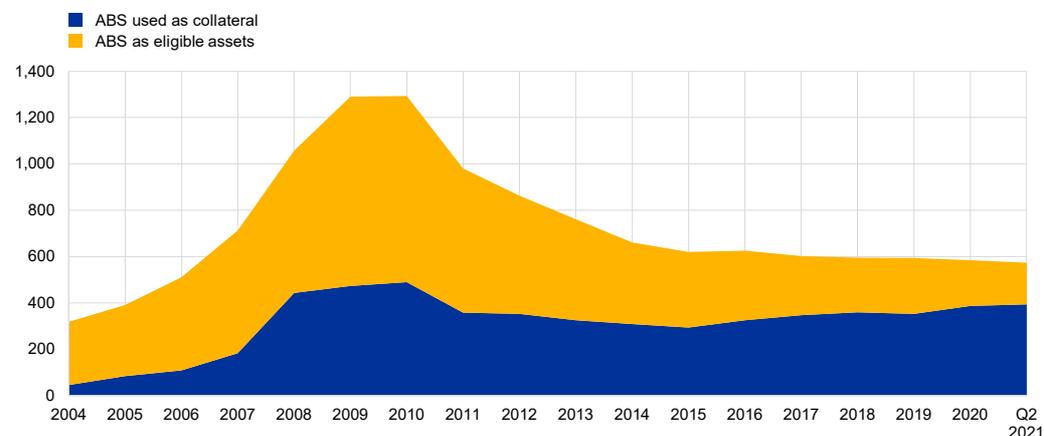
⁵⁰ Further details on the ECB's response to the various phases of the financial crisis between 2007 and 2010 can be found in ECB, (2010) *Monthly Bulletin*, Issue 10, Frankfurt am Main, October.



Chart 6

Amount of ABSs used as Eurosystem collateral (2004-Q2 2021)

(EUR billions)



Sources: ECB and ESRB calculations

Notes: Only values for the fourth quarter are used, except for the second quarter of 2021. After valuation and haircuts.

Box 5

Eligibility criteria for asset-backed securities under the Eurosystem collateral framework

The Eurosystem provides credit for the banking sector solely against the provision of adequate collateral. The eligibility of collateral (i.e. assets) is assessed by the national central banks applying the criteria specified in the Eurosystem legal framework for monetary policy instruments.⁵¹ They are governed by both a General Framework and a Temporary Framework. These criteria for eligible assets include requirements establishing minimum credit quality standards, asset type, place of issuance, currency and type of market (whether it is regulated or unregulated).

Asset-backed securities (ABSs) are subject to specific eligibility requirements on top of the general eligibility criteria for marketable assets.⁵² Some of these special criteria are:

- All cash-flow generating assets backing an ABS must be homogeneous, i.e. assignable to one specific loan category. They must not consist of tranches of other ABSs, credit-linked notes, swaps or other derivatives instruments, synthetic securities or similar claims.
- Eligible tranches must not be subordinated to other tranches of the same securitisation product (i.e. senior tranches).

⁵¹ See [Eurosystem and collateral](#), ECB website.

⁵² See Articles 72 to 79 of Guideline (EU) 2015/510 of the European Central Bank of 19 December 2014 on the implementation of the Eurosystem monetary policy framework (General Documentation Guideline) ([ECB/2014/60](#)) (OJ L 091 2.4.2015, p. 3).



- The issuer, the originator and any intermediary between these two must be established in the EEA.

The ABSs accepted as Eurosystem collateral are subject to a risk control framework, whereas a valuation haircut is applied based on the weighted average life of the ABS concerned as well as the Eurosystem's credit quality step.⁵³ On top of that, for theoretically valued ABSs, a valuation markdown of 5% (4% during the time of the temporary pandemic collateral easing measures) is also applied.⁵⁴

In addition, under the Eurosystem credit quality requirements for ABSs, at least two public credit ratings are required from two different external credit assessment institutions (ECAI); the lowest of the ratings then being applicable. The minimum credit assessment threshold for an asset to be accepted as collateral is determined by the credit quality steps laid down in the ECB Guidelines. The ratings of all accepted ECAs are mapped towards the Eurosystem harmonised rating scale,⁵⁵ allowing the comparability of credit ratings across different ECAs. Thus, ABSs must, at the very least, fulfil the credit assessment requirements of Credit Quality Step 2 of the General Framework or Credit Quality Step 3 of the Temporary Framework.

The collateral underlying EU securitisations is concentrated in a few Member States. In the second quarter of 2021, almost 80% (€561 billion) of the total EU outstanding were backed with loans located in France, Italy, the Netherlands and Spain compared with 70% in 2012 (Chart 7a). This concentration reflects the use of securitisation in certain European countries as an important source of funding. Historically, the cross-country distribution of securitisation has evolved towards a more concentrated market (Chart 7b). At EU level, the share of securitisations from France and Spain increased by 11 percentage points and 2 percentage points respectively between 2012 and the second quarter of 2021. On the other hand, securitisations from the Netherlands, Belgium and Germany contributed 7 percentage points, 2 percentage points and 1 percentage points less respectively in the second quarter of 2021 than in 2012, while the share of Italy remained unchanged during the same period. In general, securitisations from other European countries have decreased as a proportion of the EU market, falling from 13% of the total EU outstanding amount in 2012 (equivalent to €140 billion) to almost 10% in the second quarter of 2021 (equivalent to €67 billion).

⁵³ See [Eurosystem credit assessment framework \(ECAAF\)](#), ECB website.

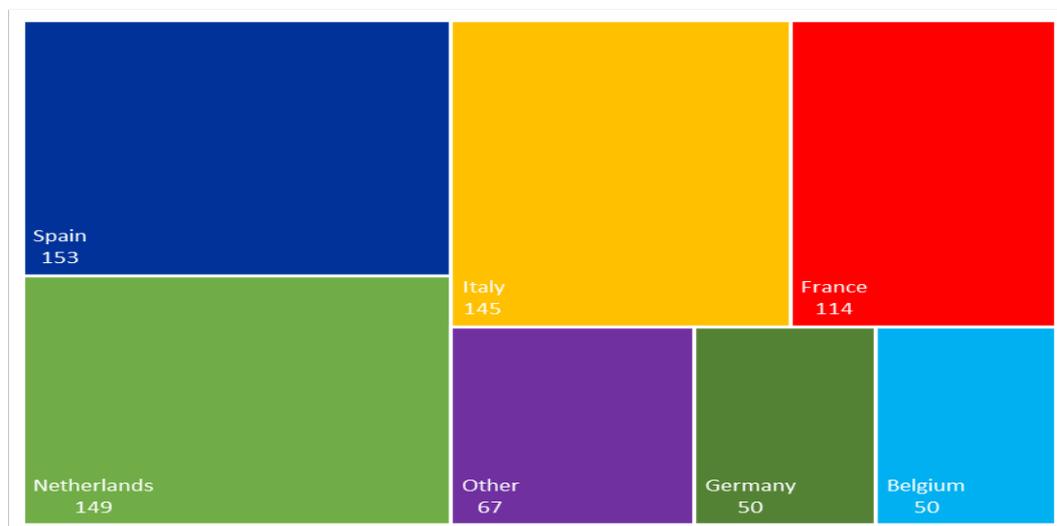
⁵⁴ See Guideline (EU) 2016/65 of the European Central Bank of 18 November 2015 on the valuation haircuts applied in the implementation of the Eurosystem monetary policy framework ([ECB/2015/35](#)) (OJ L 14, 21.1.2016, p. 30).

⁵⁵ See [Eurosystem credit assessment framework \(ECAAF\)](#), ECB website.



Chart 7a
Outstanding securitisations by EU country of collateral (Q2 2021)

(EUR billions)



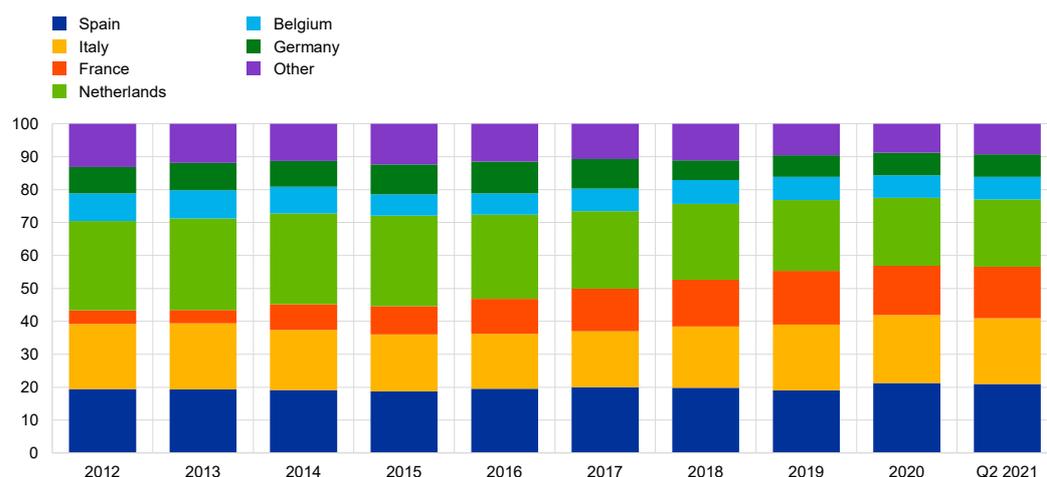
Sources: AFME and ESRB calculations.

Notes: Country of collateral refers to the country where the underlying assets were originated. CLO/CDOs were not included.

“Other” refers to the sum of Greece, Ireland, Pan Europe (volumes in which underlying collateral originates from more than one jurisdiction), Portugal and Other Europe.

Chart 7b
Distribution of outstanding securitisations by EU country of collateral (2012-Q2 2021)

(percentages)



Sources: AFME and ESRB calculations

Notes: Country of collateral refers to the country where the underlying assets were originated. “Other” refers to the sum of Greece, Ireland, Portugal and Other Europe. The United Kingdom is not included. CLO/CDOs were not included from 2015. To equilibrate the chart, origination labelled Pan Europe or Multinational (volumes in which underlying collateral originates from more than one jurisdiction) were excluded prior to 2015 given that most of these outstanding were CLOs/CDOs.



The overall credit quality of European securitisations has improved in recent years. Prior to the COVID-19 pandemic, economic growth contributed to an improvement in the credit quality of loans underlying securitisations. The share of securitisations with an investment grade rating⁵⁶ increased from 93% of total securitisation in 2014 to 96% in 2019 (Chart 8a). The greatest improvements are to be seen in the distribution of ratings reflected by new issuances within the investment grade ratings. Between 2014 and 2019 the share of securitised instruments with an AAA and AA rating increased by 7 percentage points and 22 percentage points respectively while instruments with an A and BBB rating decreased by 20 percentage points and 6 percentage points respectively, in the same period. A similar trend was identified in the number of rating actions taken on European securitisations, where the number of rating upgrades outweighed the number of downgrades (Chart 8b), and on the one-year default rates of EU ABSs, which have been zero and stable since 2012 (Chart 8c).

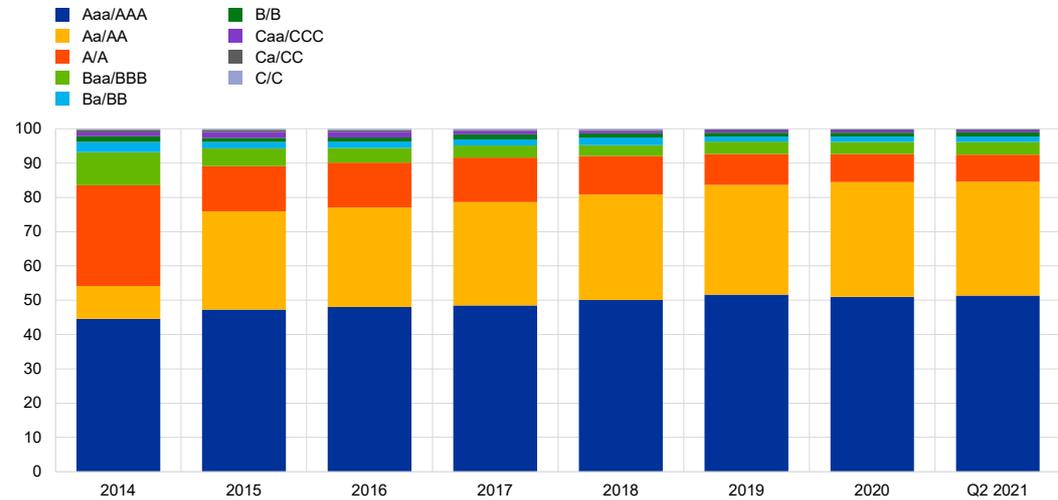
Nonetheless, the macroeconomic impact on EU securitisations of the pandemic and recent geopolitical developments, following Russia's invasion of Ukraine remains to be seen. The credit quality outlook is uncertain despite the positive developments regarding the pandemic situation. This outlook depends among other things on the effectiveness of COVID-19 vaccination programmes in the different Member States and the scaling back of government support. The latter would most likely have a negative impact on the performance of the underlying exposures. In addition, the geopolitical crisis triggered by Russia's invasion of Ukraine has worsened the global outlook of the macroeconomic environment. Although the SECR and the amendments to the CRR first entered into force a year before the start of the COVID-19 pandemic, the expansion of STS securitisations remains low. In 2020 new issuances with an STS label represented almost 40% of total new issuances, amounting to €76 billion (Chart 8d) compared with 31% in 2019 (€68 billion of new issuances). By the second quarter of 2021, this share represented just 26%.

⁵⁶ An investment grade signals a relatively low risk of default, meaning a rating of BBB or higher.



Chart 8a
Rating distribution of European securitisations (2014-Q2 2021)

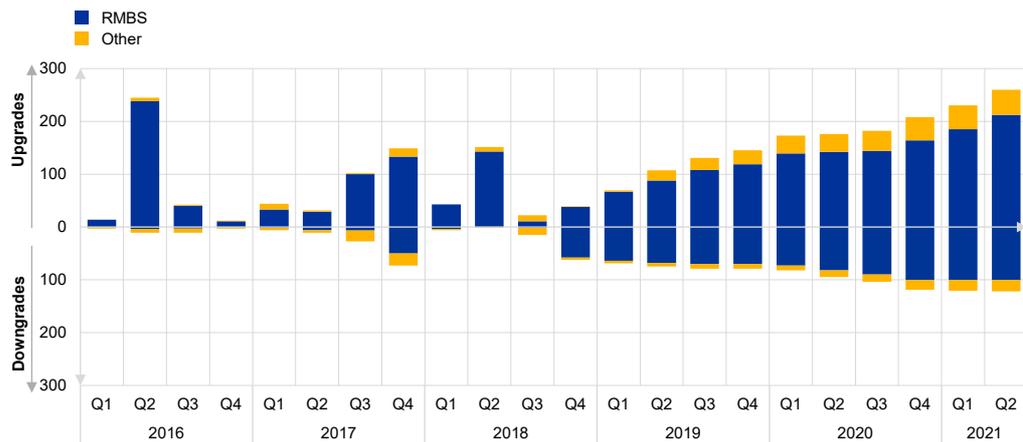
(percentages)



Sources: AFME and ESRB calculations

Notes: The data presented are based on original issuance volumes for European securities, and therefore do not reflect amortised balances. Data have been converted to percentages based on the original issuance size to make it easily comparable with the outstanding volumes provided in this report. These data are not available for the European Union as a whole and includes UK securitisations.

Chart 8b
Upgrades and downgrades of European securitisations from Moody's investor services (Q1 2016-Q2 2021)



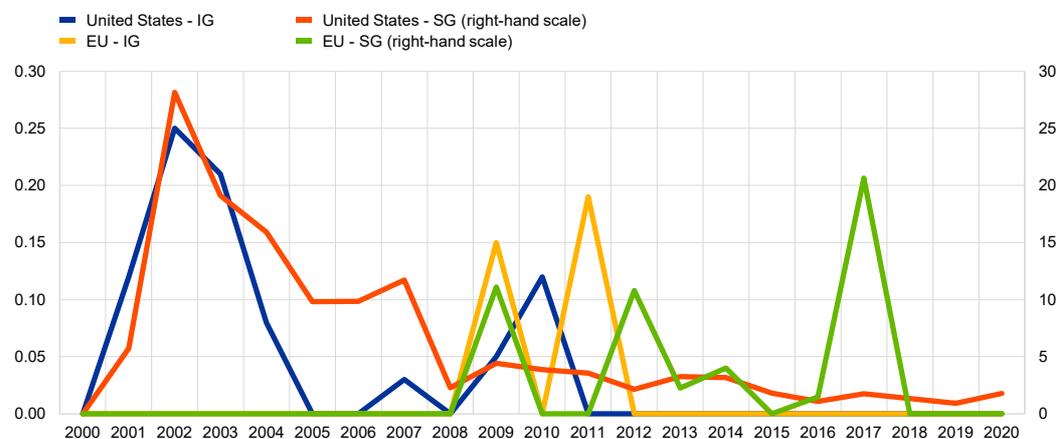
Sources: AFME and ESRB calculations

Notes: The data are not available for the European Union as a whole and includes UK securitisations. Actions on CDO/CLOs and RMBSs (non-prime) are not included.



Chart 8c
One-year default rates for EU and US ABSs (2000-2020)

(percentages)

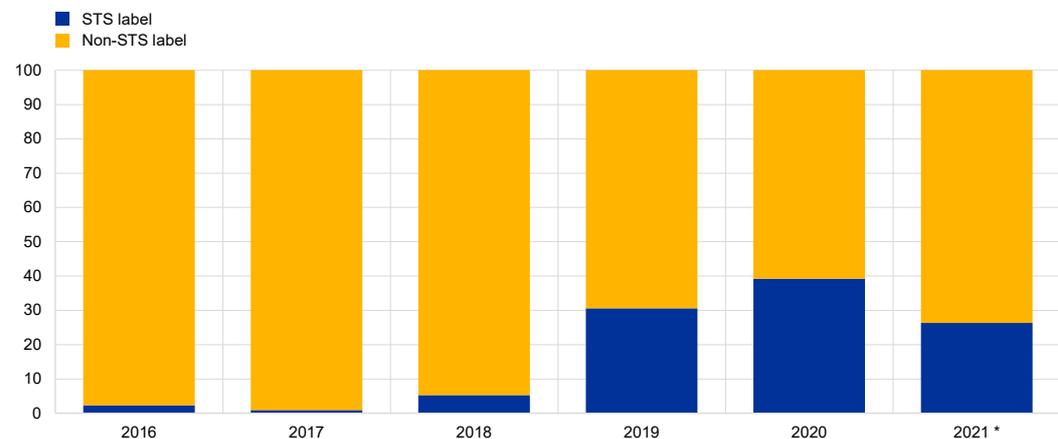


Sources: S&P and ESRB calculations.

Notes: IG refers to investment grade and SG to speculative grade. The high number of US SG defaults in 2002 and 2003 compared with 2008 and 2009 is related to the weak economic environment at the time affecting mostly the manufactured housing sector (for further information see Standard & Poor's, 2003).

Chart 8d
European issuances by regulatory label (2016-2021)

(percentages of total issuances)



Sources: AFME and ESRB calculations

Notes: STS issuance prior to the Regulation coming into force (1 January 2019) is due to legacy transactions being notified as STS. The figure for 2021 is extrapolated based on the issuances in the second quarter of 2021.

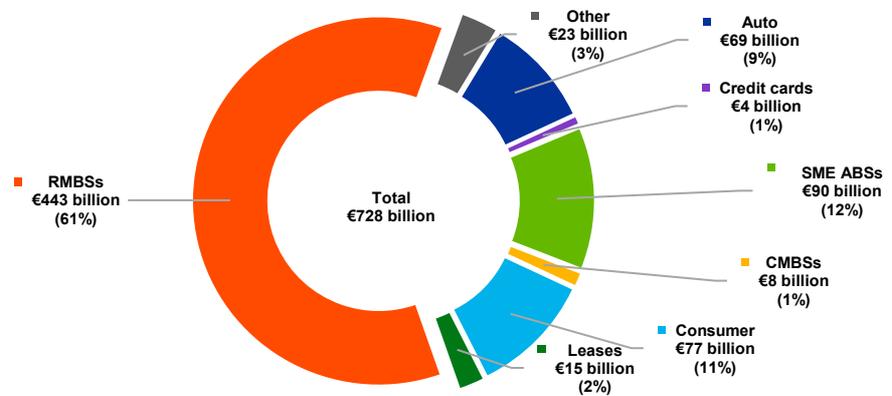
Securitisations collateralised by residential mortgages (RMBSs) remain the largest form of securitisation in the EU. In the second quarter of 2021, EU RMBSs accounted for €443 billion representing 61% of total outstanding (Chart 9a). SME loans, consumer loans and auto loans were



the next largest forms of securitisation, amounting to €90 billion, €77 billion and €72 billion, respectively. In contrast to the US securitisation market, commercial mortgage-backed securities (CMBSs) and securitised credit card loans accounted for a small share in Europe, each representing 1% of the total outstanding. Over the years the composition of securitisations based on their underlying assets has moved towards a slightly more diversified product base (Chart 9b). The share of RMBSs in total EU securitisation decreased from 68% in 2017 to 61% in the second quarter of 2021 while ABSs and SME loans increased their share during the same period from 21% to 26% and from 9% to 12%, respectively. CMBSs decreased their share from 2% to 1%, which reflects the small size of this segment in the EU.

Chart 9a
Outstanding of EU securitisations by type of collateral (Q2 2021)

(EUR billions)



Sources: AFME and ESRB calculations

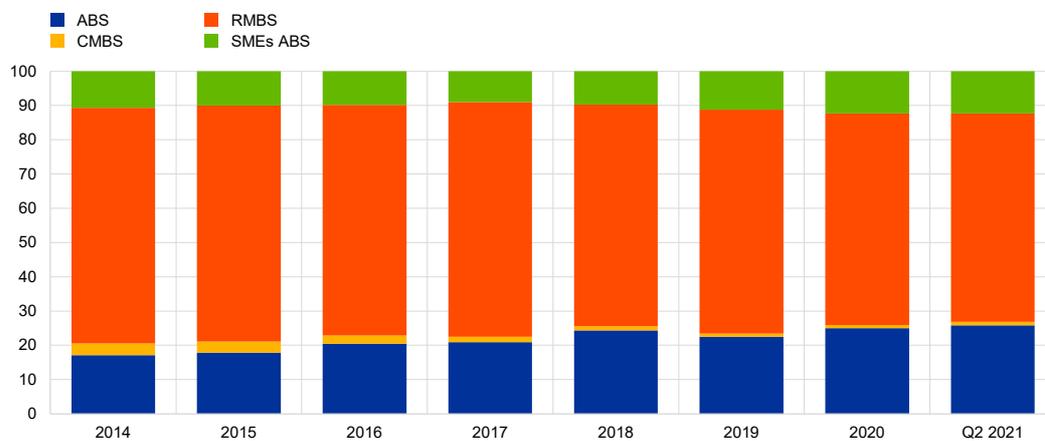
Notes: EU also covers EEA countries. CLO/CDOs are not included.



Chart 9b

Development of EU outstanding securitisations by type of collateral (2014-Q2 2021)

(percentages)



Sources: AFME and ESRB calculations

Notes: Owing to limited granularity in the decomposition before 2019, the category ABSs covers Auto, Cards, Consumer, Leases and Other loans. EU also covers EEA countries. CLO/CDOs are not included.



Box 6

Collateralised debt obligations

Collateralised debt obligations (CDOs) are typically structured credit products backed by a portfolio of fixed-income assets. CDOs are not limited to a specific asset class as underlying and may include cash assets or credit protection contracts (i.e. credit default swaps) or both. CDOs may, depending on their predominant underlying asset class, be composed of collateralised bond obligations, collateralised loan obligations (CLOs), collateralised mortgage obligations or CDOs squared (CDO²) when the collateral is another CDO.

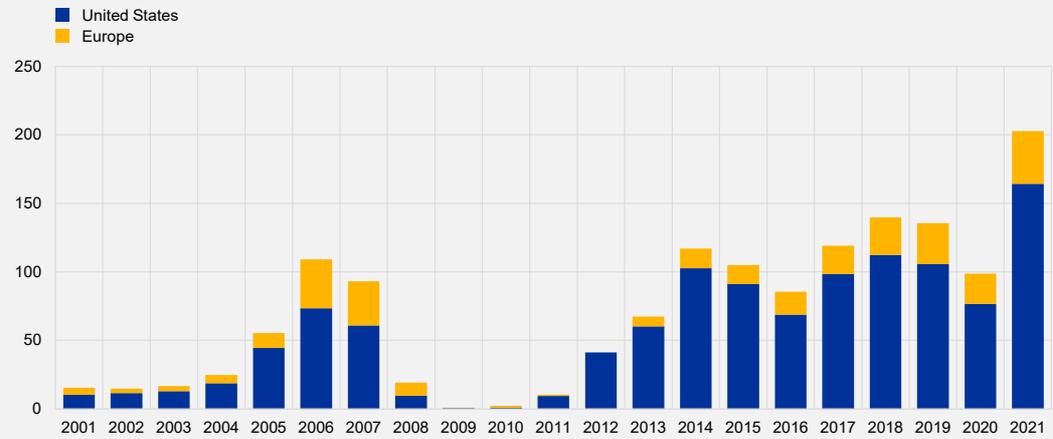
CDO issuance grew strongly in the run-up to the global financial crisis (GFC) but disappeared in its aftermath. CDOs were created to take advantage of the market mispricing caused by the misrating of structured debt, also called rating arbitrage (Jarrow, 2011). Although CDOs were more complex products (in terms of the collateral pool and the pay-off structure) than other securitisations, there was strong demand for them as they promised higher yields than other securitisations with a similar credit rating. At present, the most common type of CDO is the CLO. CLOs invest mainly in leveraged loans, that is to say bank loans where the counterparts are highly indebted, have high debt service costs relative to earnings and are typically rated below investment grade (Basel, 2019). Chart A depicts the issuances of CLOs in the United States and Europe between 2001 and 2021. It shows that the issuance of CLOs in Europe accelerated in the run-up to the GFC, from €5 billion in 2001 to €35 billion in 2006. A similar trend occurred in the United States, where issuances rose from €10 billion to €74 billion over the same period. After the GFC, the market for European CLOs almost disappeared for some years.

In recent years CLOs have regained impetus in tandem with a rise in the leveraged loan market. In Europe, CLO activity resumed in 2013, with issuances amounting to €7 billion, and reached a record high of €39 billion in 2021. In the United States, this activity resumed earlier and in 2014 surpassed the highest issuance previously registered (€103 billion). By 2021, CLO issuance in the United States had also reached a record high of €164 billion (Chart A). Globally, the largest volumes of CLOs are located in the United States. Figure B shows the total outstanding CLOs in Europe and the United States. In 2021 the combined total outstanding CLOs in the United States and Europe amounted to almost €1 trillion, with Europe accounting for almost 20% of this market. In 2021 European CLOs equated to almost 70% of the European institutional leveraged loan market (see Chart C). The quality of CLOs is closely linked to the quality of the leveraged loan market. Since 2013 the lending standards of leveraged loans, reflected in the increased share of covenant-lite loans (i.e. loans with weak covenant protection), have deteriorated, pointing to an increase in risk-taking by investors (see Chart D). By 2021 almost all leveraged loans were covenant-lite loans.



Chart A
Global CLO issuance (2001-2021)

(EUR billions)



Sources: S&P LCD, Bloomberg and ESRB Secretariat.

Chart B
Global CLO outstanding (2013-2021)

(EUR billions)



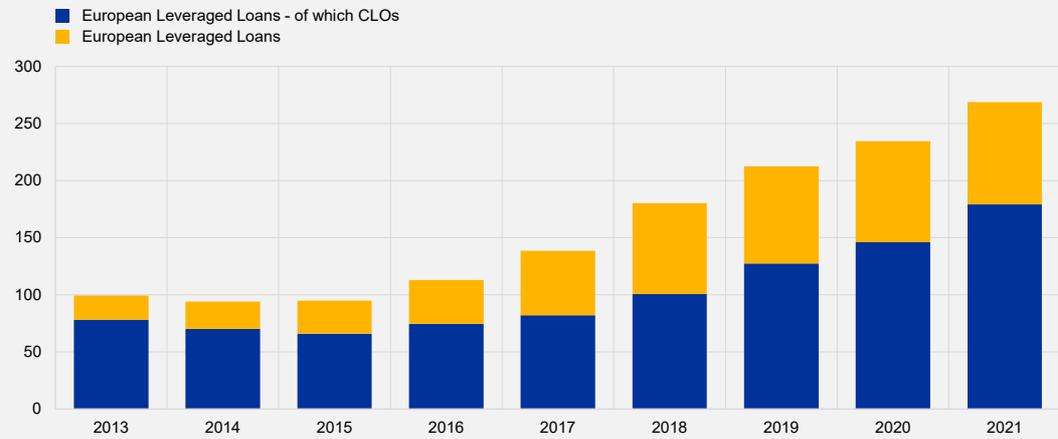
Sources: JP Morgan, AFME, Bloomberg and ESRB Secretariat.

Note: Figures are based on institutional leveraged loans.



Chart C
European leveraged loans (2013-2021)

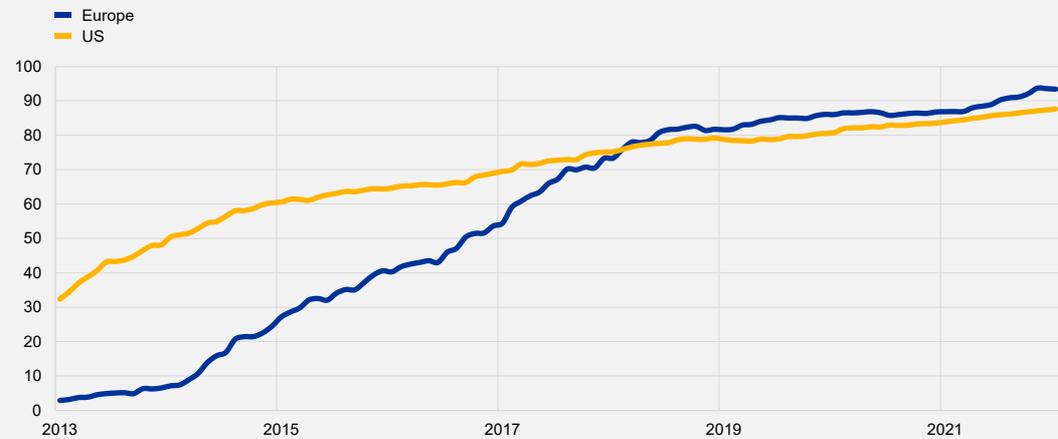
(EUR billions)



Sources: JP Morgan, AFME, S&P LCD, Bloomberg and ESRB Secretariat.
 Note: Figures are based on institutional leveraged loans.

Chart D
Covenant-lite loans in the United States and Europe (January 2013-December 2021)

(percentages of total leveraged loans outstanding)



Sources: S&P LCD and ESRB Secretariat.



3 A monitoring framework for macroprudential oversight of the EU securitisation market

This section is divided into three parts. Subsection 3.1 sets out the conceptual framework shaping ESRB monitoring of the EU securitisation market. Subsection 3.2 describes the source of information used for this monitoring framework and presents a set of indicators focusing on EU RMBSs. Section 3.3 provides sensitivity analyses of the risk indicators for the RMBS segment.

3.1 Conceptual framework

The ESRB's monitoring of the EU securitisation market is founded on considerations about how systemic risk could arise in and be transmitted by financial markets, in particular as a result of excessive leverage and interconnectedness. These considerations, which were also emphasised in the SECR, shape the monitoring framework and motivated the setting of three groups of indicators covering aspects of the securitisation market that are important from a macroprudential perspective: (i) broad market indicators, (ii) leverage indicators, and (iii) interconnectedness and concentration indicators.

Broad market indicators focus on the absolute and relative size of EU securitisations.

Section 2 provided an overview of the EU securitisation market from different angles, such as the geographical location of the collateral and the types of underlying assets. The aim with broad market indicators is to target monitoring at specific segments of the EU securitisation market that may be systematically important. Therefore, this set of indicators reflect the size of specific segment(s), their evolution, the origination of their underlying assets and the valuation of those assets. These indicators provide an indication of the upper bound for potential direct losses⁷ stemming from important and large segments of this market, whether deriving from market (de)valuations or credit losses. Depending on their size, these potential losses could jeopardise the solvency of holders of securitisations and hence become a risk to financial stability. In addition, these indicators monitor the evolution of certain securitisation products to pinpoint their importance as a source of financing lending, which is one of the objectives of the EU capital markets union.

Leverage indicators point to the level of risk inherent in EU securitisations. The aim of these indicators is to identify the quality of the underlying assets, which may, depending on the type of the securitisation, be specific to the borrower, the collateral, or both. These leverage indicators provide an indication of the probability of, and distance to, default of the underlying assets when shocks arise. Excessive borrowing and lower collateralisation of the underlying loans may create vulnerabilities within the EU securitisation market and lead to spillovers to the rest of the financial system during times of stress.

Interconnectedness and concentration indicators are aimed at uncovering and quantifying linkages within and beyond the securitisation chain as well as geographical or sectoral



concentrations. The first set of indicators under this category provides an overview of the key market participants behind securitisation transactions or programmes that are important because of their volume, and in particular the main originators or sponsors and investors. The second set of indicators, in the form of retention rates, indicates the exposure of originators to securitisations backed by own assets (i.e. the “skin-in-the-game”). The third set of indicators captures the linkage between originators and investors. This flow of risk is shown by country and institutional sector to reveal geographical or sectoral concentrations, and by the rating grade of the underlying transactions. The identification of linkages is key to understanding the transmission of shocks through the financial system.⁵⁷

Sensitivity analysis complements the monitoring of the EU securitisation market by illustrating how key indicators might change in response to adverse developments. To complement the information extracted from the monitoring categories, alternative assumptions or scenarios can stress elements of the leverage, interconnectedness and concentration indicators. These assumptions may for instance factor in sudden increases in interest rates, falls in asset prices, or increases in unemployment leading to higher default rates.

The conceptual framework and scope of this monitoring are expected to develop over time. The indicators presented in this section are a first step towards establishing an ESRB securitisation monitor. These indicators are expected to evolve in future monitors and coverage of securitisations may also broaden beyond RMBSs, in line with data availability.

3.2 Systemic risk indicators by category

This section applies the conceptual framework set out above to EU RMBSs, given that they are the largest segment of the EU securitisation market (see Section 2). Before laying out the different sets of indicators, this section describes the three main data sources used: the Centralised Securities Database (CSDB), EDW, and the SHS.

3.2.1 Data sources

The SECR requires originators, sponsors and SSPEs to provide information on public securitisations through data repositories that collect and maintain records of securitisations and underlying assets. This requirement is designed to ensure that investors in securitisations can access a single and supervised source of data to perform due diligence checks. This enhances transparency in the securitisation market as the data are accessible to investors, supervisors and regulators. In the EU, two data repositories had been authorised by ESMA at the time of writing: EDW and SecRep BV.

The EDW contains granular information on securitisations. The EDW was the first central data warehouse for European ABSs. It was founded in 2012 as a consequence of the loan-level data initiative established by the ECB in 2010. The EDW contains granular information on traditional securitisations based on residential loans, SME loans, auto loans, consumer finance loans, leasing

⁵⁷ See, for example, Clerc et al. (2016).



and credit card receivables.⁵⁸ At the time of preparing this report, EDW was the largest securitisation data repository. Reflecting this, the subsequent analysis is based on this source. Box 7 considers the data in more detail.

The SHS provides information on the holders of securitisations. The SHS provides ISIN-level portfolio holding information by country and sector at a quarterly frequency. This makes it possible to identify which sectors in which countries are holding which types of securitisations. This database includes debt securities held by euro area institutional sectors, and securities issued by euro area residents and held by non-euro area institutional sectors. Holdings by non-euro area investors, in custody within the euro area, are reported. Holdings by central banks are not included in the SHS. Securitisations lent out by banks under securities lending operations or sold under repurchase agreements (repos) are recorded as holdings by the owner bank and not as the holdings of the party temporarily acquiring them.⁵⁹

The CSDB rating dataset provides ratings from Fitch, Moody's, Standard & Poor's and DBRS Morningstar. It includes current and historical ratings for securitisations at ISIN level for all rated entities at a daily frequency. This includes information as on upgrades and downgrades, outlooks, watchlist statuses and rating withdrawals.⁶⁰

Box 7

Data considerations

The European DataWarehouse (EDW) includes granular and extensive information at loan level for each securitisation transaction reported to it. This includes information on the loan terms, the obligor and the collateral for the loans underlying residential mortgage-backed securities (RMBSs) originated at different periods but active on any reporting date. Transaction deals are reported at least quarterly. Prior to 25 June 2021 the reporting of EU RBMSs followed the ECB templates (loan-level data initiative).⁶¹ This level of granularity makes it possible to conduct a targeted and in-depth risk analysis of the assets underlying securitisations. Nonetheless, aggregates derived from this granular data need to be interpreted with caution owing to differences in market structures across the EU and data limitations:

1. **Developments in the EU securitisation market may not be representative of developments in Member States**

The reason for this is that the EU securitisation market is concentrated in a few EU countries. This reflects differences in the way mortgage lenders across the EU fund their lending. In some Member States, such as Germany and Denmark, mortgage lending covered bonds are an important funding source, while in others, such as Spain and the Netherlands, an important funding source for mortgage lending comes from securitisation. In addition, in some cases the securitised loans are originated before they are securitised. Therefore, they may be subject to a “survivor bias”, because delinquent or weak mortgage loans are typically not included in a transaction at origination (EDW, 2021). The underlying loans of RMBSs may perform better

⁵⁸ For further details, see the [EDW website](#).

⁵⁹ More information can be found on the [ECB website](#).

⁶⁰ Further information on CSDB is given in Pérez and Huerga (2015).

⁶¹ On 25 June 2021 EDW was designated as a securitisation repository by ESMA ([press release](#)).



than the average loans originated in the same year and from the same originator. This bias can be reinforced by the possibility of the originator to repurchase underlying loan (for example, underperformance or clean-up calls) and therefore leave the pool of loans securitised at any time.⁶²

2. **The reporting template for securitisations contains both mandatory and optional variables**

Despite the common ECB templates for EU RMBSs, these templates included 55 mandatory variables and 102 optional ones.⁶³ This reduces the comparability on an aggregated level, which is key for a macroprudential assessment, because some reporting entities may have provided information on the optional variables and others may not have.

3. **Reporting may diverge across reporting entities**

Some reporting entities split reporting of mortgages into parts. For example, the reporting entity may report the interest-bearing part and the loan principal as two or more observations. Moreover, static variables are, in some cases, not kept static for various reasons. Therefore, the reconstruction of reported indicators across reference dates may not always be possible.

The difference between the aggregated total outstanding of EU RMBSs published by the Association for Financial Markets in Europe (AFME)⁶⁴ (and shown in Section 2) and the current aggregated loan balance of EU RMBSs derived from the EDW is small. Chart A shows the quarterly aggregate loan outstanding (AFME) and the current loan balance (EDW) for EU RMBSs between the fourth quarter of 2014 and the second quarter of 2021 reporting periods. The monitoring presented in this report does not consider information reported before the fourth quarter of 2014 reference date because of data quality concerns.

⁶² Subject to certain limits on the share of the securitised amount that can be modified through its lifetime or depending how much the loan has been amortised compared to its original value

⁶³ Based on the [ECB's loan-level data taxonomy](#)

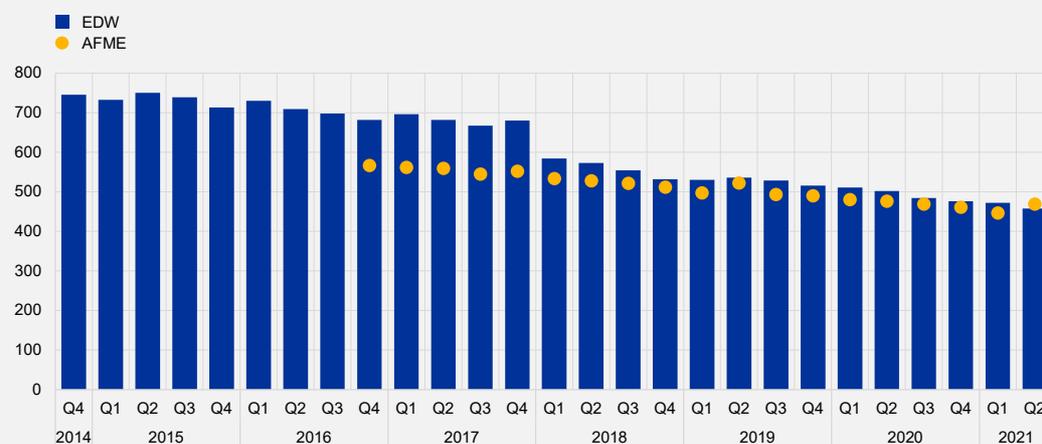
⁶⁴ For further details see the [AFME website](#).



Chart A

Total outstanding of EU RMBS securitisations from AFME data and total current loan balance of EU RMBSs from EDW data (Q4 2014-Q2 2021)

(EUR billions)



Sources: AFME, EDW and ESRB calculations

Notes: Data published by AFME prior to the fourth quarter of 2016 were not decomposed by segment and country. The United Kingdom is not included after the fourth quarter of 2016.

3.2.2 Broad market indicators

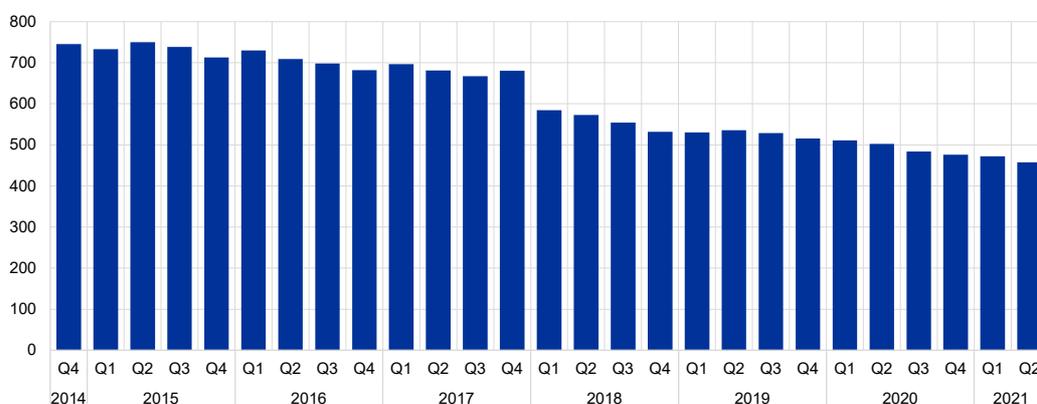
The size of the EU RMBS market has fallen in recent years. The total amount of EU RMBSs expressed as the current balance of their underlying loans fell from €745 billion in the fourth quarter of 2014 to €458 billion in the second quarter of 2021 (Chart 10a). The original loan balance (meaning the value when the loan was originated) amounted to €701 billion in the second quarter of 2021 (Chart 10b). Most of these loans were originated between 2004 and 2008 (€227 billion), in 2010 (€40 billion) and between 2015 and 2018 (€191 billion). Loans originated in 2020 represented a small amount of underlying loans (€17 billion) reflecting low loan activity during the COVID-19 pandemic.



Chart 10a

Current loan balance of EU RMBSs by reporting quarter (Q4 2014-Q2 2021)

(EUR billion)



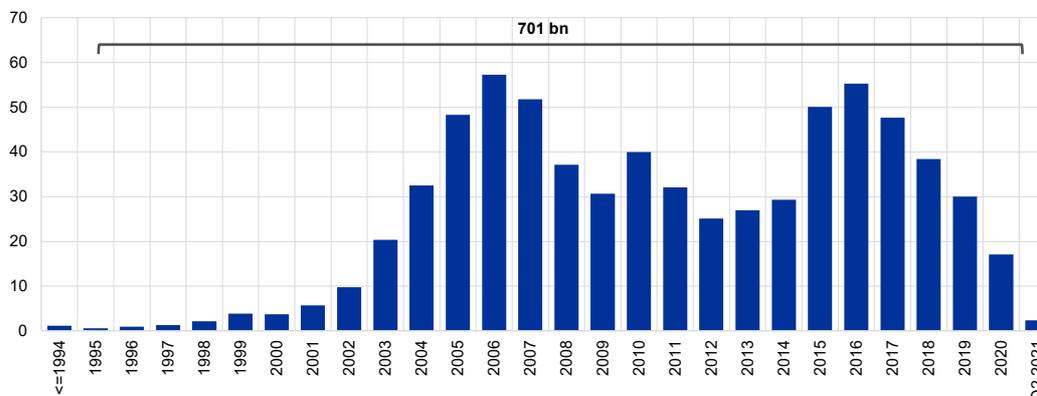
Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included.

Chart 10b

Original loan balance of EU RMBSs by origination year (Q2 2021)

(EUR billion)



Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included.

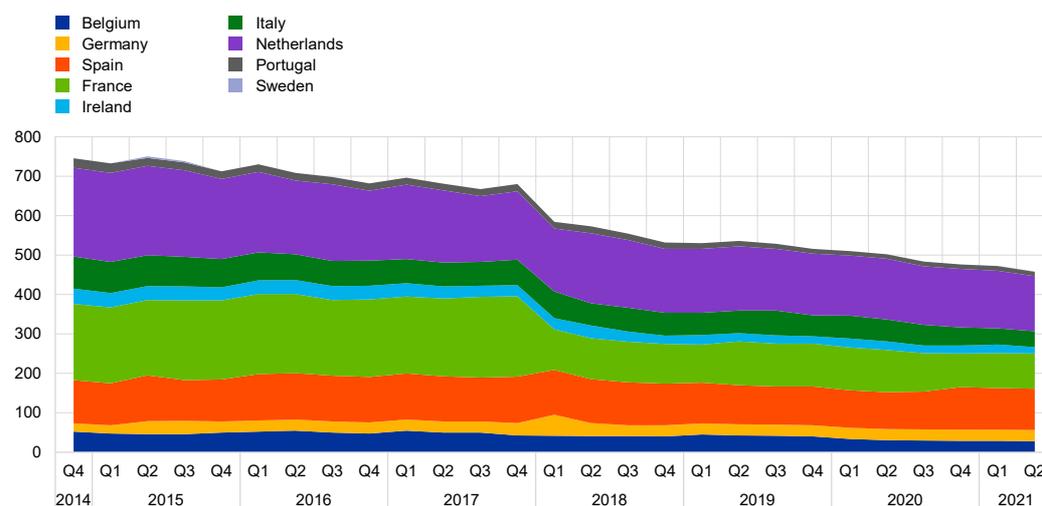
The fall in the size of the EU RMBS market is also reflected at Member State level. For almost all Member States (where the underlying loans were originated), the current loan balance of RMBSs decreased between the fourth quarter of 2014 and the second quarter of 2021 (Chart 11a) in line with the aggregate trend (see Section 2). For instance, the current amount of loans underlying RMBSs fell by more than half in France, Ireland, Italy and Portugal and by almost half in Belgium, while it fell a little less in the Netherlands. Germany is the only Member State where the



current balance increased during the same period by 35%. Compared with the size of the aggregated bank balance sheet from the Member States mentioned above, the current loan balance of EU RMBSs as a share of banks' total assets fell on average from 3.3% in the fourth quarter of 2014 to 1.8% in the second quarter of 2021 (Chart 11b). At Member State level, EU RMBSs represented 10% or more of the respective Member State's bank total assets at certain periods within this time span: Belgium in the fourth quarter of 2014, from the fourth quarter of 2015 to the third quarter of 2016, and in the first quarter of 2017, and Ireland from the fourth quarter of 2014 to the fourth quarter of 2018, and in the first quarter of 2020. The developments of EU RMBSs across Member States do not always move in tandem with developments in residential real estate prices. For example, house prices in most of the Member States, in which EU RMBSs are originated, have increased since 2014 (Chart 11c).

Chart 11a
Current underlying loan balance of EU RMBSs by country of origination and reporting quarter (Q4 2014-Q2 2021)

(EUR billion)



Sources: EDW and ESRB calculations

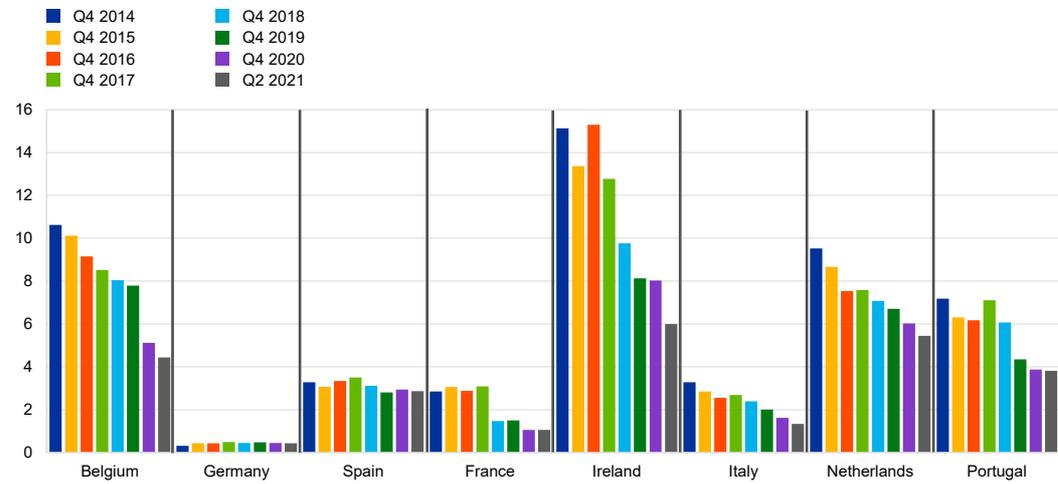
Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included.



Chart 11b

Relative size of current underlying loan balance of EU RMBSs by country of origination

(selected reporting quarters, percentages of total bank assets)



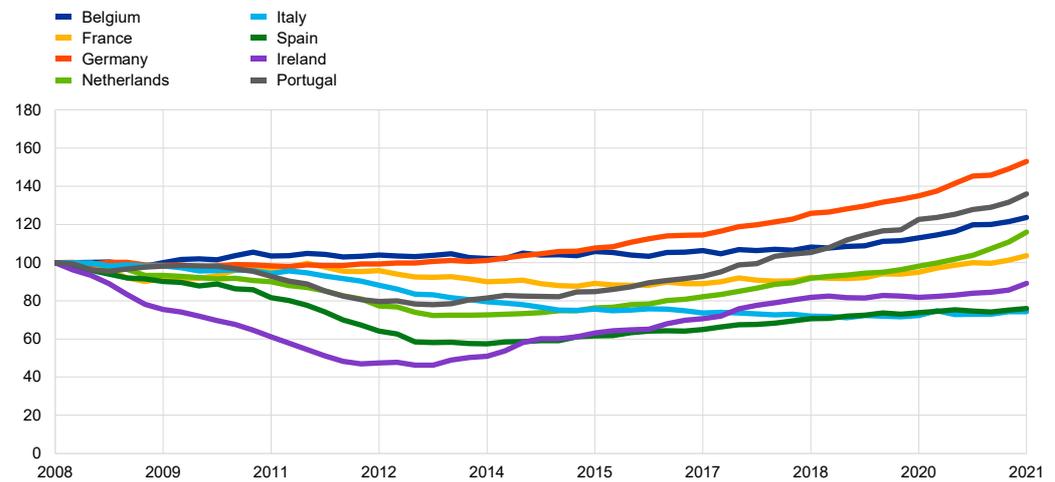
Sources: EDW, ECB and ESRB calculations

Notes: EU* refers to the aggregate of the countries included in the chart. Only loans with a positive value are considered. Loans without a property id and without an origination date were not included.

Chart 11c

Real house prices by country (2008-Q2 2021)

(Index Q1 2008=100)



Sources: ECB and ESRB calculations.



3.2.3 Leverage indicators

Excessive leverage poses a risk for financial stability given that it makes borrowers vulnerable to adverse shocks and amplifies the transmissions of shocks. In the case of EU RMBSs, the credit quality of underlying loans is measured by the resilience of the borrower, which is determined primarily by looking at the DTI ratio and DSTI ratio, and by the strength of the collateral as reflected in the property value, determined, for instance by looking at LTV ratio. For any monitoring after 2020, the data cannot disentangle the impact of fiscal and prudential measures related to the COVID-19 pandemic. Therefore, the data, and hence the indicators calculated from 2020 may underestimate the overall risk.

EU RMBSs include an important share of highly indebted borrowers with a DTI ratio above five. Across origination years, the unweighted DTI ratio of the original balance of loans underlying EU RMBSs was 4.3 as of the second quarter of 2021. This means that the loans granted to borrowers at origination represented four times their annual income. Considering the size of the loans, the weighted DTI ratio was 5.3 at the second quarter of 2021 (Chart 12). Nonetheless, the weighted DTI ratio varies across the years in which loans were originated (the origination years). For example, the weighted DTI ratio went from 4.0 in 1998 to 8.5 in 2008. From there, the ratio went down to 4.0 in 2013 to increase slightly to 4.4 between 2017 and 2020. For loans originated in the first half of 2021, the weighted DTI ratio was 4.9. By distributing the total underlying loan balance of EU RMBSs across DTI buckets, 34% of the total original loan balance in the second quarter of 2021 had a DTI ratio higher than five. This share reached a high in 2006 with 55% of loans originated that year with a DTI above five. The variation of DTI across years is not surprising. It may reflect the relationship between credit lending standards and the business cycle. Banks tend to relax lending standards during expansionary phases/boom times, whereas they tend to do the opposite during periods of recession.⁶⁵ The observations above have two limitations. First, the calculated ratio for each borrower only considers loans that underlie EU RMBSs. Therefore, the calculated DTI ratio may underestimate the real debt burden for each borrower given that it does not include other non-securitised mortgages or other types of loans taken by the borrower. Second, income is reported gross (i.e. before income taxes are deducted) and therefore the calculated DTI may not reflect the real burden of their debt.

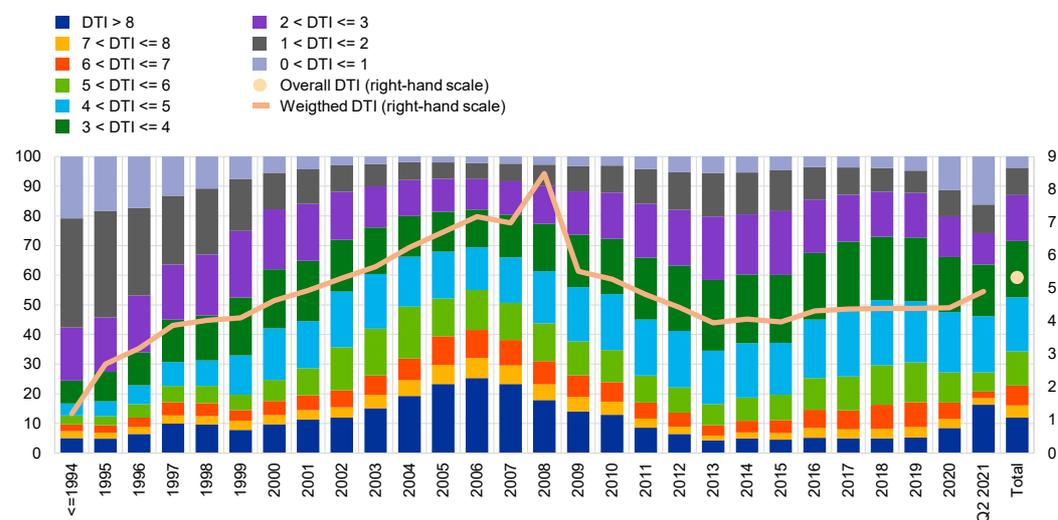
⁶⁵ See [Jimenez and Saurina \(2016\)](#) and [Athanasoglou et al. \(2014\)](#).



Chart 12

Distribution of original loan balance of EU RMBSs by DTI bucket and origination year (Q2 2021)

(percentages; aggregated debt over aggregated income)



Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included. The original DTI is calculated as the sum of loans per borrower at origination year divided by the reported income at origination year. The weighting is applied to the original loan balance.

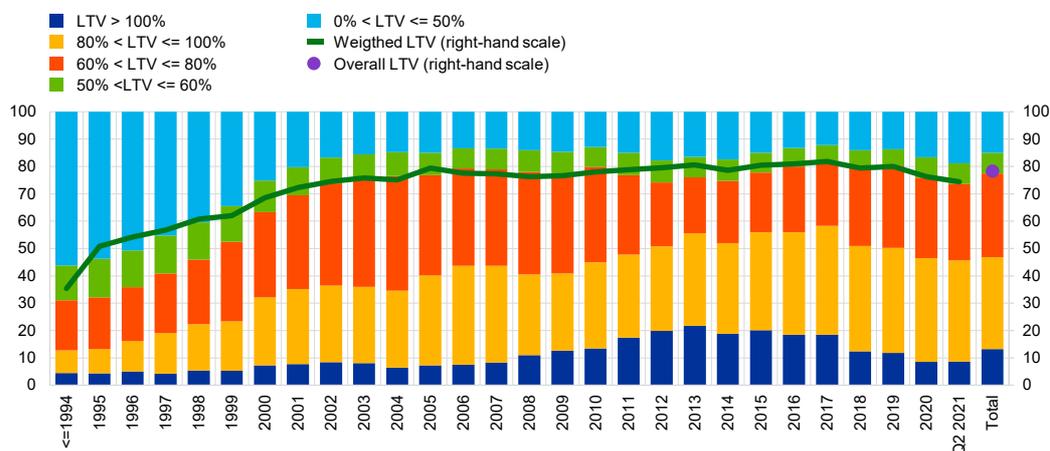
The levels of collateral behind the loans underlying EU RMBSs are high but the share of riskier loans (meaning loans with an LTV ratio above 100%) has risen. The unweighted average LTV ratio of the original loan balance across loans and origination years of EU RMBSs was 72% at the second quarter of 2021. This means that, on average, the mortgage exposure represented 72% of the value of the property at origination. The weighted average LTV ratio of the underlying loan balance of EU RMBSs was almost 80% (Chart 13). This means that, at aggregate level, the collateral value could withstand a contraction of 20% before the aggregated original loan balance ceases to be covered. Lower LTVs ensure resilience of borrowers against adverse shocks and lead to lower losses for credit institutions in case of house prices decline. Across origination years, the weighted LTV ratio was below 60% for origination years before 1998, above 75% from 2003, and around 80% between 2005 and 2019. In 2020 and in the first half of 2021, the weighted LTV ratio was 76% and 75% respectively. Nonetheless, the share of riskier loans (with an LTV above 100%) has increased from that of early origination years.⁶⁶ For example, the share increased from 5% in 1999 to 22% in 2013, and then decreased to 9% for loans generated in 2020 and the second quarter of 2021. Across origination years, the share of loans with an LTV above 100% was 13%.

⁶⁶ In general, mortgage loans with an LTV above 100% (meaning that the loan value is greater than the property value) are considered risky. Nonetheless, protection for undercollateralised mortgages may be provided in some countries in the form of public guarantees, etc.



Chart 13
Distribution of original loan balance of EU RMBSs by LTV bucket and origination year (Q2 2021)

(percentages)



Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included. The original LTV is calculated as the sum of loans per property at origination year divided by the value of the property at origination year. The weighting is done by the original loan balance.

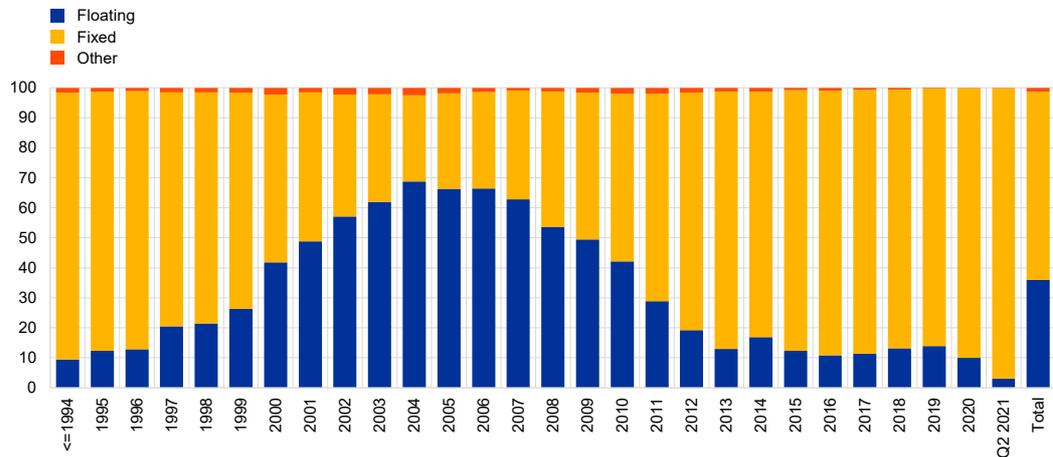
EU RMBSs include a large share of underlying loans exposed to interest rate movements.

Almost 40% of the total original loan balance at the second quarter of 2021 had an adjustable or floating interest rate (Chart 14). Most of these loans were originated prior to the GFC. For example, more than 50% of the loans originated between 2002 and 2008 had an adjustable or floating interest rate (peaking in 2004 at almost 69%). For loans originated after this period, the share of floating interest rate loans decreased substantially. For example, the share was between 10% and 14% for loans originated between 2015 and 2020. For loans originated during the first half of 2021, floating interest rate loans represented 3%. Low levels of interest rates after the GFC compared with earlier periods may have incentivised borrowers to “lock-in” these interest rates through fixed-rate loans. For example, by considering the size of the loans, the weighted fixed interest rate of EU RMBSs decreased from 4% in the fourth quarter of 2014 to 2.4% in the second quarter of 2021 reducing the gap with the floating rate from 223 basis points to 158 basis points respectively (Chart 15).



Chart 14
Distribution of original loan balance of EU RMBSs by type of interest rate and origination year (Q2 2021)

(percentages)

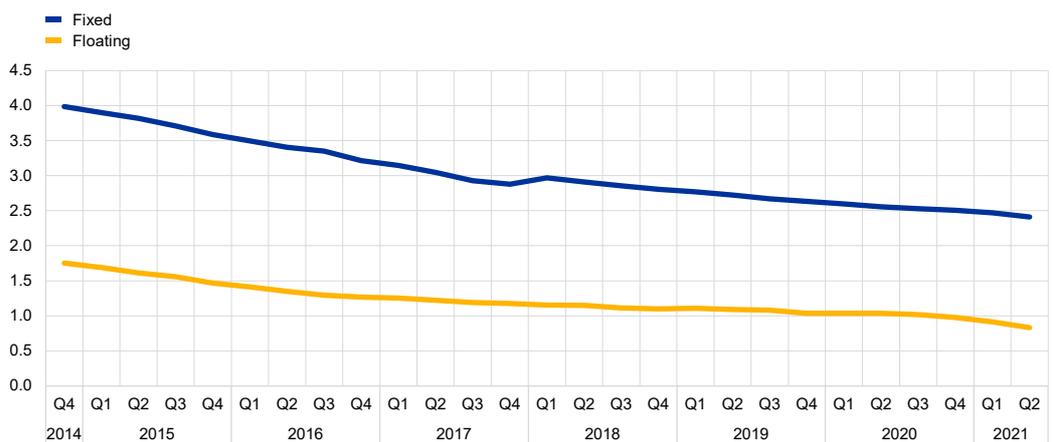


Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included. Floating rates consist of floating rate loans for life and floating rate loans linked to the London Inter-Bank Offered Rate (Libor), the Euro Interbank Offered Rate (Euribor), ECB reverting to the bank standard variable rate (SVR). Fixed rates consist of fixed rate loans for life, fixed rate loans with future periodic resets, fixed rate loans with a compulsory future switch to floating and capped loans. Other consists of discount loans and other loans.

Chart 15
Current interest rate by interest type by reporting period (Q2 2021)

(percentages)



Sources: EDW and ESRB calculations

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date are deleted. Floating rates consist of floating rate loans for life and floating rate loans linked to the London Inter-Bank Offered Rate (Libor), the Euro Interbank Offered Rate (Euribor), ECB reverting to the bank standard variable rate (SVR). Fixed rates consist of fixed



The debt service (i.e. principal and interest rate payments) of the loans underlying EU

RMBSs is small compared with existing DSTI limits in some EU jurisdictions. The DSTI ratio is an effective indicator of household over-indebtedness (Bańbuła et al., 2017) and a significant indicator on default risk (Galán and Lamas, 2019). Therefore, loans with high DSTI ratios are riskier. The unweighted DSTI ratio of the current loan balance of EU RBMSs was 29% at the second quarter of 2021, while the weighted ratio was 35% (Chart 16, on the right). This means that, on average, borrowers are using 35% of their income to service their mortgage payments (i.e. principal and interest). Compared with existing DSTI limits in certain EU jurisdictions, which ranged between 33% and 60% in 2020,⁶⁷ the current DSTI is at the lower end of the scale. Almost 80% of all current loans at the second quarter of 2021, had a weighted DSTI between 0% and 30%. (Chart 16, on the left) and only 8% of the current loan balance had a DSTI above 60%.

Debt service would, however, increase if interest rates were to increase, in particular for RMBSs where a large part of the underlying loans has adjustable or floating rates.

A large share of loans with adjustable or floating rates may push the servicing burden above sustainable levels, in particular for overindebted borrowers. The observations above have three limitations. First, the DSTI ratio calculated for each borrower only considers loans that underlie EU RMBSs. Therefore, this ratio may underestimate the real debt service burden for each borrower given that it does not include other non-securitised mortgages or other types of loans taken by the borrower. Second, the income used in the denominator is reported at the time of the loan origination. Although the calculation of DSTI ratio above considers the latest reported income for each borrower in cases where the borrower took out different loans at different origination years, it would not always coincide with the current income of the borrower. Therefore, the calculated DSTI ratio may overestimate the real burden of principal and interest rate payments on income or underestimate the burden if household income had been impacted by the COVID-19 pandemic. Third, income is reported gross (i.e. before income taxes) and therefore the DSTI ratio calculated may not reflect the real burden of their debt servicing.

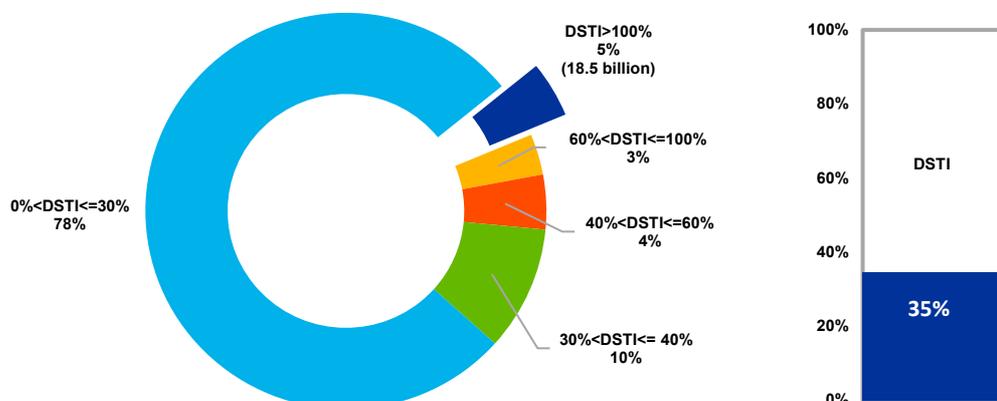
⁶⁷ See ESRB (2021).



Chart 16

Distribution of current loan balance of EU RMBSs by DSTI (Q2 2021)

(percentages)



Sources: EDW and ESRB calculations.

Notes: Only loans with a positive value are considered. Loans without a property id and without an origination date were not included. The current DSTI is calculated as the sum of next payment due for all loans linked to each borrower divided by the latest reported income for the same borrower. The weighting is done by the current loan balance.

3.2.4 Interconnectedness and concentration indicators

More than half of EU RMBSs were originated by a few banks, and a few banks held the majority of the total holding of EU RMBSs in the banking sector.

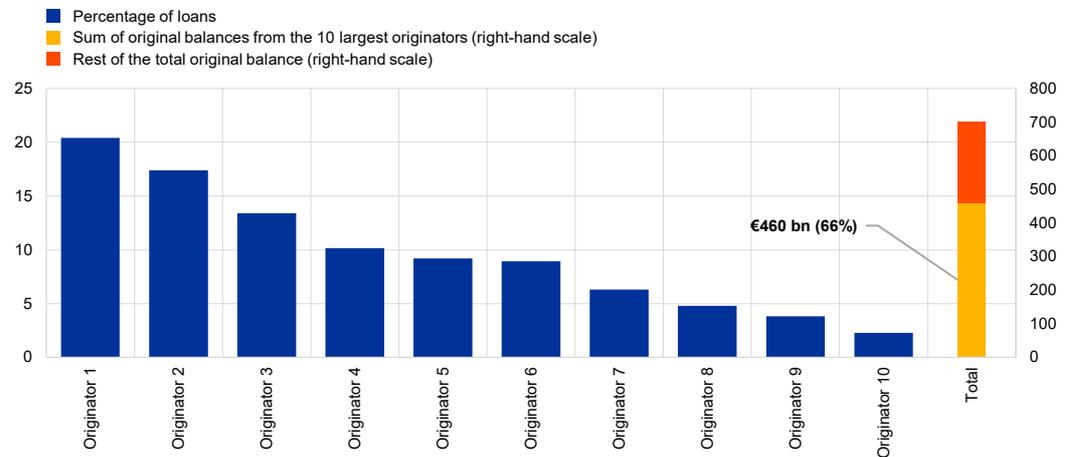
The ten largest originators accounted for 66% of the EU RMBS original balance at the second quarter of 2021, which covers €460 billion (Chart 17a). These largest originators combined represented 43% of total EU assets in the second quarter of 2021. For most of these originators, at the second quarter of 2021 the originated loan balance (accumulated) represented less than 10% of their total loan portfolio in the second quarter of 2021 (Chart 17a). Only three originators had an accumulated share above 10%, where one of them had originated underlying loans representing 20% of its loan portfolio at the second quarter of 2021. Empirical studies have shown that larger banks are more likely to securitise and issue collateralised securities in higher volumes (Deku et al, 2019). The ten largest holders of EU RMBSs within the banking sector accounted for 84% of the total holdings of EU RMBSs (Chart 17b). Concentration is also visible by the size of RMBS transactions. In the second quarter of 2021 342 deals of EU RMBSs were reported (Chart 17c). Just 15 deals and 52 deals covered 50% and 75% of the total current loan balance respectively. The observed concentration indicates that the benefits of traditional securitisation derived from transferring assets out of the balance sheet and distributing the risk across the financial system are not reaped. Nonetheless, this retention by originators implies that they also retain all the credit risk of the loans, which from an accounting perspective cannot be derecognised.



Chart 17a

Ten largest originators of EU RMBSs (Q2 2021)

(percentages of total loan portfolio; EUR billions)



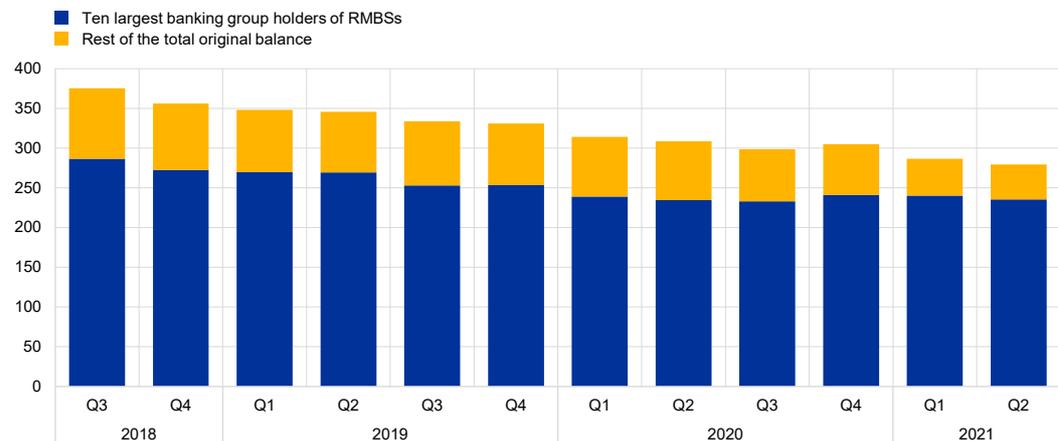
Sources: EDW, financial reports and ESRB calculations

Notes: The ranking does not represent the absolute size of the originators' securitised loans nor the absolute size of their loan portfolio. Only loans with a positive value are considered. Loans without a property id and without an origination date are deleted.

Chart 17b

Ten largest banking groups with the largest holdings of EU RMBSs (Q2 2021)

(EUR billions)



Sources: Securities Holdings Statistics Group (SHSG), financial reports and ESRB calculations

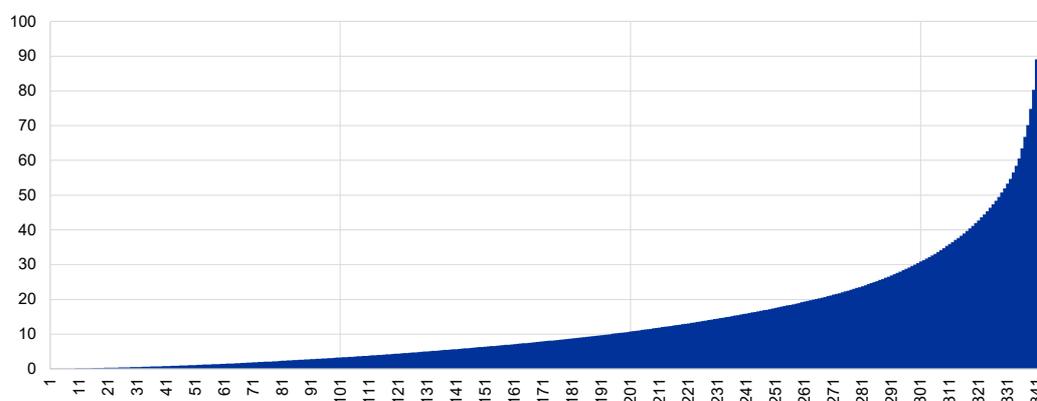
Notes: Holdings correspond to securitisations issued by institutional sectors resident in the euro area and held by institutional euro area residents. The data do not disentangle across tranches. CDOs are excluded. Holdings are at market value



Chart 17c

Current loan balance of EU RMBSs by transaction deal (Q2 2021)

(accumulated percentages)



Sources: EDW and ESRB calculations

Notes: The current loan balance for each transaction deal is the sum of current loan balance of loans under each transaction. Only loans with a positive value are considered. Loans without a property id and without an origination date were not included.

EU banks retain a large share of EU RMBSs. According to the EBA's supervisory data, the total amount of EU RMBSs retained by banks (i.e. securitisations originated by banks but not placed in the market) amounted to € 215 billion in 2021 (Chart 18a). Compared with the current balance of EU RMBSs in the same period (Chart 18b), this retained amount was equivalent to almost 50% of the current loan balance of EU RMBSs. This share has been increasing since 2014 in line with an increase in the amount of EU RMBSs retained and a decrease of the current loan balance of EU RMBSs in the same period. Out of the amount retained in 2021, €53 billion accounted for first loss tranches corresponding to 25% of the total amount retained and to 4% of EU banks' CET1 capital.⁶⁸ On the one hand, the retention of the first loss tranche aligns incentives between originators and investors. On the other hand, it exposes banks to potential losses given that these tranches are the riskiest in a securitisation structure, in particular when adverse shocks are felt by the real estate sector.

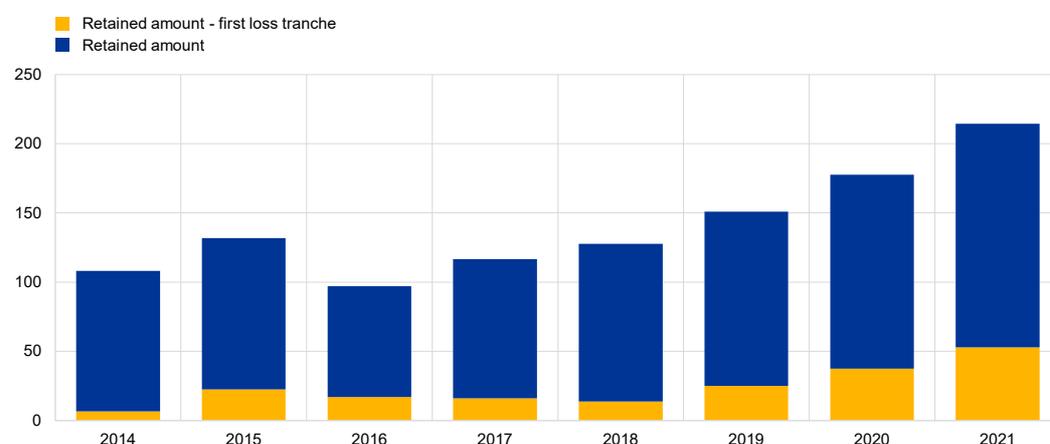
⁶⁸ CET1 numbers taken from the [EBA Risk Dashboard](#).



Chart 18a

Total amount of EU RMBSs retained by EU banks (2014-2021)

(EUR billions)



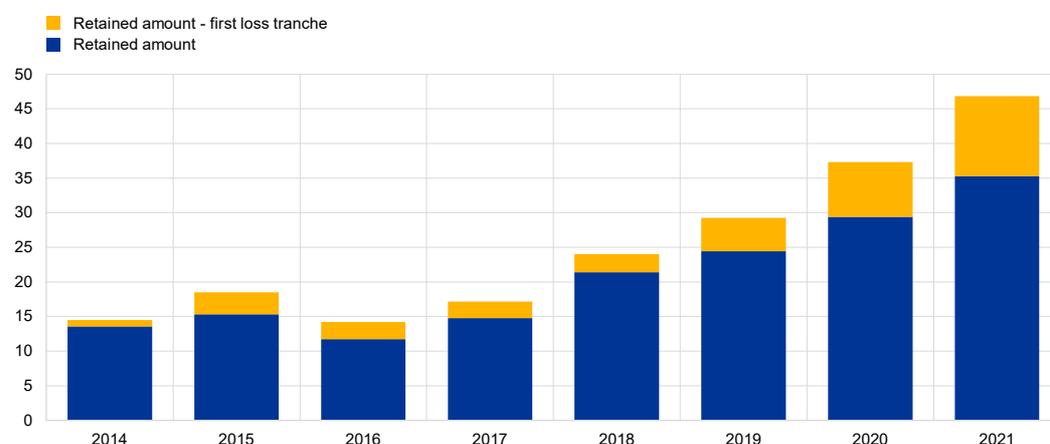
Sources: EBA Supervisory Reporting and ESRB calculations

Note: The figures for 2021 are based on reporting up to the second quarter of 2021

Chart 18b

Retained EU RMBSs as a share of total EU RMBSs (2014-2021)

(percentages of total current loan balance)



Sources: EDW, EBA Supervisory Reporting and ESRB calculations.

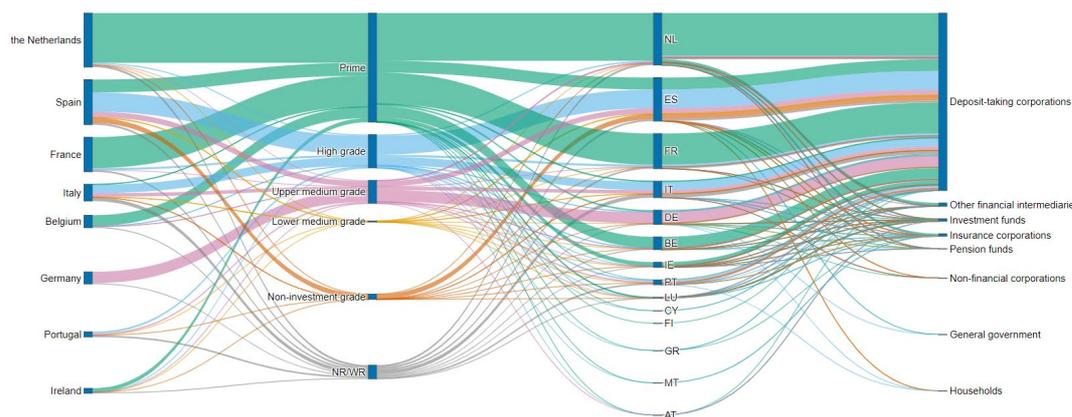
Note: The figures for 2021 are based on reporting up to the second quarter of 2021

In the EU, most of the loans underlying EU RMBSs have collateral in a few EU Member States and most EU RMBSs are held by banks in the same Member States. Based on data that can link the originators of EU RMBSs with the holders of EU RMBSs, 75% of EU RMBSs were backed by loans located in Spain, France, Italy and the Netherlands, while 72% of EU RMBSs were held in the same Member States in the second quarter of 2021 (Chart 19). Almost 60% of EU



RMBSs were rated as prime (meaning with an AAA external credit rating). Of these highly rated tranches, most of them were issued in Belgium, France, Spain and the Netherlands. Moreover, more than 80% of prime RMBSs were held by banks residing in these Member States. EU RMBS tranches with a non-investment grade credit rating represented 2% of the total nominal value with more than 80% of them being held by Spanish institutional sectors.

Chart 19
Link between originators and holders of EU RMBSs by rating grade (Q2 2021)



Sources: EDW, SHS, CSDB and ESRB calculations

Notes: The first column of the chart refers to the sum of the nominal value of EU RMBSs by country of origination. The second column refers to the sum of the nominal value of EU RMBSs by the highest external credit rating received between Moody's, S&P and Fitch. The third column refers to the sum of the nominal value of EU RMBSs by country holding the security. The fourth column refers to the sum of the nominal value of EU RMBSs by sector holding the security. Prime refers to an external rating equivalent to AAA. High Grade refers to an external rating between AA+ and AA-. Upper medium grade refers to an external rating between A+ and A-. Lower medium grade refers to an external rating between BBB+ and BBB-. Non-investment grade refers to an external rating between BB+ and D. NR/WR means not rated or withdrawn rating.

3.3 Sensitivity analyses

Sensitivity analyses of leverage indicators may help to identify vulnerabilities of EU RMBSs given a set of adverse shocks. The granularity of public securitisations reported to data repositories makes it possible to assess the risk of each transaction in great detail. In this section, three sensitivity analyses were conducted on the current LTV ratio, current DTI ratio and DSTI ratio of the loans underlying EU RMBSs. These sensitivity analyses are partial, measuring the impact of given shocks on property values, income and interest rates. The sensitivity analyses also consider country-specific adverse shocks that were calibrated by the ESRB for the EBA stress test in 2021 (the EBA scenario).⁶⁹

At EU level, severe property price corrections would not bring the current weighted LTV of EU RMBSs above 100%. The weighted average LTV ratio of the current loan balance of EU RMBSs was 60% at the second quarter of 2021 (Chart 20a). By reducing the current property values of the loans underlying EU RMBSs by 10%, 20% and 30%, the current weighted average

⁶⁹ See ESRB (2020), "Macro-Financial scenario for the 2021 EU-wide banking sector stress test", December.



LTV increases to 66%, 75% and 85% respectively in the second quarter of 2021. These shocks are equal across Member States. By considering country-specific adverse shocks (accumulated over three years) to residential real estate prices in the EBA scenario, the weighted average LTV increases to 73%. Following this scenario, the share of riskier loans (having a current LTV above 100%) increases from 4% of the current loan balance of EU RMBSs (equivalent to €17 billion) in the second quarter of 2021 to 15% of the current loan balance of EU RMBSs (equivalent to €70 billion) in the EBA scenario (Chart 20b).

Chart 20a
Current LTV of EU RMBSs under different adverse shocks (Q2 2021)

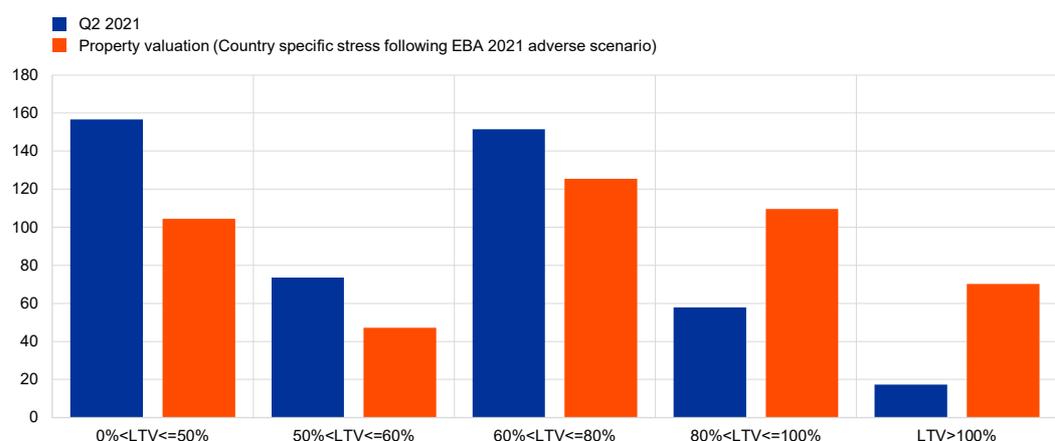
(percentages)



Sources: EDW, EBA and ESRB calculations.

Chart 20b
Distribution of EU RMBSs by LTV buckets under different adverse shocks (Q2 2021)

(EUR billions)



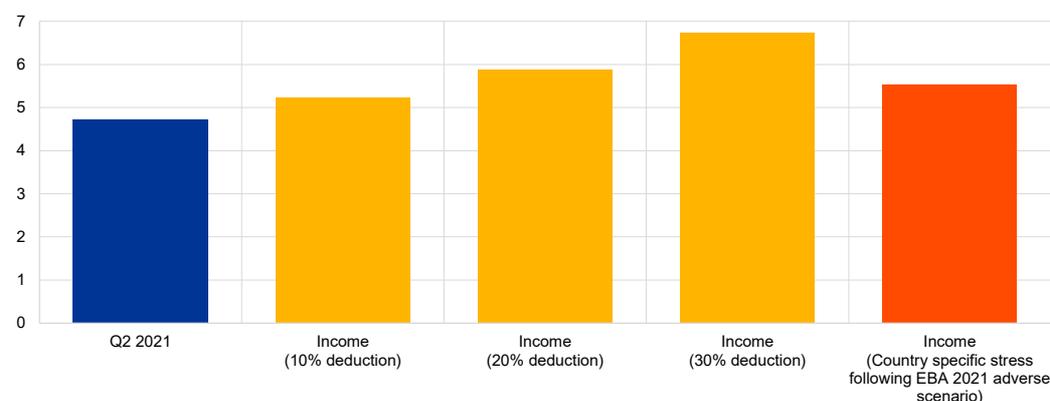
Sources: EDW, EBA and ESRB calculations.



The impact of a severe reduction in borrowers' income may increase the vulnerability of EU RMBSs to adverse developments. The weighted average DTI ratio of the current loan balance of EU RMBSs was 4.7 at the second quarter of 2021 (Chart 21a).⁷⁰ By reducing current borrowers' income in the loans underlying EU RMBSs by 10%, 20% and 30%, the current weighted average DTI would increase to 5.2, 5.9 and 6.7 respectively in the second quarter of 2021. The EBA scenario does not include shocks on income but shocks to unemployment rates. By translating the country-specific adverse shocks on unemployment into income shocks,⁷¹ the weighted average DTI increased to 5.5. In this scenario, the share of loans with a current DTI above five would increase from 19% of the current loan balance of EU RMBSs (equivalent to €78 billion) in the second quarter of 2021 to 26% of the current loan balance of EU RMBSs (equivalent to €109 billion) in the EBA scenario (Chart 21b).

Chart 21a
Current DTI of EU RMBSs under different adverse shocks (Q2 2021)

(debt to income)



Sources: EDW, EBA and ESRB calculations

⁷⁰ As mentioned previously, income is only reported at origination. Therefore, for the calculation of the current DTI, the income of each borrower was adjusted in line with the disposable income growth rates in each Member State up to the second quarter of 2021.

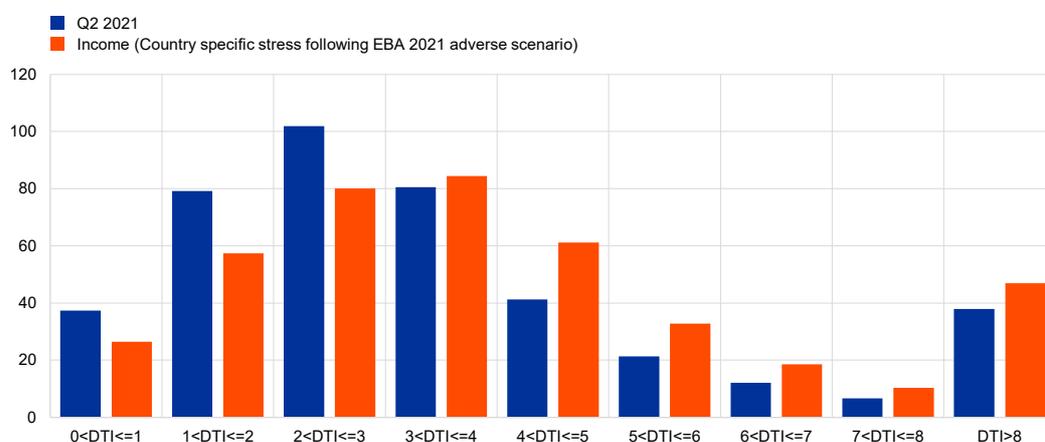
⁷¹ The income of borrowers by Member State is ranked and buckets were created based on the percentile of the income distribution. The maximum country-specific unemployment rate shock in the EBA scenario is applied to each bucket, starting from the top incomes. This makes it possible to identify unemployed borrowers. For those borrowers, the income is reduced to the unemployment benefit levels applicable in each Member State (based on [OECD statistics](#)).



Chart 21b

Distribution of EU RMBSs by DTI buckets under different adverse shocks (Q2 2021)

(EUR billions)



Sources: EDW, EBA and ESRB calculations

The impact of interest rate increases seems small for existing EU RMBSs. The weighted average DSTI ratio of the current loan balance of EU RMBSs was 26% at the second quarter of 2021 (Chart 22a), which is low as compared with existing limits.⁷² By increasing the current interest rates of the loans underlying EU RBMSs by an add-on of 50 basis points, 100 basis points, 300 basis points and 500 basis points, the current weighted average DSTI increased to 28%, 29%, 35% and 42% respectively in the second quarter of 2021.⁷³ Following the largest uniform shock of 500 basis points, the share of loans with a current DSTI above 60% increased from 7% of the current loan balance of EU RMBSs in the second quarter of 2021 to 11% of the current loan balance of EU RMBSs (Chart 22b).

⁷² As mentioned previously, income is only reported at origination. Therefore, for the calculation of the current DSTI, the income of each borrower was adjusted in line with the disposable income growth rates in each Member State up to the second quarter of 2021. Moreover, the next payment due is not decomposed by principal and interest payments. Therefore, the next payment due is constructed based on the type of the loan and the current interest rate reported to the EDW. The construction is not possible for all the underlying loans and the sample used for this estimation represents almost 80% of the current loan balance.

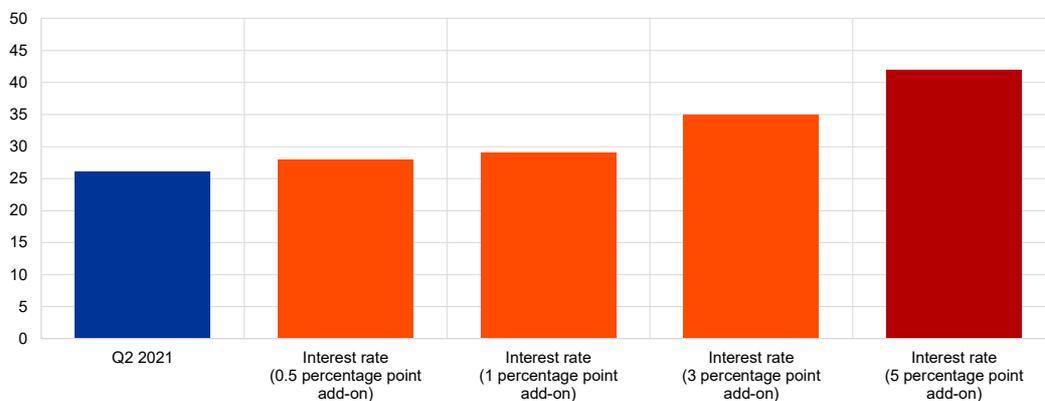
⁷³ The EBA scenario is based on a “lower for longer” interest rate environment assumption and hence this scenario is not relevant for sensitivity of the current DSTI.



Chart 22a

Current DSTI of EU RMBSs under different adverse shocks (Q2 2021)

(percentages)

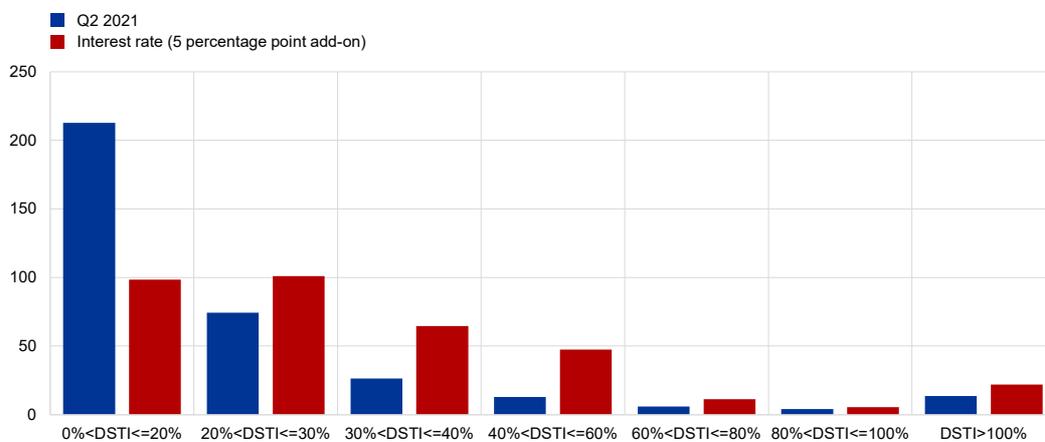


Sources: EDW and ESRB calculations

Chart 22b

Distribution of EU RMBSs by DSTI buckets under different adverse shocks (Q2 2021)

(EUR billions)



Sources: EDW and ESRB calculations



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