SECTOR IN-DEPTH

14 April 2021

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Structured Finance – Global

Climate exposure, societal trends lead ESG credit risks for transactions

Summary

Environmental, social and governance (ESG) issues pose higher credit risk to certain structured finance asset classes and global regions, with evolving regulations and shifting consumer demand exposing transactions to the potential for falling asset values or declining cash flow or both. Structural features, short loan tenors and asset diversification help minimize ESG issues' credit negative effects on transactions.

» **Combinations of environmental and social credit risk levels vary by asset class.** Environmental and social risks vary across structured finance asset classes, reflecting the sector's diverse array of transaction types and assets. Governance considerations, in contrast, are generally issuer specific.

» **Environmental: Emissions rules, severe weather pose risk to certain assets.** Securitization and covered bond collateral that are major targets of emissions standards and other environmental rules face asset value risk. Severe weather resulting from climate change can damage asset values and lead to disrupted collections that weaken transaction performance. Though environmental risks are low for most asset classes, three structured finance asset classes have moderate vulnerability: aircraft asset-backed securities (ABS), tobacco settlement ABS, and project finance (PF) and infrastructure collateralized debt and loan obligations (CDOs and CLOs).

» **Social: Demographic and societal trends and customer relations risks can weigh on cash flow**. Levels of social risk vary across structured finance, driven largely by demographic and societal trends and customer relations, with most sectors at low or moderate risk. Evolving policies, litigation and shifting consumer demand expose transactions to cash flow disruptions. Student loan ABS, particularly as it relates to Federal Family Education Loan Program (FFELP) transactions that have the highest exposure to payment plans and direct government control, is the only structured finance sector with high overall social risk.

» **Governance: Alignment of interests and adherence to documentation influence cash flow.** Governance considerations for securitized assets focus primarily on the adherence of the transaction parties to the documentation, the strength of controls on asset quality, and the alignment of interests between key stakeholders in the transaction.

Combinations of environmental and social credit risk levels vary by asset class

ESG credit considerations include a broad range of qualitative and quantitative considerations that have a material impact on a transaction's credit quality.

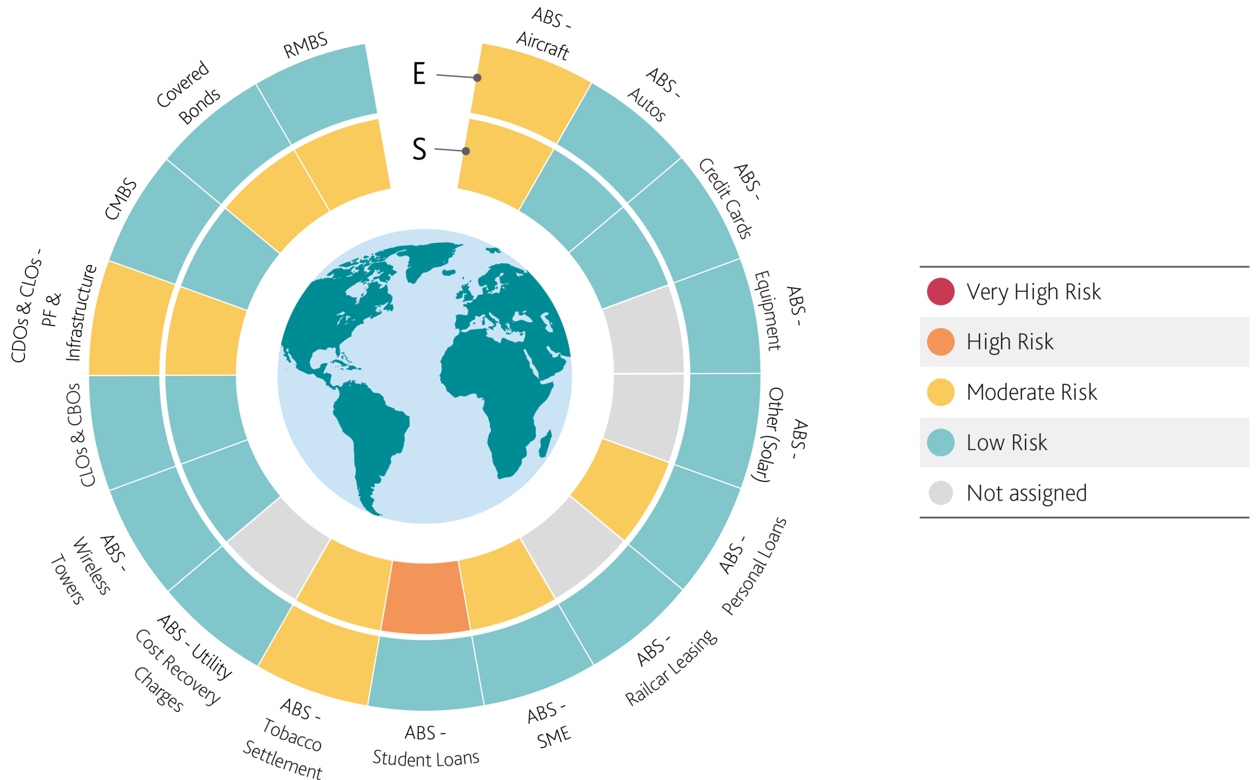
» **Environmental** considerations encompass environmental hazards and the credit consequences of regulatory or policy initiatives that seek to reduce or prevent actual or perceived hazards and their adverse effects.

» **Social** considerations address the risks to, and potential benefits for, a transaction's credit quality as a result of its interactions with or dependencies on employees, customers, supply chain partners, counterparties and society at large.

» **Governance** relates to the framework and processes through which decisions are made and related actions carried out. For structured finance transactions, alignment of interests, the strength of asset quality and amendment controls laid out in the transaction documentation and transaction parties' adherence to the documentation are critical to governance.

For structured finance, environmental and social risks vary across asset classes, reflecting a diverse array of transactions and assets, with a handful of transaction types at greater risk than others (see Exhibit 1). Asset classes are more likely to feature moderate social risk than moderate environmental risk, given that social risks represent a broader range of considerations. Meanwhile, governance considerations are generally issuer specific, and as such do not lend themselves to sector-level analysis.

Exhibit 1
Environmental and social credit risk levels for key structured finance asset classes



We assigned the environmental and social risk scores in December 2020 and October 2019, respectively, and the scores may change over time.
Source: Moody's Investors Service

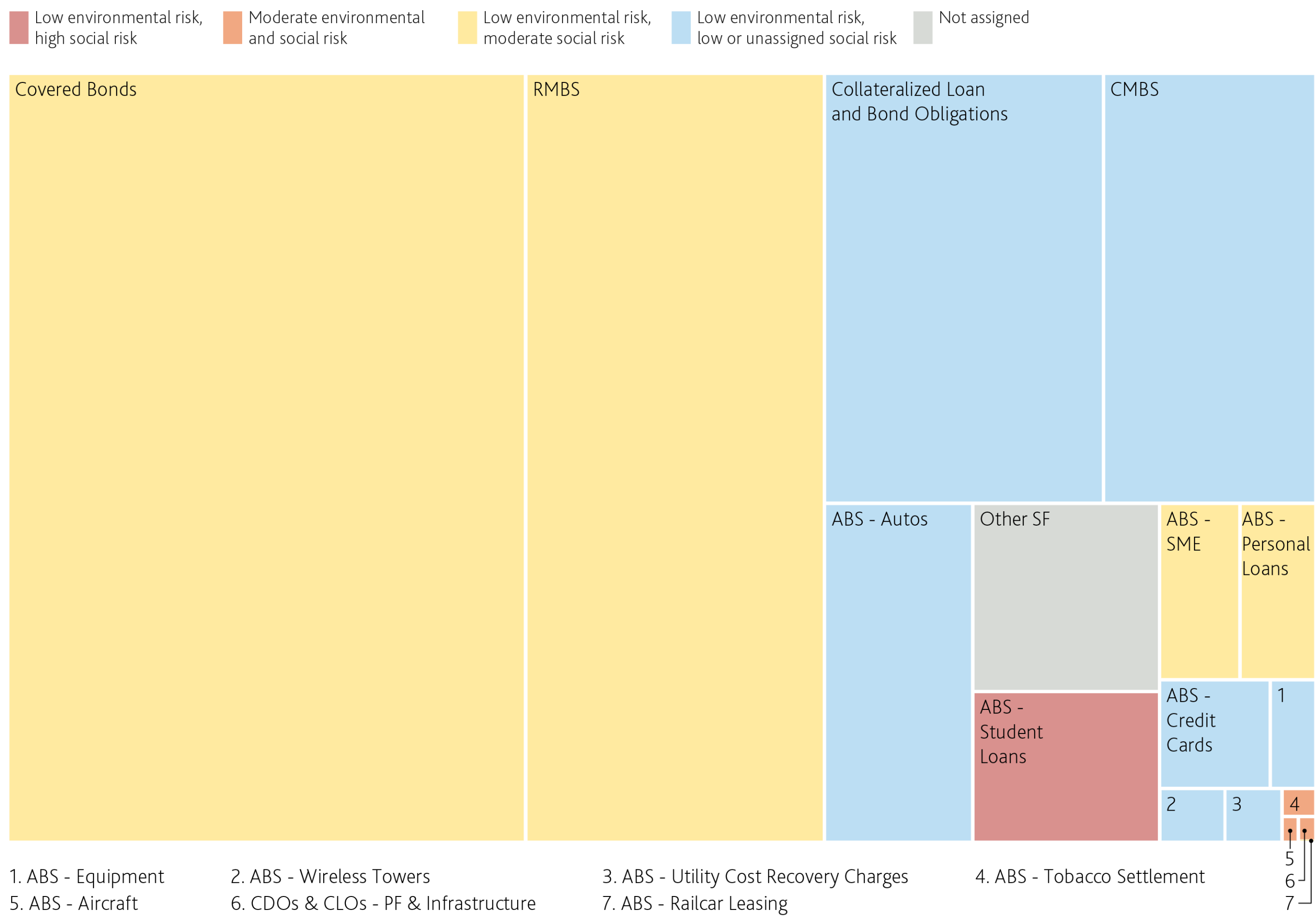
This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

Roughly two-thirds of the approximately $4 trillion of outstanding structured finance debt rated by us belongs to sectors that feature low environmental risk and moderate social risk (see Exhibit 2), led by the covered bonds sector, which itself accounts for roughly 40% of structured finance debt outstanding. Most of the remaining rated structured finance debt outstanding is represented by sectors with low environmental and low (or uncategorized) social risk. FFELP student loan ABS, the only sector that faces high social risk, represents about 2% of structured finance debt outstanding. The three sectors with moderate environmental risk, meanwhile, represent less than 1% of outstanding rated debt. Our evaluations of overall risk levels can change over time as trends change and our assessments of their credit impacts evolve; for example, social risk in residential mortgage-backed securities (RMBS) could be lower than the "moderate" score we last published in 2019, given effective mitigants to the credit impact of broad societal trends on RMBS.

Exhibit 2

Roughly two-thirds of structured finance rated debt is in sectors with high or moderate social credit risk

Sector environmental and social risk sized relative to outstanding rated debt as of March 2021



We assigned the environmental and social risk scores in December 2020 and October 2019, respectively, and the scores may change over time.

Source: Moody's Investors Service

Environmental: Emissions rules, severe weather pose risk to certain assets

Environmental risks comprise regulatory and policy issues, environmental hazards or a combination of both (see Exhibit 3), posing low overall risk to most structured finance asset classes. Environmental considerations that increase capital expenditures and operating costs can reduce cash flow, leading to asset write-downs that erode credit quality.[1]

Exhibit 3
Environmental considerations most relevant for structured finance credit quality

Carbon transition

- Current positioning for carbon transition
- Technology, market and policy risk
- Actions to mitigate risk
- Long-term resilience to risk of accelerated carbon transition

Physical climate risks

- Current and future effects of climate change
- Exposure to heat stress, water stress, floods, hurricanes, sea level rise and wildfires

Water management

- Non-climate-related risks
- Impact of economic activity
- Availability, access and consumption
- Innovations to enhance water use efficiency
- Risk of pollution-related regulatory violations

Waste and pollution

- Non-GHG air pollutants
- Land-based accidents, spills and leaks
- Hazardous and non-hazardous waste
- Circular economy

Natural capital

- Impact on natural systems (soil, biodiversity, forest, land, oceans, etc.)
- Dependency on goods and services derived from nature (agriculture, fiber, fish, etc.)

Source: Moody's Investors Service

Most structured finance asset classes have low overall environmental risk, taking into account structural and transaction-level mitigants. The three asset classes with moderate overall environmental risk are aircraft ABS, driven by current and future emission regulations; tobacco settlement ABS, driven by current and future regulations regarding secondhand smoke and weather events; and PF and infrastructure CDOs and CLOs, with exposure to power-generation projects and the oil and gas sectors (see Exhibit 4).[2]

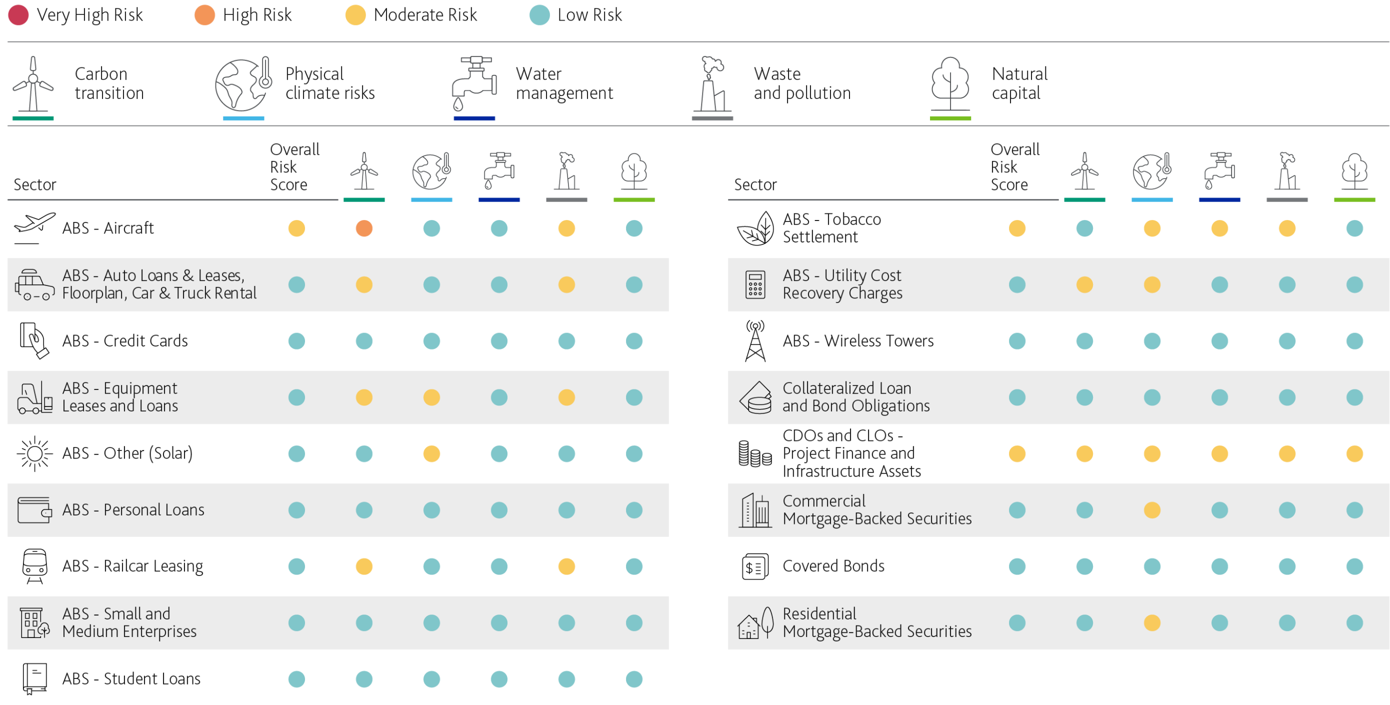
Carbon transition poses risk to asset values and transaction revenue streams

In structured finance sectors backed by contracts for carbon-intensive assets, efficiency mandates can weaken values for assets that do not comply with newer regulations. In other cases, carbon transition can impact revenue streams that depend in part on carbon-intensive energy production.

Regulations, technological innovations weaken value of older assets

Aircraft ABS face transition risks because carbon regulations for airlines in countries around the world will result in greater demand for new, more fuel-efficient aircraft.[3] Current and future regulations could make older and fuel inefficient aircraft more expensive to operate, or require retrofits that may still make them less attractive to airlines, reducing demand for them.[4] The transactions' long legal final maturities also increase their exposure to decreasing asset values over time.

Exhibit 4
Environmental risk levels for key structured finance asset classes



Very High Risk | High Risk | Moderate Risk | Low Risk

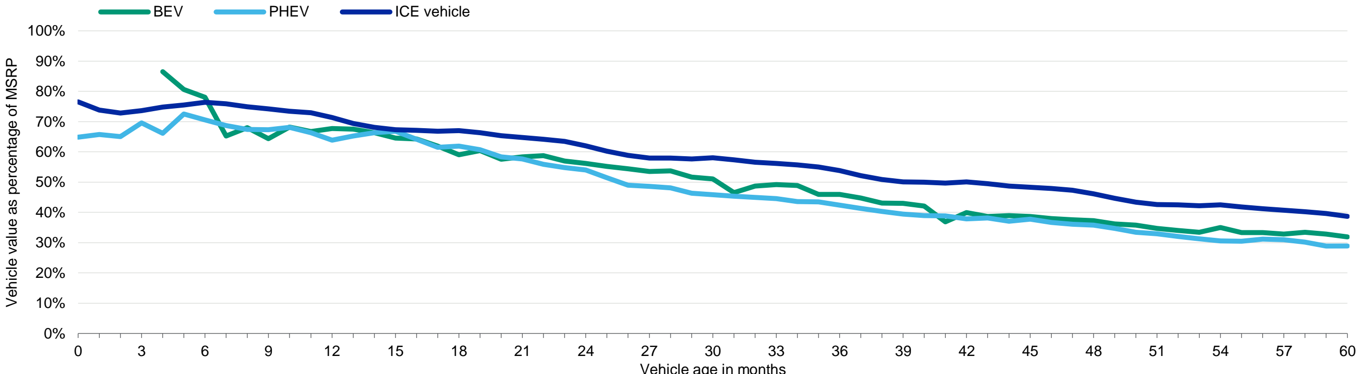
Sector	Overall Risk Score	Carbon transition	Physical climate risks	Water management	Waste and pollution	Natural capital
ABS - Aircraft	Moderate	High	Low	Low	Moderate	Low
ABS - Auto Loans & Leases, Floorplan, Car & Truck Rental	Low	Moderate	Low	Low	Moderate	Low
ABS - Credit Cards	Low	Low	Low	Low	Low	Low
ABS - Equipment Leases and Loans	Low	Moderate	Moderate	Low	Moderate	Low
ABS - Other (Solar)	Low	Low	Moderate	Low	Low	Low
ABS - Personal Loans	Low	Low	Low	Low	Low	Low
ABS - Railcar Leasing	Low	Moderate	Low	Low	Moderate	Low
ABS - Small and Medium Enterprises	Low	Low	Low	Low	Low	Low
ABS - Student Loans	Low	Low	Low	Low	Low	Low
ABS - Tobacco Settlement	Moderate	Low	Moderate	Moderate	Moderate	Low
ABS - Utility Cost Recovery Charges	Low	Moderate	Moderate	Low	Low	Low
ABS - Wireless Towers	Low	Low	Low	Low	Low	Low
Collateralized Loan and Bond Obligations	Low	Low	Low	Low	Low	Low
CDOs and CLOs - Project Finance and Infrastructure Assets	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Commercial Mortgage-Backed Securities	Low	Low	Moderate	Low	Low	Low
Covered Bonds	Low	Low	Low	Low	Low	Low
Residential Mortgage-Backed Securities	Low	Low	Moderate	Low	Low	Low

The category risk level scores reflect inherent sectorwide exposures without accounting for mitigating factors, such as asset diversification or transaction structural features. Overall risk scores incorporate the five category scores and any applicable sectorwide mitigating factors.
We assigned the environmental risk scores in December 2020, and the scores may change over time.
Source: Moody's Investors Service

For **auto ABS,** similar to aircraft ABS, regional changes in emissions regulations or technology, particularly as they relate to fuel consumption, could affect the residual value of vehicles or the recovery value of the vehicles on defaulted contracts. Auto ABS are exposed to vehicle values when the obligor defaults or vehicles are returned and sold at the end of the lease or vehicles are sold out of the transaction.[5] Risk to vehicle values extends to both new technologies, such as battery and plug-in hybrid electric vehicles (BEVs and PHEVs), which have shorter track records and a less certain value proposition, and older technologies, which could become less desirable as newer technologies gain in prominence. Specifically, regional policy initiatives and shifts in consumer sentiment risk lowering the values of vehicles, particularly those with older engines with high carbon dioxide and smog-forming emissions. However, auto transactions have short tenors, limiting the extent to which evolving emissions standards and other regulatory or technological change can affect the value of the vehicles over the life of a particular transaction.

BEVs and PHEVs have tended to depreciate more rapidly than internal combustion engine (ICE) vehicles (see Exhibit 5).[6] Contracts backed by alternative fuel vehicles (AFVs) have constituted only a small portion of ABS pools, though we expect that proportion will grow, and the share is higher among European transactions than those in the US and Asia. Contracts for BEVs have typically accounted for low-single-digit percentages of the collateral backing auto transactions in recent years, though the pace of investment in AFVs is accelerating. AFVs' share of global vehicle registrations will approach 40% by the end of the decade, with the proportion exceeding 70% in Europe, driven in part by tightening carbon dioxide emissions targets and policy support for the production and purchase of AFVs.[7]

Exhibit 5
BEVs and PHEVs have steeper depreciation curves than ICE vehicles
Vehicle value as a percentage of manufacturer suggested retail price (MSRP)



Sources: National Automobile Dealers Association and Moody's Investors Service

Regulations requiring certain emissions or energy efficiency standards for commercial and residential buildings also weaken the values of properties backing loans in **RMBS**, **CMBS** and **mortgage covered bonds**, though the imposition of such regulation is likely to be gradual. Regulations can lower noncompliant properties' valuations if they increase fines and other costs or introduce the need for energy efficiency investments. Lower-valued properties, in turn, increase loss severities on defaulted loans and refinancing risk in CMBS.[8] The risks for mortgage covered bond cover pools will increase over time if mortgage collateral emissions and other characteristics lag regulatory requirements.[9]

The EU's target to decarbonize its building stock by 2050 would pose risks to real estate-backed transactions if implementation weakens property values along with borrowers' ability to service their loans.[10] Private sector initiatives by mortgage lenders covering over 50% of the EU market complement legislative requirements by further developing the definition of energy efficient mortgages.[11] In a US example, New York City's Climate Mobilization Act mandates emissions limits on most commercial and multifamily buildings greater than 25,000 square feet, with provisions for annual reporting and compliance and penalties for exceeding limits.

Sectors related to carbon-intensive industries could lose revenue to carbon transition
Some structured finance sectors face carbon transition risk from dependence on, or at least adjacency to, carbon-intensive industries.

Utility cost recovery charge (UCRC) ABS[12] have moderate exposure to shifts in energy efficiency that could lead to lower electricity volumes sold, reducing the transactions' income from consumption-based surcharges. The risk is mitigated, however, by transaction structures that typically include true-up mechanisms, which allow for adjustments to the cost recovery charges, enabling the bonds to fully amortize within their established maturity.

Railcar ABS have indirect exposure to carbon transition risk because railcar lease revenue depends in part on coal, which typically accounts for about 10% of railcar freight volume. The coal mining and coal terminals sector has very high risk exposure to carbon transition due to expanding renewables use and tightening rules on waste and pollution.

PF and infrastructure CDOs and CLOs typically face moderate carbon regulation risk from exposure to power generation projects and the oil and gas sectors, with higher portfolio exposure translating into greater risk. The midstream energy sector, primarily an oil and gas transportation and processing business, will remain significantly exposed to carbon transition risk as economies pivot away from oil and natural gas in the coming decades.

CLOs, particularly European transactions, have increasingly incorporated ESG-related investment criteria, with one of the most prevalent restrictions prohibiting investments in companies involved in fossil fuel extraction and production. Such restrictions have not meaningfully constrained managers' investment flexibility, though, and the performance of CLOs with ESG investment restrictions has been comparable to that of CLOs without ESG investment restrictions.[13]

Physical climate risks can weaken asset values and lead to borrower hardship

Physical climate risks encompass the effects of climate change, which contributes to extreme weather events. Related transaction losses stem from damage incurred on the assets that underpin transaction cash flows and reductions in economic activity. Examples of hazards include heat stress, water stress, floods, hurricanes, sea level rise and wildfires.

Borrower hardships following weather events often lead to temporary performance deterioration

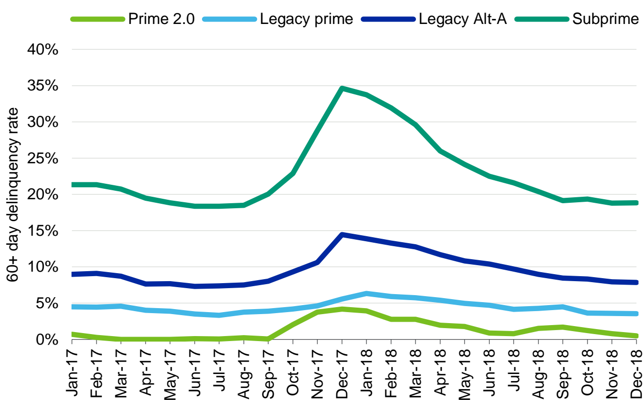
Auto ABS, **railcar ABS**, **CMBS**, **RMBS** and **mortgage covered bond** cover pools are all at risk from physical damage to the assets backing the underlying loans and, along with consumer ABS in general, from payment interruptions driven by financial hardships resulting from extreme weather. Increasingly in recent years, flooding and other property damage from extreme weather[14] and wildfires[15] have affected collateral performance in transactions. However, the credit impact is typically mitigated by factors such as pool diversification, servicer relief efforts, insurance coverage, and transactions' structural features.

Pool delinquencies have often increased in the wake of hurricanes that caused widespread property damage, though servicers have typically offered temporary relief to distressed borrowers. Such relief efforts, though delaying transaction cash flows, help to mitigate long-term performance deterioration. Disasters have temporarily hurt RMBS performance, for example, though it has tended to recover within a year. After Hurricane Harvey hit Houston in 2017, delinquencies among mortgages for borrowers in affected areas rose and then returned to their pre-storm level within 12 months (see Exhibit 6).[16] Auto loan extensions also spiked in the wake of Harvey, along with Hurricanes Irma and Maria around the same time, but quickly fell to prior levels (see Exhibit 7).

Exhibit 6

Delinquencies temporarily rose in areas affected by Hurricane Harvey

Share of RMBS collateral in affected areas at least 60 days delinquent

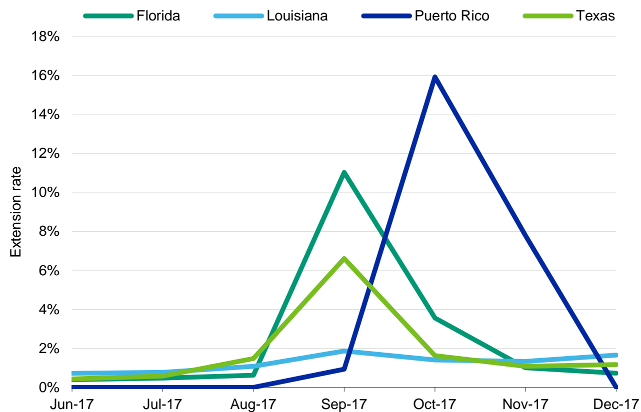


Source: Moody's Investors Service

Exhibit 7

Auto loan extensions spiked in regions affected by the 2017 hurricanes

Share of auto loan ABS collateral granted extensions, by borrower location



Source: Moody's Investors Service, based on data from US Securities and Exchange Commission filings

Pool diversification also typically mitigates the overall performance deterioration from any single weather event. For example, around 6.7% of loans in Australian RMBS we rate were related to properties in areas affected by bushfires in early 2020, though the actual share of loans that were negatively affected by the fires was much smaller.[17]

Insurance coverage on physical assets at risk from weather events also mitigates performance deterioration because it reduces the financial impact on distressed borrowers. CMBS and RMBS collateral typically carries property-level insurance and auto ABS collateral is often covered by vehicle-level insurance. CMBS is typically well covered by insurance for property and casualty, business interruptions, and windstorms and flooding. RMBS investors are also protected by standard hazard and flood insurance.

In Japanese RMBS and ABS, originator support mitigates natural disaster risk. Originators have tended to repurchase at par loans that are at risk of delinquency or default because of natural disasters, thereby removing them from securitized portfolios.[18]

Weather events can impact UCRC ABS, tobacco settlement ABS

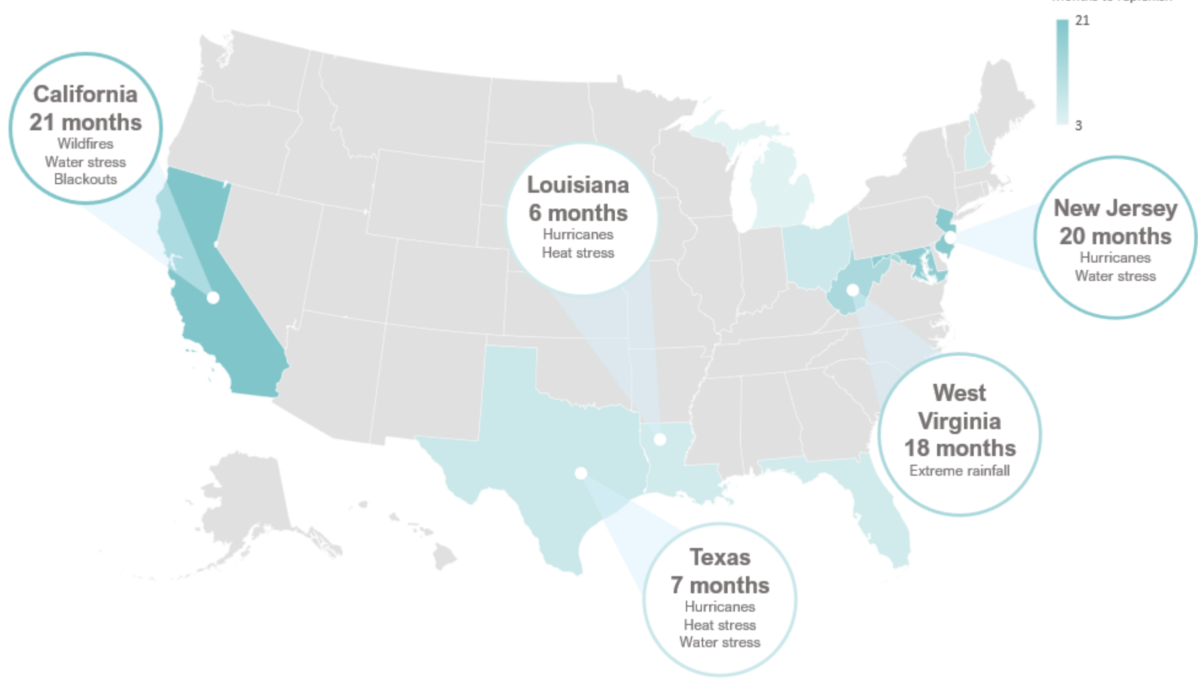
UCRC transactions generally feature moderate physical climate risk because weather events can interrupt cash flows by damaging electricity generation assets or disrupting electricity consumption. Though UCRC transactions do not benefit from high diversification, the larger the service area territory covered by a particular transaction, the less likely that a weather event will impact all of the customers. The mandatory true-up adjustments in the UCRC transactions also mitigate the risk that lost revenue will prevent the bonds from paying down before their maturity date. To replenish their reserve accounts following climate-related events, UCRC transactions have needed close to two years in certain regions (see Exhibit 8).

Tobacco settlement ABS are also exposed to moderate physical climate risk, because severe weather events could pose supply chain issues that reduce revenue.

Exhibit 8

UCRC reserve deficits in certain regions took close to two years to recover after climate-related events

Average number of months for transaction reserves to return to target



Source: Moody's Investors Service

Waste and pollution concerns can increase regulatory risks

Waste and pollution risks include those that derive from air and land-based waste and pollution, including air pollutants, hazardous and nonhazardous waste, and human-made accidents, such as spills and leaks. The waste and pollution category excludes carbon dioxide and methane emissions, which are considered under the carbon transition category, and water pollution, which is related to water quality and treatment and is part of the water management category.

Enhanced scrutiny of diesel emissions that began in 2015[19] highlights the risk of noncompliance with air pollution standards to **European auto ABS**. Values of diesel vehicles, particularly those with older, highly polluting engines, declined across the EU due to fears of driving bans and usage restrictions in major metropolitan areas. The share of diesel vehicles among new European passenger car registrations has been steadily falling, however, and newer diesel vehicles adhere to the stricter Euro 6 emission standards and are less at risk from restrictions than diesels of Euro 5, or older, standards.[20]

Regulation of indoor secondhand smoke, combined with other regulations that make smoking more expensive, lower demand for tobacco products, reducing cash flow to **tobacco settlement ABS**.

Water management is a concern for agriculture-related sectors

Water management risks encompass non-climate-related issues, generally centered around management and governance. These include water availability, consumption, efficiency of use, access, quality, treatment, pollution, innovation, regulation and mispricing.

Obligors in **equipment ABS** with loans or leases for agricultural equipment are vulnerable to water shortages because they rely on a constant water source to operate their businesses. Government aid and geographic diversification help to mitigate these risks. Likewise, as an agricultural crop, tobacco requires a fairly consistent level of soil moisture, thereby exposing **tobacco settlement ABS** to water management risk.

Natural capital concerns lead to regulatory attention

Natural capital refers to assets provided by nature that are essential for human habitation and economic activity. Attention to the linkages between air, land and the oceans, the interconnectedness of life-forms and the importance of biodiversity eventually leads to regulations on business.

PF and infrastructure CDOs and CLOs have exposure to natural capital risks through power generation projects and the oil and gas sectors. Regulations to preserve natural capital, for example, can change the competitive dynamics of specific basins and the midstream oil and gas companies that serve them.

Social: Demographic and societal trends and customer relations risks can weigh on cash flow

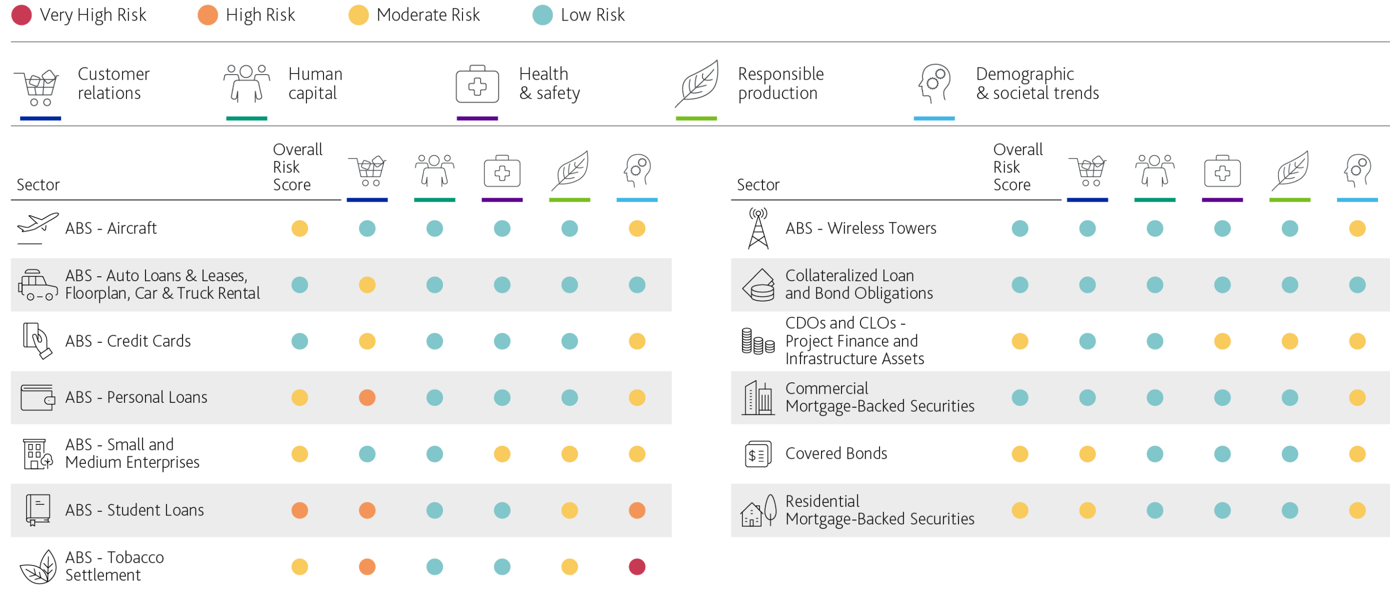
Social issues represent a broad category of considerations that pose varied levels of credit risk and potential benefits to structured finance asset classes. Social issues that can impact a transaction's credit quality result from its interactions with, and dependencies on, employees, customers, supply chain partners, counterparties and society at large (see Exhibit 9). In structured finance, social risks can affect not only the credit quality of the assets but also transaction counterparties, such as the originator, servicer, swap counterparty and account bank.

Exhibit 9
Social considerations most relevant for structured finance issuers

Source: Moody's Investors Service

Levels of social risk vary across structured finance sectors, driven largely by demographic and societal trends and customer relations (see Exhibit 10). FFELP student loan ABS is the only structured finance sector with high overall social risk, reflecting US and state policymakers' significant interest in student debt burdens.[21]

Exhibit 10
Social risk levels for key structured finance asset classes



The category risk level scores reflect inherent sectorwide exposures without accounting for mitigating factors, such as asset diversification or transaction structural features. Overall risk scores incorporate the five category scores and any applicable sectorwide mitigating factors.
We assigned the social risk scores in October 2019, and the scores may change over time.
Source: Moody's Investors Service

Customer relations are a key risk for consumer assets

Customer relations risks encompass the ways in which a transaction's counterparties' interactions with its customers lead to lost business and increased costs, with the potential for financial stress for the transaction. Customer relations issues include the handling of data security and customer privacy, fair disclosure and labeling, and responsible marketing and distribution. Adverse events damage a firm's reputation and increase the potential for litigation and regulatory action, all of which can lead to financial losses that impact a transaction's credit quality.

FFELP student loan ABS are exposed to high customer relations risk because FFELP servicing policies are prescribed by the US government and therefore directly subject to policymakers' goals.[22] Regulators' focus is high on FFELP loan servicers to ensure fair practices, and the consequences for servicers of not following these practices could include lawsuits and fines. Government-prescribed servicing policies can increase FFELP ABS credit risk if they result in greater use of payment plans that subject transactions to slower collateral amortization, thereby increasing the risk that the bonds will not pay back all of their principal prior to their legal maturity.[23] Exhibit 11 shows a timeline of key US student loan legislation.

Customer relations risk in **personal loan ABS** stems from product disclosures, high interest rates and new lenders' business models. Consumer protection legislation could make it more difficult to collect loan payments or realize recoveries on defaulted loans. US marketplace lenders have attracted elevated levels of regulatory attention. Recent regulatory and borrower challenges to marketplace lenders and their third-party lending partners over “true lender” status and interest rate exportation could result in loans being deemed void or unenforceable in certain jurisdictions. Such jurisdictions would include those where the lenders' ability to collect and charge interest payments that exceed state interest rate limits has been successfully challenged.[24]

Exhibit 11
US student loan legislation with a focus on FFELP and federal Direct Loans

Year	Legislation	Description
1965	Higher Education Act	Federal funds provided to state schools for low interest loans
1972	Basic Educational Opportunity Grant Program	Pell Grants designed to offer financial aid to needy students
2001	Economic Growth and Tax Relief Reconciliation Act	Expanded the student loan interest tax deduction
2007	College Cost Reduction and Access Act	Created Income-Based Repayment (IBR) and Public Service Loan Forgiveness (PSLF)
2010	Health Care and Education Reconciliation Act	Ended FFELP originations and expanded federal Direct Loan Program
2010	Dodd-Frank Wall Street Reform and Consumer Protection Act	Required the CFPB and the Secretary of Education to submit a report on private student loan
2015	Revised Pay as You Earn	Expanded this income-driven repayment (IDR) program
2019	FUTURE Act	Streamlined the annual IDR certification process
2020	CARES Act	Permitted borrowers to temporarily stop paying federally owned student loans

Focus on FFELP borrowers (1965–2007)

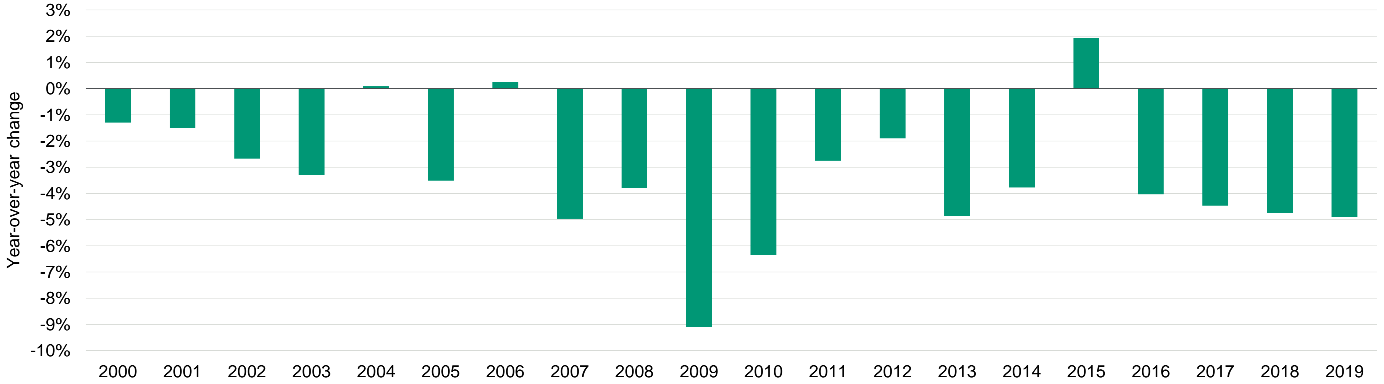
Focus on federal Direct Loan borrowers (2010–2020)

Source: Moody's Investors Service

Credit card ABS lenders face moderate customer relations risks related to regulatory uncertainty around high interest rates and data security and customer privacy. A number of card transactions have suffered from data breaches of lenders and related retailers in recent years, including Target Corporation, Neiman Marcus Group[25] and Capital One Bank. However, high levels of seller's interest in credit card ABS have protected investors from potential losses tied to fraudulent card use. Credit card ABS for which the originator uses a partner bank model can also face customer relations risks similar to those faced by personal loan ABS.

Tobacco settlement ABS face customer relations risk from the potential for increased regulatory scrutiny and tax increases that could decrease cigarette consumption, reducing the revenue available to repay tobacco bonds. The marketing of new products with low regulation also exposes the tobacco companies behind tobacco ABS to litigation risks. Tobacco companies have invested in alternative, lower-risk products to try to ensure their longer term viability.[26] Exhibit 12 shows that US cigarette consumption has declined in nearly every year since 2000.

Exhibit 12
Cigarette shipments have declined an average of 3.3% per year since 2000
Annual change in cigarette shipment volume



Source: National Association of Attorneys General

As **covered bonds** are direct obligations of financial institutions, bank credit quality is covered bonds' primary credit driver. Banks' most significant social risks involve misconduct, poor handling of data security and customer privacy breaches. Banks' financial and operational flexibility and track record of adjusting to social issues, however, limit the potential credit impact to covered bonds. Some social issues affecting a bank, such as the mis-selling of financial products linked to mortgage loans, could weaken loans in a cover pool if they render borrowers less able to pay them off.

Human capital risks can weaken small business obligors

Human capital risks are primarily associated with how an issuer engages with and manages its employees and contractors. Such considerations can encompass labor relations, human resource management, discrimination and diversity and inclusion-related issues.

Sectors with exposure to small businesses, such as **small and medium-sized enterprise (SME) ABS** and some **equipment loan and lease ABS**, are at risk from raises to the minimum wage. Such policies risk increasing expenses and weakening the financial viability of the small businesses whose obligations back the ABS.

Health and safety concerns impact small business, infrastructure projects

The health and safety category incorporates the management of employee and contractor health and safety, mitigation of industrial accidents and responsible waste disposal.

SME ABS and some **equipment loan and lease ABS** backed by obligors with relatively few financial resources can be eroded by health and safety requirements that increase firms' expenses and weaken their financial viability.

PF and infrastructure CDOs and CLOs have significant exposure to project finance and infrastructure linked to sectors such as power generation projects, regulated water and regulated utilities and networks. These sectors face health and safety risks relating to maintaining heavy equipment and machinery, the danger of regular injuries and fatalities in working with gas and electricity, and ongoing health issues from exposure to industrial environments.

The coronavirus's impact on public health is a social risk

The coronavirus pandemic is a social risk under our ESG framework, given its substantial implications for public health and safety. The pandemic has weakened the performance of consumer and corporate assets across sectors and geographies. Some transactions in sectors with high exposure to the outbreak through its dampening of travel and consumption were more acutely affected. In some examples:

» The commercial aviation downturn weakened **aircraft ABS** by elevating the risk of airline bankruptcies and lease deferrals; depressing aircraft lease rates and values; reducing the ability of lessors to release aircraft; and increasing the likelihood of early retirements of older aircraft.

» Retail- and hotel-related commercial real estate backing **CMBS** and **mortgage covered bonds** suffered from decreased consumer mobility and an accelerated shift to online retail following lockdown restrictions.

» Decreased rental car demand weakened rental car companies, increasing the risk in **rental car ABS** that the sponsoring entity would go out of business, leading to a partial fleet liquidation to pay off the outstanding ABS. We downgraded Hertz rental car ABS in 2020 following the significant deterioration in The Hertz Corporation's credit profile that caused it to file for Chapter 11 bankruptcy.

» Consumer and commercial lenders worldwide offered payment moratoriums of varying forms and scope to provide relief to borrowers facing financial hardship. Payment moratoriums reduce transaction cash flow by pushing back scheduled interest and principal payments, but also help limit losses on loans to borrowers who would have otherwise defaulted because of temporary financial hardship. Asset classes with borrowers receiving support from moratoriums include **auto ABS**, **credit card ABS**, **personal loan ABS**, **student loan ABS**, **RMBS**, **mortgage covered bonds**, **SME ABS** and **equipment ABS**.[27]

Responsible production concerns can lead to regulatory and litigation costs

Responsible production is a broad category that incorporates the risks and opportunities around how an issuer manages its supply chain partners and production processes. These include the potential impact of product failures, recalls or contamination, and headline risks from supply chain practices, such as human rights controversies and violations.

Student loan ABS with loans covering for-profit school tuition face risks from a regulatory focus on misleading claims made during the origination process about employment outcomes. Such enrollment practices have triggered fines and legal costs, and in extreme

cases, can lead to school closures that elevate loan default rates by worsening the job prospects for students who are unable to attain a degree.[28] FFELP loans face a different responsible production risk in that, having been effectively subsidized by the US government to help students afford college, they lacked risk-based underwriting. This risk is mitigated in FFELP ABS, however, by a federal guarantee.

Other examples of responsible production risk include:

- Finance companies in the US and other markets originate indirect auto loans to non-prime borrowers through their relationships with franchise and independent dealers, potentially generating responsible production risk for some **auto loan ABS**. Dealer fraud can lead to the risk of early payment defaults, which can be mitigated by representations requiring repurchases of early-defaulting loans.
- Issues that arise with respect to production processes and supply chain partners could increase risk for transactions with large exposure to certain businesses. Vulnerable sectors include **SME, equipment, and fleet lease ABS**, which are backed by contracts to businesses in an array of industries, including healthcare, construction and retail. Other vulnerable sectors include **rental car ABS**, which are backed by a single lease to the rental car company for the underlying vehicle fleet.
- Social concern about tobacco farming's impact on the environment and economies and the use of child labor in agriculture can lead to litigation costs and reputational damage that weaken the credit of tobacco companies, the ultimate obligors in **tobacco settlement ABS**.
- **PF and infrastructure CDOs and CLOs** have moderate responsible production risks related to their exposure to power generation projects, regulated water and regulated utilities and networks, which face supply chain risk from their need to source fuel and other equipment.

Demographic and societal trends reach across structured finance asset classes

The demographic and societal trends category reflects the credit effects of external social trends. Key issues include changing demographics, such as aging populations and generational shifts in values; concerns over fair pricing and access to essential goods and services; and social agendas, such as public health and anti-addiction campaigns.

Households' and lawmakers' increased focus on postsecondary school affordability has led to greater use of payment plans that slow collateral amortization for **FFELP student loan ABS**. Concerns about student debt levels have also led politicians to give more consideration to student loan bankruptcy dischargeability, which would increase loan defaults and the severity of losses.[29]

Trends and preferences that drive demand for space affect building owners and the credit risk of commercial real estate backing **CMBS** and some **mortgage covered bonds**. As the wealth and income gap continues to grow, local governments and regulatory agencies are likely to address housing affordability through incentive systems such as “smart zoning” and new tax benefits for affordable housing construction, as well as through penalties such as rent control.

Other examples of the effects of demographic and societal trends include:

- Societal trends benefit **wireless tower ABS**, reflecting robustly growing data consumption as the use of mobile devices and adoption of the Internet of Things rises, increasing the value of the collateral. Similar trends, however, are a credit negative for **credit card ABS**, with credit card use at risk of declining as mobile and online payments become more popular.
- Some **mortgage covered bonds** are moderately exposed to demographic and societal trends, such as government policy that can influence underwriting standards and servicing policy. In addition, US reverse mortgage transactions are exposed to mortality rates and trends related to the timing of when borrowers move to long-term care facilities.
- Increased consumer awareness and a regulatory agenda to use cleaner energy will present risks to **PF and infrastructure CDOs and CLOs**, and shifting consumer preferences for smoking reduces the revenue available to repay **tobacco ABS**.

Governance: Alignment of interests and adherence to documentation influence cash flow

Governance is a set of controls, policies, and procedures that help direct and manage an issuer's business and financial activities (Exhibit 13). Governance considerations for securitized assets focus primarily on the strength of controls on asset quality and amendments laid out in the transaction documentation and the adherence of the transaction parties to the documentation. The strength of key transaction parties, such as the originator, manager, servicer, and trustee, can influence cash flow or transaction credit quality. A structured finance transaction's legal arrangements that provide for bankruptcy remoteness are also key governance considerations.

Exhibit 13
Governance considerations most relevant for structured finance issuers

Source: Moody's Investors Service

Financial strategy & risk management is addressed in transaction documentation

The financial strategy and risk management category addresses a structured finance transaction's controls over asset quality. Securitizations typically have representations and warranties and covenants with respect to the collateral. Transactions in certain sectors, such as RMBS, also typically include some level of due diligence performed on the assets.

Transactions that are actively managed, have pre-funding periods, or have revolving collateral pools may feature documentation that delineates rules that govern asset eligibility. **CLOs** feature documentation that stipulates the asset types that qualify as eligible collateral, the maximum proportions of the collateral pool that different types of assets may account for, and the rules around which assets may be traded in and out of the pool. **RMBS warehouse** transactions also include eligibility criteria that constrain the potential composition of the pool. **Covered bonds** are supported by legal frameworks and, with the loans remaining on the issuer's balance sheet, align the interests of the issuer with prudent management of the cover pool.

Management credibility & track record of transaction parties impact cash flow

In structured finance, the strength of key transaction parties, such as the originator, manager, servicer, and trustee, can influence cash flow and transaction credit quality. First-time transaction sponsors and new business models pose elevated risks if they lack a performance track record through a complete credit cycle. **CLOs**, for example, have provisions that ensure an orderly replacement of the collateral manager or the assignment or delegation of its duties. A financially weak sponsor and servicer could, in certain cases, add variability to transaction performance with the risk that they lose the ability to effectively service the assets. Backup servicing agreements, however, partially mitigate this risk.

Organizational structures include legal arrangements for bondholder protection

The organizational structure of structured finance transactions includes the legal arrangements that provide for bankruptcy remoteness.[30] Securitizations typically use bankruptcy-remote special purpose entity (SPE) structures, which limit the transaction's

ability to issue additional debt and engage in activities other than those related to the underlying assets and the transaction. Such structures help to protect bondholders from bankruptcy risk.

Transactions may also be structured to incentivize counterparties to take actions that are in the best interests of the noteholders. An example of such a structure includes the sponsor or manager taking a stake in the continued performance of the assets through the retention of some of the transaction's debt or equity.

Covered bonds are issued by credit institutions, so their exposure to governance risk aligns materially with the institution's exposure. If the institution fails, there is recourse to a pool of assets that is subject to a country-specific legal and regulatory framework.[31] The framework typically ensures a high level of accountability by regulating how the collateral should be managed and protected.

Compliance & reporting considerations define data accuracy and transparency

Compliance and reporting focuses on transparency, the timeliness and accuracy of financial reporting, audit quality, compliance controls and certain regulatory violations or litigation. Weak internal controls within transaction parties risk errors and mismanagement that could lead ultimately to litigation or regulatory sanctions, potentially lowering future transaction cash flow.

Structured finance transactions can include a variety of mechanisms to ensure the independent verification of important data. A significant share of **US RMBS**, for example, now requires independent reviews of all seriously delinquent loans to determine whether they breached any loan-level representations and warranties. Third-party reviews in RMBS support loan quality because they ferret out defective loans and strengthen the integrity of the loans' reported characteristics.[32]

Board structure, policies & procedures encompass risk management frameworks

Board oversight includes involvement in setting and monitoring a firm's risk appetite and ensuring that a proper risk management framework is in place. In a securitization context, independent directors help protect against the voluntary bankruptcy of the issuing SPE. In situations in which the independent directors have permissibly waived fiduciary duties to the equity, independent directors typically must consider only the interests of the SPE and not the interests of the sponsor or its affiliates in determining whether to vote to file for voluntary bankruptcy.

In addition to independent directors, most **CLOs** and **PF and infrastructure CDOs** achieve independence from transaction parties through the use of a structure in which the equity in the issuer is owned by a Cayman charitable trust. In **aircraft ABS**, the issuers' boards are able to direct certain actions that the servicers take with respect to liquidation and re-leasing of aircraft to maximize asset value.

Appendix: Assessing sector exposure to environmental and social risks

Our heat maps (Exhibits 4 and 10) provide qualitative assessments of the overall credit materiality of environmental and social risks for individual sectors. We regard environmental and social risks as material if they result in visible pressure on the credit profiles of a broad set of issuers, either today or in the foreseeable future. In assigning an environmental or social risk score, we considered a sector's exposure to environmental or social risks in their totality, as well as industrywide mitigants to these risks. Sector classifications are based on our rating methodologies and reflect only entities that we rate within a given sector.

To assess a sector's environmental and social credit risks, we first considered each sector's inherent (unmitigated) exposure to different categories of environmental or social risk and assigned a category score of very high, high, moderate or low to describe the sector's exposure to each risk category. We then took these category scores and any applicable sectorwide mitigating factors into consideration to assign an overall environmental or social risk credit score to each sector (the below exhibit shows our scoring definitions).

Overall Sector Environmental and Social Risk Scoring

Our overall scores provide a qualitative assessment of the credit materiality of environmental and social risks. In this context, we regard environmental and social risks as material if they result in visible pressure on the credit profiles of a broad set of issuers, either today or in the foreseeable future. In assigning a score, we consider a sector's exposure to environmental and social risks in their totality, as well as sector-wide mitigants to these risks.

VERY HIGH RISK	For sectors scored red overall, the credit materiality of environmental or social risks is considered "very high risk". As such, material pressures from environmental or social risks are visible for issuers' credit profiles currently, or there is a very high likelihood that these will crystallise in the future. There is also limited scope for most issuers to adjust to or manage these risks in the near term without major structural, financial and/or policy realignment.
HIGH RISK	For sectors scored orange overall, the credit materiality of environmental or social risks is considered "high risk". As such, credit pressures from environmental or social risks are present, or are likely to crystallise in the future, but are less influential for issuers' credit profiles compared to sectors scored red. There is also typically greater scope for issuers to adjust to or manage environmental or social risks; for example, by adapting business models, changing policies (in the case of governments), or by passing on expected cost increases to customers or taxpayers.
MODERATE RISK	For sectors scored yellow overall, the credit materiality of environmental or social risks is considered "moderate risk". As such, credit pressures from environmental or social risks are less pronounced, or are less likely to develop in a way that is influential in the future compared with sectors scored orange. Sectors have inherent exposure to one or more environmental or social risks, but there is a reasonable expectation that most issuers can adapt to or manage these risks over the medium term in a way that substantially mitigates the overall impact on credit quality.
LOW RISK	For sectors scored blue overall, the credit materiality of environmental or social risks is considered "low risk". As such, there is little pressure on issuers' credit profiles currently, and a low likelihood that they will manifest in the future. Low risk sectors may have some exposure to one or more environmental or social risks, but there is significant scope to adjust or manage these risks. Remediation is generally routine, costs can easily be passed along to customers or taxpayers, and/or regulations are unlikely to become meaningfully stricter over the foreseeable future.

Moody's related publications

» ESG – Global: 2021 outlook – Stimulus, transparency and policy alignment to amplify ESG trends, 3 February 2021

» ESG – Global: Heat map: Sectors with $3.4 trillion in debt face heightened environmental credit risk, 14 December 2020

» General Principles for Assessing Environmental, Social and Governance Risks Methodology, 14 December 2020

» Structured finance – US: Heard From the Market: Moody's Structured Finance ESG Roundtable, 21 February 2020

» ESG – Global: Heat map: Social considerations pose high credit risk for 14 sectors, $8 trillion debt, 31 October 2019

» ESG — Global: Governance considerations are a key determinant of credit quality for all issuers, 19 September 2019

» Cross-Sector — Global: Social issues can be material to private issuers' credit quality but are not typically the primary driver, 20 February 2019

» Structured finance — Global: Green finance sprouts across structured finance sectors, 13 November 2018

Endnotes

1 Environmental considerations also increasingly influence consumer preferences, potentially supporting credit quality for companies with increased demand for products and services.

2 For information on our environmental risk scoring, see ESG – Global: Heat map: Sectors with $3.4 trillion in debt face heightened environmental credit risk, 14 December 2020.

3 See Passenger airlines and aircraft lease ABS – Global: Heard From the Market: Commercial aviation conferences, Dublin 2020, 13 February 2020.

4 Lower demand for older, less-efficient aircraft would weaken transaction cash flows if aircraft are re-leased at lower rates at the end of their terms or if residual values on sold aircraft decline. See Aircraft lease ABS — US: An overview of aircraft lease ABS, 17 September 2019.

5 Lease transactions are also exposed to vehicle values when the lessee returns the vehicle to the lessor at the end of the lease term. Dealer floorplan loan and rental car transactions face exposure to vehicle values when a dealer or the rental company defaults.

6 See Auto ABS — US: Residual value risk is amplified for battery electric vehicles, 15 December 2017.

7 See Automotive – Global: Automakers' move to alternative fuels will hurt returns; updated forecasts show faster adoption, 25 March 2021.

8 See RMBS and CMBS — EMEA: Energy efficiency targets will weaken the credit quality of noncompliant real estate, 10 December 2018.

9 See Covered bonds – Europe: EU energy efficiency agenda increases credit risks for noncompliant covered bond collateral, 17 April 2019.

10 See ESG – EMEA: Emission pricing poses low risk of losses for RMBS and covered bond mortgages, 4 November 2019.

11 See Structured Finance: EU banks' energy-efficient mortgage plan will increase risk for structured deals with noncompliant building collateral, 10 December 2018.

12 UCRC transactions are backed by the rights of electric utilities to impose, collect and receive a special charge on all customers who receive electricity delivery service in the utilities' service territory.

13 See CLOs – Global: ESG criteria proliferate among CLOs but impact on investment flexibility remains limited, 7 April 2021.

14 See Structured finance — US: Credit impact of 2017 hurricanes on securitizations remains limited, 15 March 2018.

15 See Residential MBS: RMBS' Low Exposure to Areas Affected by California Wildfires Mitigates Credit Negative Effects, 19 October 2017.

16 See RMBS — US: More frequent natural disasters heighten risk; insurance and servicers' actions mitigate losses, 15 April 2019.

17 See RMBS – Australia: Bushfires highlight growing natural disaster risks, but immediate impact on RMBS is small, 9 January 2020.

18 See Structured finance – Japan: Natural disasters pose growing risk for ABS and RMBS, but mitigants exist, 23 May 2019.

19 See ABS — Global: Emissions Issues Are Credit Negative for VW's Auto ABS Around the World, 29 September 2015.

20 See Auto ABS — EMEA: Potential diesel driving bans in Europe unlikely to weaken collateral backing ABS, 1 November 2017.

21 For information on our social risk scoring, see ESG – Global: Heat map: Social considerations pose high credit risk for 14 sectors, $8 trillion debt, 31 October 2019.

22 See Student Loan ABS – US: Student loan burdens drive high social risk, 12 October 2020.

23 For example, we downgraded 260 FFELP ABS tranches in 2016 as a result of increased use of income-based repayment plans that led to slower loan repayments and threatened timely payoffs before tranche maturities.

24 See Consumer and Small Business ABS – US: 'True lender' rules for certain online loans would further cut deals' legal risks, 15 September 2020.

25 See No Impact on Credit Card ABS from Card Data Breaches, but More Damaging Attacks Still a Concern, 21 May 2014.

26 See Tobacco – Global: Health implications drive high social credit risks but impact varies by product, 15 June 2020.

27 See Structured Finance – Global: Payment moratoriums disrupt transaction cash flow while helping avoid borrower defaults, 12 May 2020, and Structured Finance – Global: Servicing policy and government mandates drive varying exposure to payment moratoriums, 22 July 2020.

28 For example, the for-profit college chain University of Phoenix and its parent company, Apollo Education Group, reached a record $191 million settlement with the Federal Trade Commission (FTC) on 10 December 2019. The settlement is the largest that the FTC has obtained in a case against a for-profit school and resolved charges that the school allegedly advertised deceptive claims about post-graduation employment opportunities and its curriculum. Under the settlement, University of Phoenix paid $50 million in cash and canceled $141 million in student debt.

29 Student loans are exempt from dischargeability in bankruptcy except in rare cases of severe borrower financial hardship.

30 See Bankruptcy Remoteness Criteria for Special Purpose Entities in Global Structured Finance Transactions, 7 October 2014.

31 There are a small number of covered bonds that are issued outside of country legal frameworks and governed only by transaction documents.

32 See RMBS – US: Improved governance will support performance for post-crisis RMBS, 19 September 2019.

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