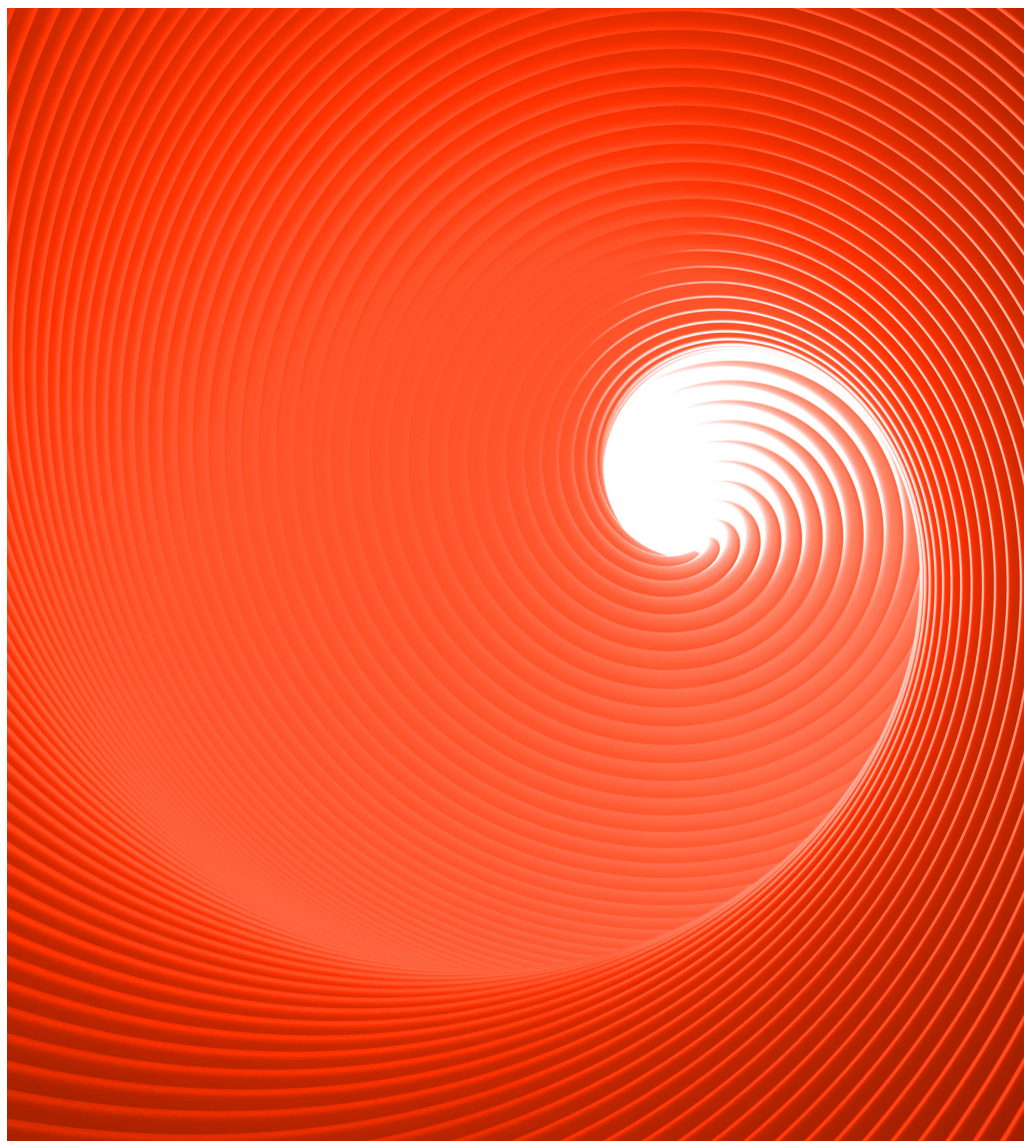


# When The Cycle Turns: How Would Global Structured Finance Fare In A Downturn?

Sept. 4, 2019



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## Key Takeaways

- S&P Global Ratings undertook a stress test to estimate the impact of a potential market downturn on structured finance ratings. Under our simulation, U.S. growth stumbles as previous fiscal stimulus measures expire. A U.S. recession undercuts world growth and a confidence shock spreads across the globe via slower trade and weak commodity markets.
- Under this scenario, we believe that downgrade and default risks for most structured finance sectors and regions would be contained to speculative-grade classes, albeit with some risk in low investment-grade (e.g., 'BBB') credits. We generally expect performance to remain within our rating definitions. Still, there are certain sectors and regions which merit a closer look, including U.S. and European CLOs, U.S. subprime auto ABS, and CMBS. Sovereign downgrades could also put pressure on some ratings in the European periphery.
- We attribute the reduced severity of potential rating actions and the lower number of potential defaults compared to those which occurred during the 2007-2009 crisis to our less severe stress scenario, as well as to criteria recalibration and enhancements that we made after the crisis.

After several years of sustained world GDP growth, the peak of the current economic cycle might well be behind us. Growth at present is gradually decelerating and S&P Global Ratings recently lowered its forecast for global GDP growth, due to trade and geopolitical uncertainty (see [“Global Growth Suffers As Secondary Trade Effects Go From Risk To Reality,”](#) published on July 2, 2019).

Table 1

### GDP Growth Forecasts (%)

|          | 2018 | 2019f | 2020f |
|----------|------|-------|-------|
| U.S.     | 2.9  | 2.5   | 1.8   |
| Eurozone | 1.9  | 1.1   | 1.3   |
| China    | 6.6  | 6.2   | 6.2   |
| Japan    | 0.8  | 0.8   | 0.1   |
| World    | 3.7  | 3.4   | 3.6   |

f--Forecast. Source: S&P Global Ratings.

Given the potential for the cycle to turn, we have evaluated the potential of a hypothetical recession on our structured finance ratings, by asset class and region.

## What's Changed Since The Global Financial Crisis?

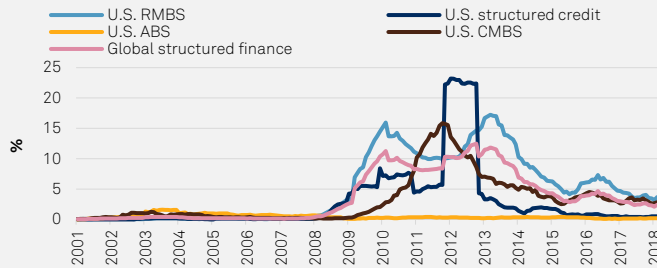
Before we turn to our forecasts based on our recession scenario, let's review what's changed since the 2007-2009 downturn, which saw a period of downgrades heavily outnumbering upgrades, and high defaults.

## How Structured Finance Performed During The Global Financial Crisis

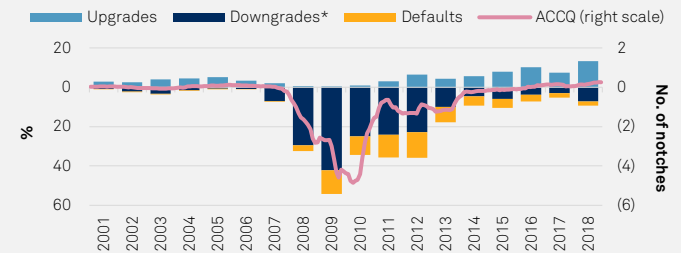
### U.S.

A deterioration in collateral performance led to defaults and downgrades. Changes in criteria also explain some downgrades.

#### 12-Month Trailing Default Rates



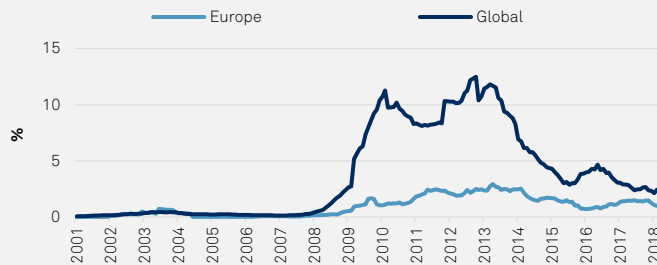
#### Transition Rates And Average Change In Credit Quality



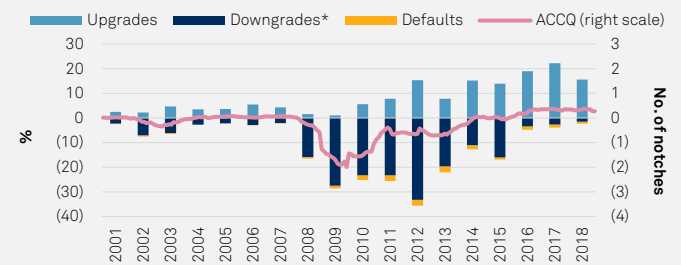
### Europe

Limited defaults and negligible losses. Several downgrades due to collateral performance, but also due to rating actions on sovereigns and criteria changes.

#### 12-Month Trailing Default Rates



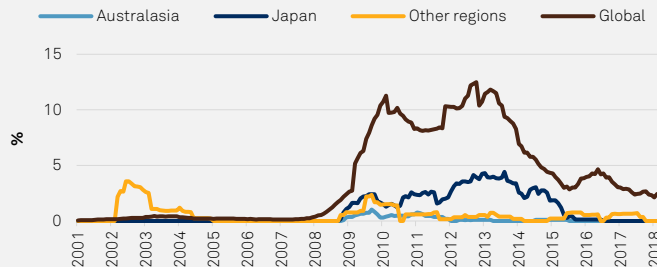
#### Transition Rates And Average Change In Credit Quality



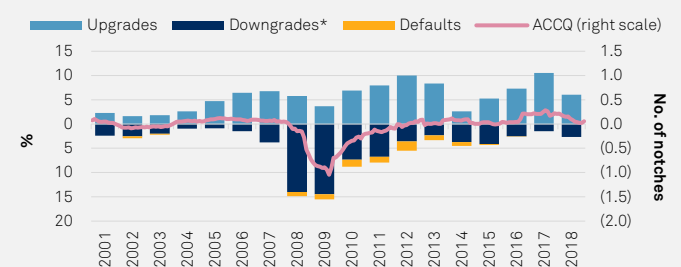
### Other regions

Very limited defaults and fewer rating actions than in the U.S. and Europe.

#### 12-Month Trailing Default Rates



#### Transition Rates And Average Change In Credit Quality



Note: 'Other regions' category includes Canada, Latin America, Asia, and some emerging markets.

\*Excluding defaults. ACCQ--Average change in credit quality. Securities whose ratings migrated to not rated (NR) over the period are classified based on their rating prior to 'NR'.

Source: S&P Global Fixed Income Research.

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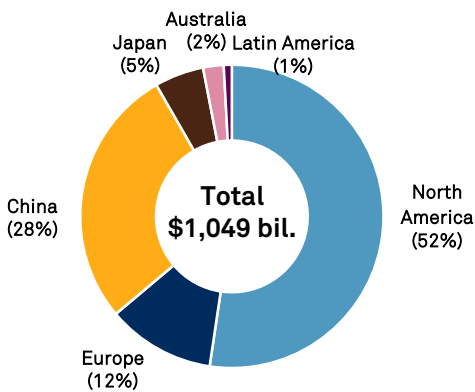
## How the market has evolved

The 2007-2009 downturn affected the structured finance industry, and created ongoing market and regulatory changes that have generally decreased the use of securitization and increased traditional portfolio lending. A notable exception is some banks, mainly in Southern Europe, which now rely on “retained securitization” to obtain cheap funding via the repo facility provided by the European Central Bank.

The securitization markets have also evolved, and changes have been made to how loans are originated and how related risks are passed on to institutional investors. Although markets have been receptive to greater collateral information disclosure and simpler structures, risk retention requirements have had mixed success especially in the U.S., as many mortgage originators are not natural long-term investors (see “[Ten Years After The Financial Crisis, Global Securitization Lending Transformed By Regulation And Economic Growth](#),” published on July 21, 2017, and “[U.K. RMBS 2.0 Origination And Structural Evolution Combine To Reduce Credit And Reinvestment Risk](#),” published on Jan 7, 2019).

Chart 1

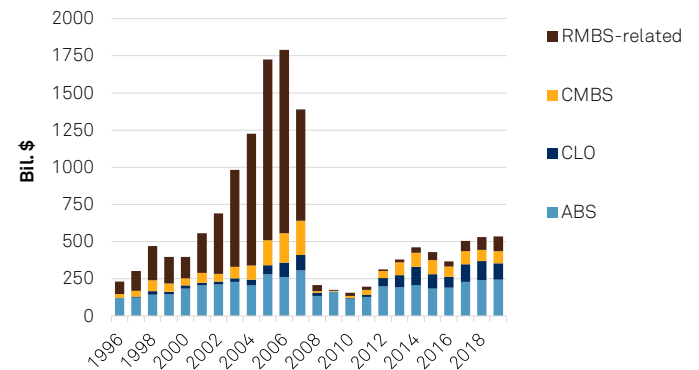
### Global Structured Finance Issuance Volumes 2018



Source: S&P Global Ratings.  
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Chart 2

### U.S. Issuance Is Still Below Pre-Crisis Levels



Source: S&P Global Ratings.  
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While in recent years U.S. securitization issuance has recovered to roughly the same level as that seen in the early 2000s, the composition has changed somewhat, with private label residential mortgage-backed securities (RMBS), for example, now representing a far smaller portion of the overall pie. Outside the U.S., volumes of investor-placed structured finance issuance are still subdued in Europe, while China is playing an increasingly significant role in the sector.

## Main Changes Since The Global Financial Crisis

### Regulation

- Increased disclosure requirements, for instance the simple, transparent and standardised (STS) designation
- New risk retention rules for certain sectors, such as the 5% risk retention requirement for originators, and increased regulatory capital charges for some investors
- Limits to the origination of certain products, such as self-certified mortgages in the U.K., and increased focus on loan affordability, such as the ability-to-repay (ATR)/qualified mortgage (QM) rule in the U.S.

### Market structure

- Shift toward nonbank sponsors and emergence of private portfolio lenders
- Less use of leverage by investors and more ‘buy and hold’ investments
- Decreased rated issuance compared to pre-crisis levels

### Securitization structures

- More sequential pay structures which, all else equal, provide more protection to senior bondholders
- Generally more seasoned and less leveraged structures
- Certain structures—such as subprime RMBS and CDOs of ABS—have broadly disappeared

CDOs--Collateralized debt obligations. ABS--Asset-backed securities.

## How our securitization criteria have changed

In 2010, we broadly introduced new ratings stability criteria, which set limits for the expected degree of downward ratings migration under a moderate stress over one- and three-year periods. Further, we have recalibrated our criteria for substantially all major sectors since the financial crisis (for example, U.S. credit card asset-backed securities [ABS] in 2011, U.S. commercial mortgage-backed securities [CMBS] in 2012, Japanese RMBS in 2014, European auto loan ABS in 2015, and U.S. RMBS in 2018).

In general, these recalibrations have resulted in higher credit enhancement under our criteria for a given rating level than before the crisis, and hard credit enhancement floors for certain classes that could cushion bondholders from harder to quantify risks. The new criteria also expanded to new asset types the idea of a benchmark or archetypal pool, with which to compare asset pools that we rate. Pools whose credit characteristics stray from the benchmark require greater (or lower, as the case may be) cushioning throughout the capital structure.

Another consequence of higher credit enhancement is that relatively more of our ratings in recent vintages are skewed toward the senior parts of the capital structure (e.g., in 2016-2018 vintage U.S. conduit CMBS or most of the recent issuance in Asia-Pacific).

## Predicting Credit Performance Under Our Stress Scenario

We begin with a brief description of the hypothetical global economic downturn that we are using in our analysis. In this recession scenario, U.S. GDP contracts and growth stays negative for six quarters with unemployment exceeding 6%. The recession has ripple effects across the globe via slower trade and weak commodities markets.

Deteriorating financing conditions and a weaker global economy result in lagging domestic demand and disinflationary forces that sap eurozone GDP. Falling business investment produces job cuts that lead to higher unemployment, and lagging consumption also causes imports to fall. With Europe's main export markets in recession, eurozone exports suffer.

China feels the effects starting with trade tensions that turn into a full-blown trade war causing collateral consequences to the economy from a confidence shock. The unemployment rate moves back above 4.5%—or to highs last seen during the global financial crisis—which curbs consumption. Year-on-year growth in consumer spending slips to 4% and GDP growth slips below the Chinese government's current target range of about 6.0% to 6.5%. Transmission to emerging markets occurs mostly via a global confidence shock that produces foreign exchange rates volatility, capital outflow pressures, restrictive financing conditions, and pressure from weak commodities markets.

Table 1

### Macroeconomic Assumptions In Our Hypothetical Downturn Scenario

|                  | Real GDP (YOY %) |        |        | Unemployment (%) |        |        | Fixed investment (YOY %) |        |        | Export growth (%) |        |        |
|------------------|------------------|--------|--------|------------------|--------|--------|--------------------------|--------|--------|-------------------|--------|--------|
|                  | Year 1           | Year 2 | Year 3 | Year 1           | Year 2 | Year 3 | Year 1                   | Year 2 | Year 3 | Year 1            | Year 2 | Year 3 |
| <b>US</b>        | 0.2              | (1.0)  | 1.7    | 4.6              | 6.4    | 6.5    | (1.2)                    | (1.1)  | 3.4    | (3.2)             | (3.9)  | 3.2    |
| <b>Eurozone</b>  | (1.6)            | 0.0    | 1.9    | 8.9              | 9.4    | 8.9    | (4.7)                    | (0.3)  | 4.2    | (2.1)             | (1.2)  | 4.7    |
| <b>UK</b>        | (0.3)            | (0.9)  | 0.9    | 4.6              | 6.3    | 6.9    | 0.4                      | 1.6    | 3.1    | (0.8)             | (1.1)  | 2.1    |
| <b>Japan</b>     | (0.2)            | (1.7)  | 0.6    | 3.0              | 3.6    | 3.4    | (0.6)                    | (2.0)  | 1.7    | (2.3)             | (3.2)  | 2.1    |
| <b>China</b>     | 3.6              | 3.7    | 6.4    | 4.3              | 4.6    | 4.5    | 2.3                      | 0.7    | 5.3    | (2.2)             | 0.2    | 10.6   |
| <b>Brazil</b>    | (2.9)            | (3.2)  | 1.8    | 14.6             | 16.6   | 16.6   | (10.1)                   | (7.3)  | 8.2    | 2.2               | 1.9    | 4.3    |
| <b>Australia</b> | 2.3              | 1.1    | 2.5    | 5.7              | 6.6    | 6.5    | 0.9                      | (1.6)  | 3.2    | 3.1               | (0.1)  | 2.2    |

Note: Assumptions in year one, two, and three of a hypothetical recession. Source: S&P Global Ratings

### Most sectors' credit risks would be contained to speculative-grade classes

We generally expect that senior investment-grade tranches would be fairly well insulated in our stress scenario, while subordinated speculative-grade tranches may suffer more downgrades. Similarly, we believe default risk would be contained mostly to speculative-grade credits<sup>1</sup>.

The following heatmap provides an overview of what we see as expected results across various asset types and countries/regions, and should be viewed in conjunction with the risk assessment profiles at the end of this report.

<sup>1</sup>Obligations rated 'CCC' are currently vulnerable to nonpayment and are dependent upon favorable business, financial, and economic conditions to meet their financial commitments. As such, instruments that are assigned a rating in the 'CCC' category or lower may see downgrades or defaults even absent a turn in the credit cycle.

## When The Cycle Turns

Table 2

### What Is The Credit Risk For Structured Finance If The Cycle Turns?

Expected Performance Under A Hypothetical Stress Scenario

|                | North America | Europe | Latin America | Australia and New Zealand | Japan | Greater China |
|----------------|---------------|--------|---------------|---------------------------|-------|---------------|
| Consumer ABS   |               |        |               |                           |       |               |
| Commercial ABS |               |        |               |                           |       |               |
| ABCP           |               |        |               |                           |       |               |
| RMBS           |               |        |               |                           |       |               |
| Covered bonds  |               |        |               |                           |       |               |
| CLO            |               |        |               |                           |       |               |
| CMBS           |               |        |               |                           |       |               |

| Scenario   | Expected outcomes |                   |                    |             |             |
|------------|-------------------|-------------------|--------------------|-------------|-------------|
|            | Downgrades SG     | Downgrades Low IG | Downgrades High IG | Defaults SG | Defaults IG |
| Very low   |                   |                   |                    |             |             |
| Moderate   | X                 |                   |                    |             |             |
| Elevated   | X                 | X                 |                    |             |             |
| High       | X                 | X                 | X                  | X           |             |
| Very high  | X                 | X                 | X                  | X           | X           |
| No ratings |                   |                   |                    |             |             |

IG--Investment-grade. SG--Speculative-grade. X--Means (some) risk of downgrade or default

**Very low risk.** Limited risk of defaults and downgrades

**Moderate risk.** Limited risk of defaults, risk of downgrades mainly for speculative-grade classes.

**Elevated risk.** Limited risk of defaults, some risk of downgrades both for speculative-grade and low investment-grade classes.

**High risk.** Some risk of defaults on speculative-grade classes, risk of downgrades both for speculative-grade and investment-grade classes.

**Very high risk.** Risk of defaults and downgrades across the capital structure.

Asset performance may vary across asset classes, depending for example on how the hypothetical recession will play out and which parts of the economy are hit the hardest, but we believe this is already embedded in our criteria and in the available credit enhancement. Likewise, credit performance may vary within an asset class, due for example, to prevailing underwriting standards, but again we have accounted for this in our analysis.

## Credit Performance To Remain Robust Under Our Recession Scenario

As a result of criteria changes since the financial crisis and relatively more stringent underwriting standards in this credit cycle, we expect fairly robust overall credit performance across rated global structured finance instruments under our recession scenario. And while certain segments of the capital structure, sectors, and regions appear more susceptible to downgrades or defaults in a downturn, we believe that the collateral performance of securitizations that we rate should be more robust under our recession scenario than during the previous crisis.



# Asset-Backed Commercial Paper: U.S.

Very Low

Moderate

Elevated

High

Very high

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## Summary Results Under Our Recession Scenario

- U.S. asset-backed commercial paper (ABCP) is generally rated at least 'A-1 (sf)' as it is weak-linked to banks rated 'A/A-1' or higher<sup>2</sup>. The ratings on ABCP issued by partially supported programs also rely on adequate credit enhancement ('A' or 'AA-' rating level for ABCP rated 'A-1 (sf)' or 'A-1+ (sf)', respectively).
- We expect stable rating performance and no defaults in our recession scenario.

## What's changed since the crisis?

Regulatory reforms helped stabilize liquidity and credit support, and created demand for more disclosure of asset-level data. While the increased cost and capital considerations tied to the new regulations initially reduced the ABCP volume outstanding, conduits have since adjusted their platforms, and investors now benefit from a more stable and transparent market. Additionally, conduits retained their own ABCP instead of retaining required risk through a costly subordinated note holding to comply with the risk retention rule.

## Key assumptions

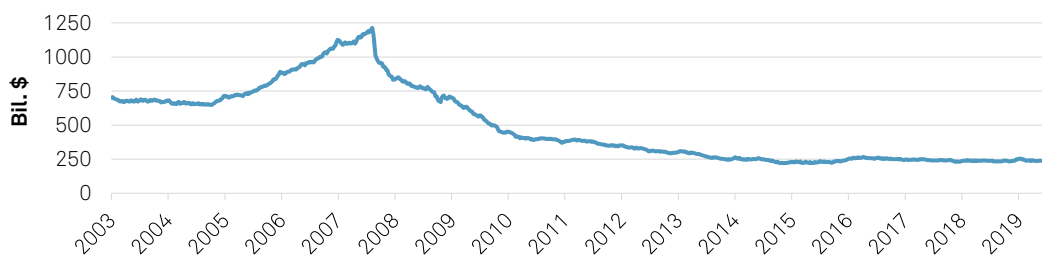
Under our scenario, we do not anticipate any rating impact on U.S. ABCP, based on the high investment-grade ratings on bank sponsors and extensive experience of non-bank sponsors. ABCP conduits are actively managed and, the related ABCP rating is driven by the rating on the liquidity or credit support provider. Currently, no conduit that we rate has less than 100% liquidity. The underlying collateral is mainly auto loans and leases, credit cards, and trade receivables. We expect stable credit performance for investment-grade ratings in these traditional asset sectors. However, if asset quality deteriorates, transaction sellers can increase credit enhancement, and sponsors can post available program-wide credit enhancement, or remove a transaction from the conduit.

**We do not foresee any rating impact on U.S. ABCP, with no defaults**

## Key risks

U.S. ABCP ratings are generally linked to the ratings on the banks that provide liquidity support to the programs. This means that a negative rating action on the banks would trigger an equivalent rating action on the ABCP issued by conduits. For partially enhanced ABCP, the ratings are also constrained by the creditworthiness of the assets backing the ABCP.

## ABCP Volume Outstanding 2003-2019

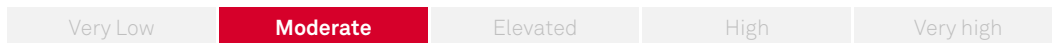


Source: S&P Global Ratings.  
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<sup>2</sup>All partially supported ABCP issued by U.S. conduits is currently rated at least 'A-1 (sf)'. ABCP issued from one fully supported program—White Plains Capital Co. LLC managed by Guggenheim Treasury Services LLC—is currently rated 'A-2 (sf)'.



# ABS: Europe



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## Summary Results Under Our Recession Scenario

- We expect stable rating performance, with the risk of downgrades and defaults coming primarily from speculative-grade classes.
- Less than 3% of our total rated EMEA ABS universe is speculative grade.

## What's changed since the crisis?

European ABS performance was generally very stable during and after the crisis. Downgrades were predominantly due to sovereign or counterparty rating actions. We updated our European auto ABS criteria in 2015 to increase our ratings transparency. We now rate European credit card and equipment ABS under our global criteria, which we introduced to further global consistency.

## Key assumptions

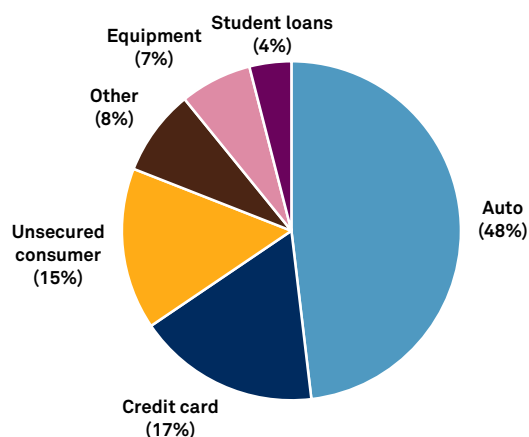
Based on the high stresses to which our criteria subjects the upper end of the capital structure, and the typically short remaining life of ABS portfolios, we do not anticipate rating changes for investment-grade ratings. Speculative-grade ratings benefit less from credit enhancement and structural support, hence they are more at risk of downgrades under our recession scenario. The auto ABS sector dominates the European ABS asset class. We expect changes in mobility models (e.g., the move to battery electric vehicles) to not negatively affect asset performance, because of the limited risk horizon of auto ABS transactions.

**Well-established structures and short risk horizons in EMEA ABS result in resilient investment-grade ratings**

## Key risks

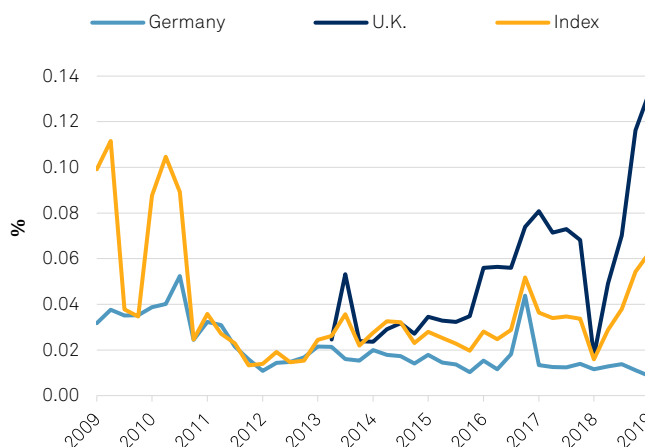
Sovereign rating changes could negatively affect investment-grade European ABS ratings, especially where those ratings are already at their maximum levels based on the current sovereign ratings. Mobility disruption or innovation could hamper recovery performance for auto ABS, which could increase the likelihood of rating changes.

## EMEA ABS Ratings By Asset Type



Source: S&P Global Ratings.  
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## EMEA Auto ABS Performance (Periodic Net Losses)



Source: S&P Global Ratings.  
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# ABS: U.S.

|          |                 |          |      |           |
|----------|-----------------|----------|------|-----------|
| Very Low | <b>Moderate</b> | Elevated | High | Very high |
|----------|-----------------|----------|------|-----------|

## Summary Results Under Our Recession Scenario

- We expect stable rating performance with risk of downgrades and defaults coming primarily from speculative-grade classes.
- These ratings come from previously downgraded legacy ratings (5% of the portfolio) and new issuance speculative-grade classes (4% of the portfolio).

## What's changed since the crisis?

Although U.S. ABS ratings performance was relatively strong throughout the crisis, we updated most of our ABS criteria after the crisis to improve transparency and better reflect the asset performance deterioration and trends observed during the crisis. This generally resulted in increased credit enhancement and improved credit profiles for asset pools since the financial crisis. Sequential pay structures are more prominent today. We did not update our U.S. auto loan criteria given the strong performance of this sector's ratings throughout the financial crisis, with very few auto loan pools performing worse than our 'BBB (sf)' rating stress.

## Key assumptions

Most of the U.S. ABS market comprises highly rated classes. Ratings at 'A (sf)' or above make up 85% of our total ABS rating portfolio of approximately 3,800 ratings. The assets in this space such as auto loans/leases/floorplan, credit cards, equipment, and student loans all have substantial performance history. In our hypothetical stress scenario we would expect limited ratings impact on this part of the rated portfolio consistent with our sensitivity scenario analysis. The typical sequential pay structures also provide relative strength for the senior ratings in the capital structures.

## Key risks

We expect our recession scenario to negatively affect the speculative-grade portion of the ratings portfolio. Most of these ratings comprise previously downgraded legacy ratings in the student loan and manufactured housing asset types. Sub-prime auto issuance of speculative-grade tranches has also recently become popular with investors.

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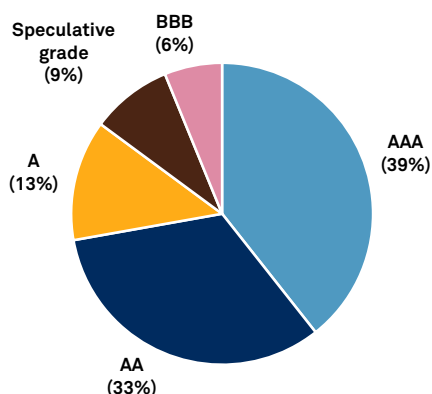
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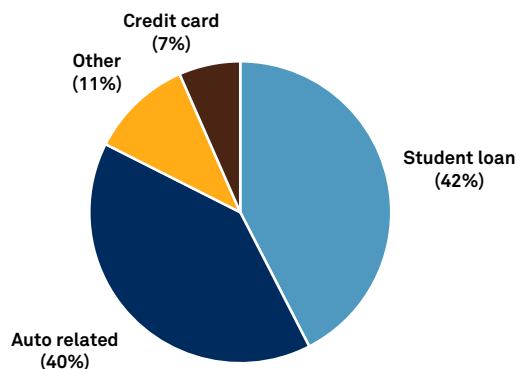
**Our hypothetical stress scenario could constrain speculative-grade ratings**

## Ratings By Category 2019



Source: S&P Global Ratings.  
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## Ratings By Asset Type 2019



Source: S&P Global Ratings.  
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# CLO

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We do not anticipate any significant rating impact on CLOs over the next two years. In a downturn we would expect rating migration to be concentrated in low investment-grade and speculative-grade ratings, with defaults clustered in the speculative-grade category.

## What's changed since the crisis?

CLO 1.0 transactions—broadly defined as those CLOs issued until 2009—performed very well during the most recent recession. We rated about \$500 billion worth of U.S. CLO 1.0s across 200 managers (4,322 ratings from 800 CLO structures). Of those, just 38 classes defaulted as of 2018 year-end. Compared with their pre-crisis CLO 1.0 siblings, post-crisis CLO 2.0 transactions have generally been issued with higher credit enhancement, include simpler portfolio compositions, and shorter reinvestment periods. All else being equal, tranches in these transactions are less likely to default in a global financial crisis-type downturn.

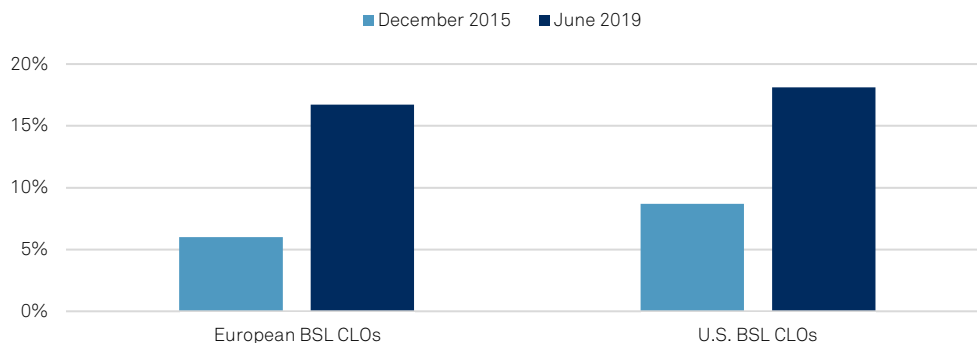
## Key Assumptions

We do not anticipate any significant rating impact on global CLOs over the next two years. In a moderate downturn, we expect most rating transitions to be concentrated in the speculative-grade space. As we saw in the most recent financial crisis, overcollateralization tests could fail and redirect payments sequentially, causing a deleveraging of the senior classes at the expense of interest deferral for the junior most tranches. As collateral performance during the recent financial crises has shown, we believe these key features in CLO structures are self-correcting over time.

## Key risks

Recovery rates could come under pressure during the next downturn due to the proliferation of covenant-lite loans, weaker loan documentation, and increased leverage. We rate more than 95% of companies that comprise underlying U.S. and European broadly syndicated loan CLOs, including both the issuer credit and recovery rating. Our CLO criteria capture shifting risk conditions in the loan market through its reliance on these ratings, which dynamically inform the default and recovery assumptions employed in our analysis.

## Reinvesting European And U.S. BSL CLOs Saw 10% Increase In Loans Issued By 'B-' Rated Issuers



BSL—Broadly syndicated loans. Source: S&P Global Ratings.  
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**Under our stress scenario, we expect pressure on speculative-grade and low investment-grade tranches. Defaults should be limited to speculative-grade ratings**

# CMBS: Europe

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We expect speculative-grade classes to be primarily at risk of downgrades or defaults. We don't expect comparable rating pressure on investment-grade classes because in our rating analysis we have already stressed such classes using more severe market value declines than those expected in our recession scenario.

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## What's changed since the crisis?

Today's European CMBS transactions feature structural enhancements, such as enhanced liquidity support and longer tail periods designed to mitigate risks that contributed to widespread downgrades in pre-crisis transactions. Yet, issuance remains low compared to pre-crisis levels. We recalibrated our European CMBS criteria in 2012.

## Key assumptions

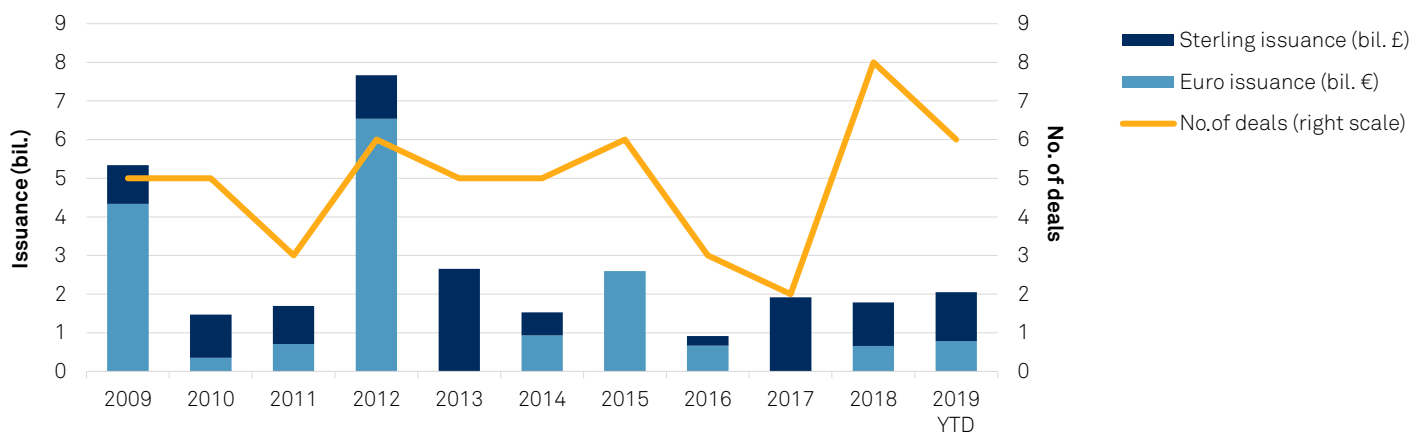
European CMBS transactions are generally asset-specific and thus subject to idiosyncratic risk. We analyze each asset individually and underwrite the net cash flow (NCF) to the lower of in-place and market rental levels. Our criteria also account for market vacancy levels, rollover, new supply, and single tenant risk. Given that we calculate our cap rates (property net cash divided by its value) based on long-term historical averages, they significantly exceed prevailing market levels. This results in S&P Values (our view on a property's long-term average value) that are generally between 25% and 35% below open market values (the decline in the property markets that a 'B' rated class can withstand, all else being equal). We therefore expect speculative-grade classes to be primarily at risk of downgrade or default when the cycle turns. However, only about 11% of our currently outstanding non-credit-linked ratings are in the 'BB' or 'B' rating categories.

**A more severe recession in Southern Europe could exacerbate the effects of a cyclical downturn, but our ratings exposure in the region is limited**

## Key risks

A more severe recession in Southern Europe could exacerbate the effects of a cyclical downturn, but our ratings exposure in the region is limited to only three transactions, of which one is credit-linked and the other two are constrained to speculative-grade ratings.

## Rated European CMBS Issuance



Source: S&P Global Ratings.  
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# CMBS: U.S.

|          |                 |          |      |           |
|----------|-----------------|----------|------|-----------|
| Very low | <b>Moderate</b> | Elevated | High | Very high |
|----------|-----------------|----------|------|-----------|

## Summary Results Under Our Recession Scenario

- We do not anticipate any significant rating impact on CMBS conduit transactions in the U.S. over the next two years even in our stress scenario.
- Single-asset single-borrower (SASB) transaction performance is more asset-specific and thus more subject to idiosyncratic risk.

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## What's changed since the crisis?

We recalibrated our CMBS criteria in 2012, resulting in 'AAA' and 'BBB' conduit credit enhancement levels that are about double, and in some cases triple, that of pre-crisis deals.

## Key assumptions

We do not anticipate any significant rating impact on CMBS conduit transactions in the U.S. over the next two years. In our recessionary scenario, we would expect most conduit rating transitions to be in the speculative-grade category, although this risk is mitigated by the fact that we have generally only rated senior classes in recent vintages. However, there is some limited potential risk in certain post-crisis deals with higher retail or suburban office concentrations. In addition, though generally lower-leveraged, the proliferation of 'pari passu' debt in more recently rated conduits, whereby components of one large loan are placed into several conduits, has introduced additional risk as one loan's distress could potentially affect all the conduits into which it has been placed.

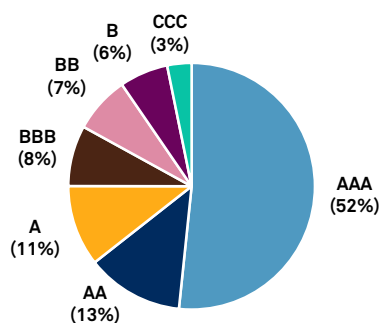
SASB performance is more asset-specific and thus more subject to idiosyncratic risk. SASB deals with exposure to retail, lodging, or suburban offices are inherently more susceptible to volatility, but are cautiously underwritten. S&P value variances to appraised value are typically 30% or more for SASB transactions, creating a significant buffer to market value declines. We would expect mostly speculative-grade classes to be at risk of downgrade when the cycle turns, but we could see limited downgrades reach the low investment-grade rated classes.

**A recession is likely to exert pressure on speculative-grade classes; however, we could see downgrades of low investment-grade rated SASB classes**

## Key risks

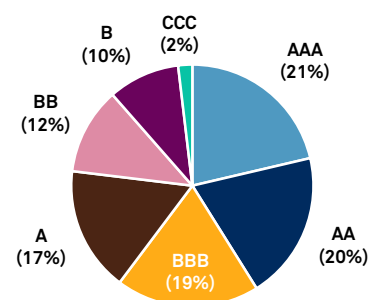
CMBS ratings for earlier post-crisis deals with higher retail or suburban office concentrations and SASB transactions, in general given idiosyncratic risk, would be more vulnerable to a downgrade in a more stressed economic environment.

### 2.0 Conduit Ratings (Q2 2019)



Source: S&P Global Ratings.  
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### SASB And Large Loan Ratings (Q2 2019)



Source: S&P Global Ratings.  
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# Covered Bonds

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We expect stable rating performance and no defaults, considering the outlooks on the ratings on the issuing banks and the covered bond programs, the available credit enhancement, and the presence of unused notches.
- Sovereign downgrades could put pressure on some covered bond ratings in the eurozone periphery.

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## What's changed since the crisis?

The covered bond market is no longer a 'AAA' market, mainly due to lower ratings on some issuers and sovereigns. New jurisdictions outside traditional markets and new structures such as conditional pass-through have emerged. We updated our criteria in 2014 to reflect new regulation, such as the introduction of the European bank recovery and resolution directive, and the experience learned from the crisis.

## Key assumptions

Other than idiosyncratic (non-systemic) risk, we do not anticipate any rating impact on covered bond programs in core European countries as a result of our recession scenario. We expect only moderate deterioration in the performance of prime mortgage and public sector assets found in cover pools. Moreover, issuers typically remove nonperforming assets from cover pools, and usually commit more assets than required to achieve their current ratings.

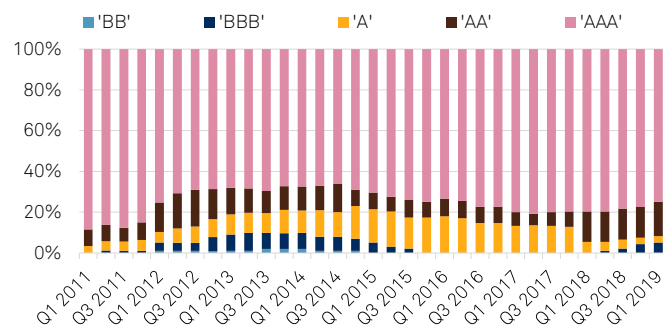
Finally, most programs benefit from so-called "unused notches of rating uplift." For example, when the available credit enhancement exceeds that required for the current rating, meaning that a lowering of the issuer credit rating would not automatically trigger a lowering of the covered bond ratings, all else being equal.

**We expect pressure on covered bond ratings to be mainly due to movements in sovereign ratings**

## Key risks

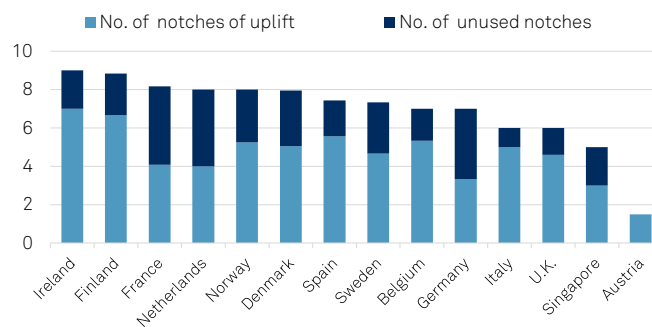
Covered bond ratings in the eurozone periphery are generally limited by the application of our rating above the sovereign criteria. This means that a negative rating action on the sovereign could trigger an equivalent rating action on the covered bond programs.

## Covered Bond Ratings By Rating Category



Source: S&P Global Ratings.  
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## Average Number Of Unused Notches By Country



Note: This chart does not include pass-through programs. Source: S&P Global Ratings.  
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# RMBS: Europe

|          |                 |          |      |           |
|----------|-----------------|----------|------|-----------|
| Very low | <b>Moderate</b> | Elevated | High | Very high |
|----------|-----------------|----------|------|-----------|

## Summary Results Under Our Recession Scenario

- We expect stable rating performance and no defaults. Downgrades are likely to be largely limited to speculative-grade tranches.
- Sovereign downgrades—and potential subsequent counterparty downgrades—could constrain some RMBS ratings.

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## What's changed since the crisis?

Some of the regulatory measures put in place in response to the financial crisis, such as originator minimum retention rules, affect all European securitizations and are designed to improve the alignment of risk and reward between originators and investors. The implementation of the STS framework aims to enhance the transparency of transactions structured to meet its requirements in order to obtain favorable regulatory capital treatment for investors. Other changes such as a simplification of liability structures, are market rather than regulatory driven. Beyond that, country-specific regulation has restricted lenders' ability in those countries to originate high-risk mortgage loans.

## Key assumptions

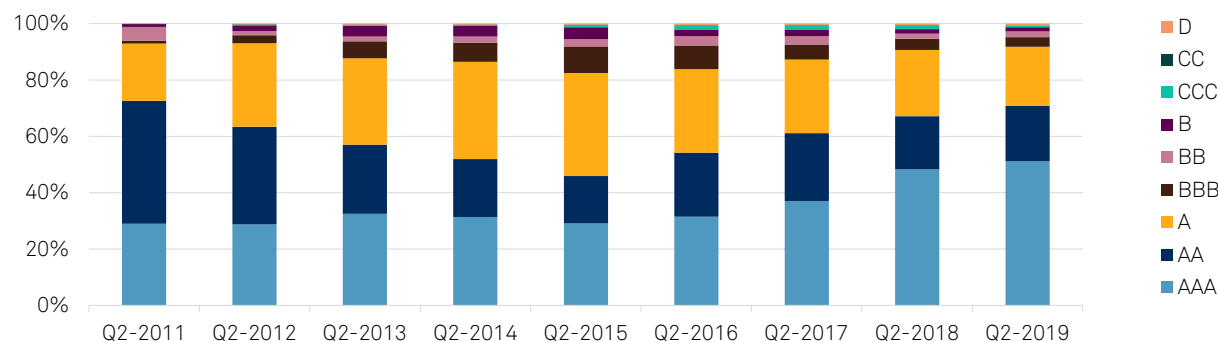
Under our recession scenario, we expect the collateral performance of prime RMBS transactions to only moderately deteriorate, with defaults triggered by increased unemployment and underemployment. Most transactions issued since the crisis are fully amortizing and senior tranches will benefit from deleveraging, providing greater insulation to any future shocks. Although we anticipate a reduction in mortgage finance availability, finance is likely to be available, albeit on less generous terms with restricted eligibility.

**Collateral performance of prime RMBS transactions could only moderately deteriorate**

## Key risks

On the back of weakening sentiment and tightening of lending criteria, demand for houses and housing finance could slow, leading to higher loss severities. Tail risk caused by increasing concentrations to poorer quality borrowers may disproportionately affect certain legacy transactions, particularly in the U.K. where there are a large number of rated pre-2008 transactions outstanding. In a number of countries, notably, Spain, Italy, and Portugal, some ratings are constrained by the sovereign rating. As such, any deterioration in the sovereign rating will directly affect the transaction ratings.

## EMEA RMBS Ratings By Rating Category



Source: S&P Global Ratings.  
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# RMBS: U.S.

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We expect some downgrade risk for speculative-grade paper and limited defaults given the robust housing market as house prices have outpaced long-term averages.
- Capital structure deleveraging and seasoned loans in certain pools that have already weathered a downturn also reinforce our view.

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## What's changed since the crisis?

Mortgage origination quality has changed significantly since the crisis and has been enhanced by regulatory changes such as the QM/ATR rule (requiring lenders to determine a borrower's ability to repay), enhanced alignment of incentives, and substantial due diligence. Structural evolutions, including fewer pro rata mechanisms and credit enhancement floors, have added additional credit enhancement, especially benefitting more senior layers of the capital structure.

## Key assumptions

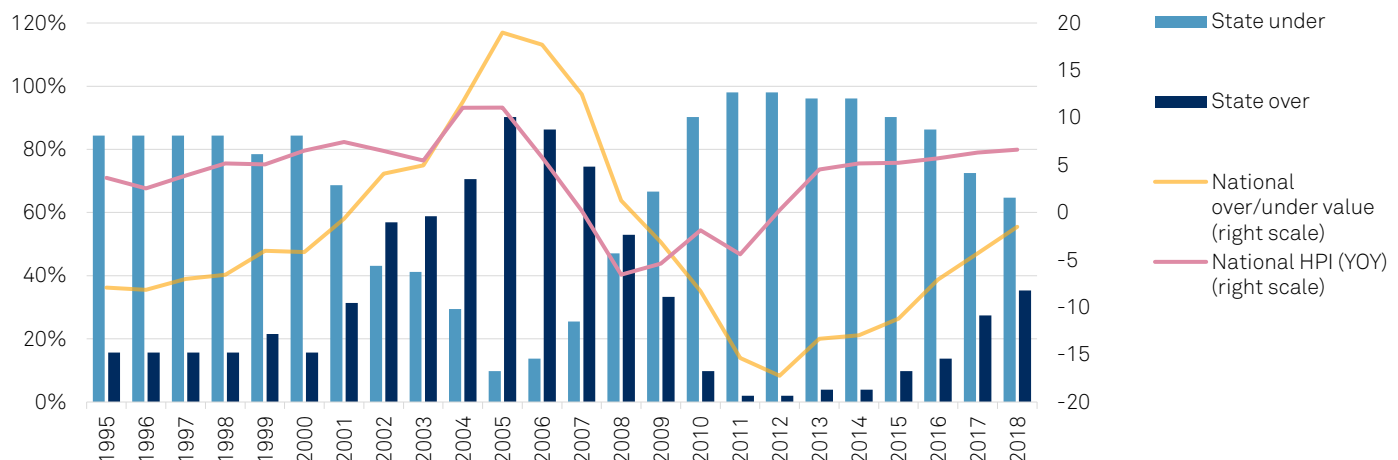
Our recession scenario results in only limited defaults, primarily in the speculative-grade category. This scenario reflects house price appreciation combined with the deleveraging of capital structures. The results also reflect our views of the overall house price-to-income ratio compared to a long-term average ratio. This suggests that national over/undervaluation is more balanced than before the crisis, when we estimated that prices were overvalued by almost 15%. We believe that this balance should help limit house price depreciation in a recession scenario.

## Key risks

Some U.S. RMBS structures may be more sensitive to cash flow fluctuations, which could intensify under our recession scenario if macroeconomic conditions deteriorate. These fluctuations may arise from payment disruptions due to additional loan modifications or exacerbated negative pool performance for pools with a smaller number of assets.

**We anticipate limited defaults with downgrade risk weighted toward the lower end of the capital structure**

## State Over-/Under-Valuation Percentage Versus National Level



Source: S&P Global Ratings. HPI--House price index.  
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# Australia and New Zealand

Very low

**Moderate**

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We expect broadly stable rating performance and no defaults.
- Our stress scenario could affect ratings on speculative-grade RMBS and ABS notes.

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## What's changed since the crisis?

Transactions are generally structured with credit enhancement buffers and mechanisms to support modest collateral performance deterioration under our stress scenario. We see less use of Lenders Mortgage Insurance (LMI) as a form of support in RMBS transactions in Australia. Macroprudential measures have resulted in more conservative lending and underwriting activity in recent years. We updated our RMBS criteria in 2011 to reflect the global housing market experience post-crisis, as well as the higher risks associated with higher household indebtedness in Australia. We also revised our LMI criteria in 2014.

## Key assumptions

We anticipate that in our hypothetical recession the impact would flow through to employment levels, and by extension to some consumers. Most parts of Australia have experienced house price recalibration over the past 18 months. We believe that any further downturn in Australia's macroeconomic conditions would have a more modest effect on house prices than in previous years.

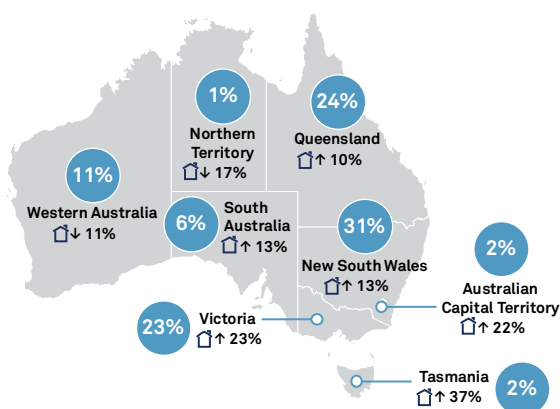
Recent Australian RMBS transactions provide a level of resiliency as they have adequate credit enhancement, generally strong collateral quality, and structural features that protect noteholders from loss in deteriorating economic conditions.

**We expect pressure on ratings to mainly affect less seasoned transactions and the speculative-grade category**

## Key risks

A more sustained housing market downturn than contemplated by our recession scenario, coupled with sharp unemployment increases, is the key risk for consumer asset classes, particularly RMBS. Rating pressure on counterparties, including LMI providers, could cause further ratings volatility.

## State Exposures And Property Price Growth Across Australian RMBS



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# Greater China

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- We expect stable rating performance and no defaults in retail ABS and RMBS transactions, considering their highly-diversified portfolios, shorter-tenor loans, and, by global standards, conservative deal structures.
- Downgrades of key counterparties, such as credit support providers and transaction sponsors, could result in similar pressure on single name-repackaged transactions.

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## What's changed since the crisis?

China's securitization market developed quickly only after 2014. Offering a wide variety of asset-backed financing, it is now the world's second largest securitization market by new issuance volume. Transactions we rate feature conservative asset characteristics and repayment structures. Other than China, securitization activity in this region has been slow since the crisis, with most products being repackaged transactions linked to specific financial institutions' credit quality.

## Key assumptions

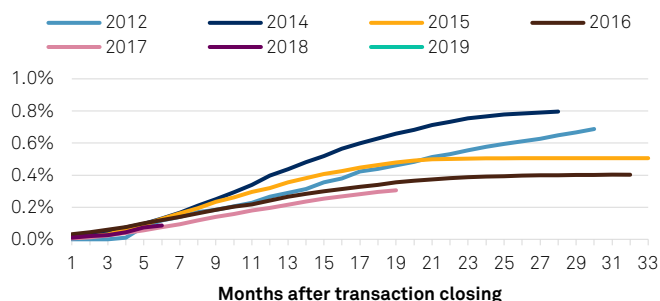
Our ratings primarily relate to retail-receivables transactions (consumer ABS and RMBS). Assets supporting these transactions have short tenors (a weighted-average life of within one year except for residential mortgages, which has a weighted-life of five to seven years), lower loan-to-value (LTV) ratios, and highly diversified obligors. These considerably shorten the exposure period to worsening macroeconomic conditions, and reduce the risk that a stress in certain industries or regions could significantly affect the whole transaction. The assessment of China and Hong Kong under the stress still indicates low unemployment that we believe is unlikely to stall increasing household income and debt serviceability, despite increasing household debt. As a result, we expect the asset performance of retail receivables to only mildly deteriorate under our recession scenario, which could be addressed by accumulating credit enhancement from sequential turbo repayment structures.

**We expect pressure on ratings to primarily come from movements in counterparty ratings**

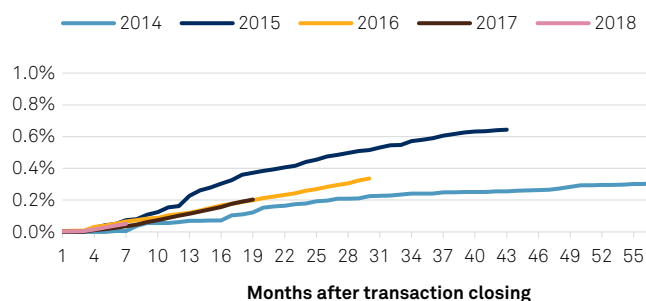
## Key risks

A limited number of transactions relate to bank-credit repackaged transactions, which may have higher rating transition rates under our stress scenario due to the link to banks' ratings.

## Cumulative Defaults of Assets Supporting China Auto Loan ABS



## Cumulative Defaults of Assets Supporting China RMBS



Note: Data as of June 30, 2019. The definition of default may be different from deal to deal. Source: S&P Global Ratings.  
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# Japan

Very low

Moderate

Elevated

High

Very high

## Summary Results Under Our Recession Scenario

- More than 90% of overall outstanding ratings in Japanese structured finance are prime RMBS notes, with most rated 'AAA (sf)'. The remaining ratings relate to transactions in sectors such as auto ABS and commercial ABS.
- We generally expect stable performance from the portfolios backing these notes under our recession scenario. This is because 1) the unemployment rate in Japan would remain low under the scenario; and 2) the underlying portfolios are diversified pools that have been resilient to past economic stress.

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## What's changed since the crisis?

The market is now dominated by RMBS and ABS, with only a few recent CLO/CDO and CMBS issuances. We updated our RMBS criteria in December 2014 to adopt the global framework for analyzing the credit quality of RMBS.

## Key assumptions

We generally expect stable performance for the portfolio backing Japanese securitizations under our recession scenario:

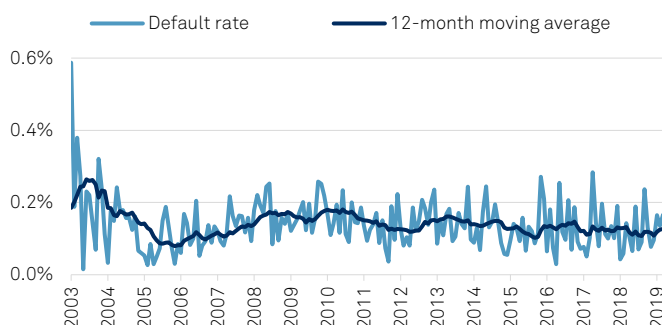
- We think the unemployment rate, which affects the performance of mortgage loans in our view, would remain low, even under our recession scenario. The most recent unemployment rate has been hovering at a historically low level of less than 3%.
- Diversified portfolios, which back most securitizations, would likely maintain stable performance as they have under past economic stress.

**We think pools backing commercial ABS are less resilient to economic stress, than those backing RMBS**

## Key risks

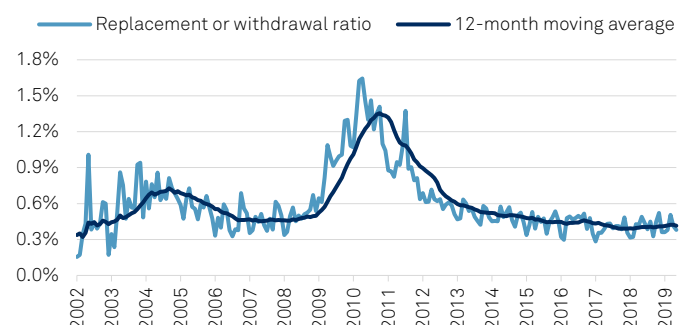
We think the underlying pools backing commercial ABS are less resilient to economic stress than those backing RMBS as there is, in general, industry concentration risk. Thus, we expect the limited number of commercial ABS transactions that we rate to come under pressure in a more stressed economic environment.

### Annualized Default Rate Private Sector RMBS Mortgage Pool



Source: S&P Global Ratings.  
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### Annualized Replacement Or Withdrawal Ratio JHF RMBS Mortgage Pool



JHF--Japan Housing Finance Agency. Source: S&P Global Ratings.  
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# Latin America

|          |                 |          |      |           |
|----------|-----------------|----------|------|-----------|
| Very low | <b>Moderate</b> | Elevated | High | Very high |
|----------|-----------------|----------|------|-----------|

## Summary Results Under Our Recession Scenario

- We expect stable rating performance and no defaults given the available credit enhancement and tenor of the portfolio. The ratings in Argentina and Brazil already factor in a degree of stress given macroeconomic weakness.
- The outlook for the Mexican economy is also challenging. Sovereign downgrades could put pressure on ratings.

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## What's changed since the crisis?

Lessons learned about transaction oversight—and the provision of better information and regulations—such as risk retention compliance, have in our view created better-quality securitization pools. ABS has been the most active asset class in the region since the crisis.

## Key assumptions

**Argentina:** The ratings assigned to securitizations in Argentina already incorporate a material level of stress. In our view, credit enhancement and the short tenor of rated obligations should support stable ratings performance in our recession scenario.

**Brazil:** The ratings assigned to securitizations in Brazil also incorporate a degree of stress, given the country's recent weak economic performance. A GDP contraction and currency depreciation would likely affect the performance of the corporate sector and, thus, corporate repacks in our recession scenario.

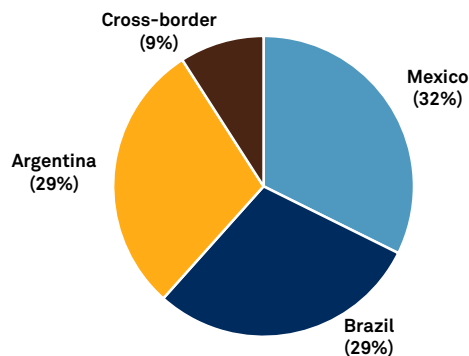
**Mexico:** Under our scenario, we would not expect a major impact on rating performance, even in the speculative-grade category, given that the collateral performance of residential mortgage loans has been stable over the past 10 years. A weaker economy, as would be the case in our recession scenario, could result in a weakening in the performance of securitizations from equipment leasing companies that serve small and midsize enterprises.

**Sovereign downgrades could constrain ratings performance**

## Key risks

Ratings in the region are generally limited by the application of our rating above the sovereign criteria. Conversely, a negative rating action on the sovereign would trigger an equivalent rating action on the rated transactions. Limited economic growth is also a key risk for the region.

## Latin America Outstanding Structured Finance Ratings



Data as of December 2018. Source: S&P Global Ratings.  
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## When The Cycle Turns

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