BUILDING STRONGER PORTFOLIOS

ESG Integration

INVESTMENT-LED, EXPERT DRIVEN

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J.P.Morgan
Asset Management

Fixed Income

As bond investors, we view ourselves as lenders of our clients' money, and we are committed to delivering strong risk-adjusted returns. Consistent with this philosophy, our Global Fixed Income, Currency & Commodities (GFICC) investment process is research-driven and globally integrated.

We expect the issuers in our portfolios to conduct business in a sustainable manner and to demonstrate high standards, and we believe that assessing material ESG risks and opportunities is one of the drivers of long-term performance. We explicitly and systematically take into consideration relevant and material ESG issues, alongside other fundamental factors, in our proprietary analysis and monitor these factors throughout our investment process.

While there are nuances in how we implement ESG integration based on the differences that exist across fixed income sectors, we have a consistent approach that spans three pillars: proprietary research, engagement and portfolio construction.

Proprietary research

We utilize a disciplined and systematic process to evaluate and identify attractive investment opportunities through analysis of fundamental, quantitative and technical investment factors. Proprietary research forms the foundation of our approach to ESG integration, with over 68 career research analysts dedicated to thoroughly analyzing every aspect of an investment, including ESG factors where material and relevant.

Our proprietary research process incorporates inputs such as company regulatory filings, annual reports, company websites, direct communication with companies and government issuers, media, third-party research and proprietary J.P. Morgan Asset Management research. Other inputs include sell-side investment research and reports from industry groups. We have also developed a proprietary materiality matrix, which highlights the key ESG-related risk factors across all fixed income markets. This tool serves to guide analysts' research efforts, ensuring that they focus on the specific topics within each sector that have the most impact. See EXHIBIT 10 for an excerpt of this materiality matrix.

Analysts also have access to third-party ESG data within our research database, which is displayed for each issuer in various ways to track individual environmental, social and governance scores, as well as to observe changes over time. This quantitative data is a supplement to, and not a dictator of, our analysts' views. Our analysts form their own views based on their research and judgment, and this is articulated in a written research report, which contains a specific section for ESG comments.

ESG analysis and research are visible on our centralized technology platform, Spectrum™, and are shared across all investment teams, including fixed income and equities, enabling greater collaboration and leverage across the J.P. Morgan Asset Management platform.

Engagement

Although we do not carry voting rights as bondholders, we engage on a wide range of ESG issues with a variety of market participants.

The C-suite relationships that our research analysts have developed over their careers enable us to engage regularly with company management and representatives of government issuers on matters that are material to our credit assessment, including relevant ESG factors. We also aim to contribute to positive change by participating in industry forums and regularly consulting with third-party data providers and rating agencies.

Our scale and position within the asset management industry allow us significant representation across asset classes: We often conduct engagement at a firmwide level or with our equity counterparts and our centralized Investment Stewardship Team, where our specific company interests align.

The results of our ESG engagement are reflected in the research reports produced by analysts, and they feed back into the overall view of an issuer, thereby directly influencing investment decisions.

Portfolio construction

All qualitative analysis and quantitative metrics for ESG are housed in our common technology platform, Spectrum™, to ensure full transparency and access for all investors. Portfolio managers have a daily view of their exposure to the risks associated with ESG factors, which can also be customized depending on the nature of the portfolio.

In addition to the in-depth, bottom-up research our analysts conduct into each bond, continual monitoring is required to understand the ongoing ESG profile of each portfolio. Our independent risk management team has developed periodic risk reports, sent directly to portfolio managers and accessible in our systems, to enable the portfolio managers to understand the ESG risks to which they are exposed and to identify potential outliers—issuers that stand out as having significantly better or worse ESG scores and practices than their peers.

Given the scale and diverse nature of fixed income markets, each of our sector teams takes a tailored approach to this common GFICC ESG integration process.

- **Corporate credit:** For investment grade (IG) and high yield (HY) corporate issuers across both developed and emerging markets, relevant ESG risks are systematically considered as part of bottom-up fundamental analysis. Included in this fundamental research are the impacts to both current and future cash flows from ESG risks and opportunities. If the analyst believes that the ESG factors are material and may impact issuer risks, this view will be reflected in the overall credit opinion.

  The proprietary fundamental research of our credit analysts incorporates insights from third-party ESG data, research reports and company engagements. Since third-party ESG data is not sufficient in emerging markets, our emerging market (EM) credit analysts supplement their research by consulting with the companies they cover to answer a list of ESG-related questions. This is done in collaboration with equity colleagues, where coverage overlaps and information barriers allow.

  Based on their holistic review of issuer fundamentals and market conditions, IG credit and EM credit analysts perform a proprietary ranking process. Analysts also explain the contribution of ESG factors to their overall issuer view in the "ESG comments" section of their research communication.

  Portfolio managers have access to both the proprietary analyst issuer rankings and third-party ESG scores, and take this information into account to assess the fundamental, quantitative and technical factors in the marketplace and arrive at an investment decision. In addition, IG credit and EM portfolio managers consistently review and discuss ESG outliers at regular meetings with analysts, which fosters greater collaboration and understanding of ESG factors.

- **Developed market sovereign debt:** Our ESG views are conveyed through a scorecard process in which we assess and rank each country's standing on a variety of factors, including those specifically related to environmental, social and governance topics. These scores form the basis of our quantitative analysis of a country's sovereign credit risk and are supplemented by qualitative factors such as the impact of political developments on the fiscal and economic outlook. The scorecard metrics that specifically pertain to ESG include: unemployment rate, government deficit, government debt, control of corruption, Worldwide Governance Indicators, demographics, education levels, energy intensity of GDP, renewable energy, energy imports, competitiveness and ease of doing business. The sovereign scores, which are tracked and plotted over time to provide insight on each country's trajectory, ultimately influence our investment decisions.
- **Emerging market sovereign debt:** Our analysis of EM sovereign debt consists of several proprietary tools to assess a country's ability and willingness to repay its debt, including our Country Fundamental Index (CFI) and Country ESG Index (CESGI). The CFI model provides an independent, objective measure of creditworthiness (by incorporating a number of fundamental indicators spanning solvency, liquidity and structural factors) that is used to calculate fair value spreads. The CESGI model provides a holistic quantitative assessment of ESG factors that is used to calculate an ESG-adjusted fair value spread. The CESGI is constructed by considering over 30 ESG indicators and focusing on those that have more significance in explaining the difference between country spreads and CFI-implied fair value. These factors include: carbon emissions, vulnerability to environmental risks, poverty, gender equality, ease of doing business, corruption and short-term political risks. The output of these quantitative models is supplemented with qualitative comments, informed by analyst research and regular country visits to meet with central bankers, government officials and local analysts.
- **Securitized products:** We conduct bottom-up research on both the underlying collateral and the deal structure of securitized products. The analysis of the collateral focuses on the quality of the underlying receivables and the likelihood that future cash flow payments will ultimately be received. The primary focus of assessing the deal structure is the structural factors that can alter the payments flowing from the collateral to different tranches in the deal, to better understand each security's expected total return under different prepayment or expected loss scenarios. ESG factors are key components of both the collateral and structural analysis we perform, as they can have a notable impact on future cash flows. We have developed a proprietary materiality matrix, which highlights the sources of the most material ESG risks by subsector (for example, conduit mortgage-backed securities [CMBS], asset-backed securities [ABS] airplanes, ABS consumer loans) to guide and direct the efforts of our research analysts (see Exhibit 10). Some of the most material ESG risks in the securitized space that we assess as part of our ongoing analysis include (but are not limited to): geographic concentration and exposure to extreme weather events; carbon footprint; energy, water and waste management; predatory lending; consumer protection laws; potential for underwriting fraud; and quality of reporting. In addition to our focus on proprietary fundamental research, we also leverage the depth of our team (24 dedicated securitized investors) and alternative third-party data and research providers (such as INTEX and Trepp) as a means of uncovering and understanding ESG risks across the securitized space.

- **Municipal bonds:** ESG risks form part of the bottom-up fundamental analysis for municipal bonds. The analysts' credit assessments and subsequent internal rankings incorporate material, relevant ESG risk factors, where information is available. The analysts identify ESG risks relevant to their sectors by using our proprietary materiality matrix. In the municipal space, the analysis may include (but is not limited to): climate risks, energy efficiency, clean water management, pollution abatement, affordability, transparency, litigation risks, pension funding and financial controls. Portfolio managers take into account these internal credit risk assessments when making investment decisions. ESG assessments are reviewed periodically through our governance review process. The size and scope of the municipal bond market, with over 50,000 issuers, makes universal engagement extremely challenging. However, we engage directly with issuers when circumstances warrant or an opportunity exists. We also actively participate in ESG-related industry conferences for both issuers and investors. We continually communicate to issuers, rating agencies, bankers, data vendors and other investors the need for better ESG disclosure and data within the sector.

Case study:

Proprietary ESG research leads to early insight

Over the past couple of years, one of our analysts, a specialist covering retail companies, has had a different view on a French retailer from third-party ESG data providers and the major credit agencies. Third-party ESG data providers ranked this retailer at AA, citing a number of strengths including its development of natural/organic product lines and its pioneering carbon footprint labeling. One third-party ESG data provider did make certain score deductions to its rankings for its pyramid ownership structure (a stake is held by a leveraged holding company) and the concentrated board controlled by the CEO.

We felt, however, that these issues—combined with poor disclosure, questionable accounting practices (including fully consolidating minority-owned entities) and a clear conflict of interest between the CEO and other stakeholders—were not compatible with such a strong ESG ranking or credit rating. Nor did we believe that the bonds for the French retailer priced in these risks.

Our more skeptical view of the company's ESG practices, compared with third-party ESG data providers, was reflected in our analyst's written research report, housed in Spectrum™.

In Q2 2019, the leveraged holding company that owns the majority of the equity in the French retailer got into financial trouble and entered into a restructuring of its debt. This caused the bonds of the French retailer to fall and vastly underperform the wider European high yield market: In Q2 2019, the European high yield market returned 2.3%, while the index-calculated return for the French retailer's debt was -10.7%. The retailer's bonds' credit ratings fell from Ba1/BB by Moody's and S&P, respectively, to B3/B over the course of 2019.

This is an example of how, through our bottom-up proprietary research process, we formulate our own views on an issuer's ESG profile and identify under- or overvalued securities irrespective of third-party ratings.

Case study:

Engagement leads to change on a bank's board of directors

In September 2019, our analyst met with the CEO of a Russian bank and questioned the lack of gender diversity on the board. The CEO was receptive to this conversation and agreed to take it into consideration.

During a follow-up meeting with the CEO in November 2019, the CEO confirmed that the bank had committed to female representation in the upcoming round of board appointments and that it was actively interviewing for the position.

The bank has since appointed the first female member to its board.

This is an example of how, though we do not have voting rights as bond investors, we can still have a meaningful positive influence on the business practices of our portfolio companies.

Case study:

ESG profiles impact portfolio weightings of fintech bond issuers

To supplement the integration of ESG considerations throughout our fundamental, proprietary research process, our global investment grade portfolio management team reviews the ESG score of each ticker, by industry, to identify ESG outliers and potential overweight or underweight positions for portfolios.

This comparison of portfolio positioning with third-party (MSCI) ESG data provides a reference point to help focus discussions at an industry/ticker level within the broad investment grade universe, and to promote additional dialogue with research analysts. It can also impact portfolio construction decisions.

As part of this review process, our portfolio managers identified two issuers in the fintech sector with comparable credit metrics and yet very different ESG profiles. Both issuers were payment processing companies in the sterling market with the same credit rating, trading at a similar spread over UK government bond yields. However, one company had significantly more stringent data privacy and cybersecurity protocols. In the fintech sector, the strength of these protocols can have a material impact on future cash flows—an illustration of the importance of carrying out this ESG score review on an industry-by-industry basis.

Our analysts verified the two companies' ESG profiles with their own research. As a result, the portfolio management team reflected the difference in portfolio positioning by overweighting the issuer with positive cybersecurity protocols and underweighting the other.

This is an example of how ESG factors are considered throughout multiple stages of the portfolio construction process and can ultimately impact portfolio positioning.

EXHIBIT 10: PROPRIETARY MATERIALITY MATRIX USED IN THE RESEARCH PROCESS

	Industry	Environmental	Social	Governance	Comments
Corporate	Basic Industry	High	Low	High	E: Metals, chemicals, paper industries inherently alter, pollute, & corrupt natural landscape S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, anti-corruption policies integral for multinational conglomerates
	Capital Goods	Low/Medium	Low	High	E: Non-resource intensive manufacturing w/ focus on clean tech & minimizing waste material S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, anti-corruption policies integral for multinational conglomerates
	Communications	Low	Medium	High	E: Limited effect across cable/satellite, wireless and wirelines sectors S: Labor management can be of heightened concern, companies have larger social profile G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Consumer Cyclical	Low	Medium	High	E: Limited effect across auto, gaming, home construction, lodging leisure sectors S: Labor management can be of heightened concern, companies have larger social profile G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Consumer Non-Cyclical	Low/Medium	Low/ Medium	High	E: Food & beverage sector has largest environmental footprint; healthcare more limited S: Labor management can be of heightened concern and product safety/quality is critical G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Energy	High	Low	High	E: Exploration & Production industries inherently alter, pollute, & corrupt natural landscape S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, anti-corruption policies integral for multinational conglomerates
	Finance	Immaterial	Medium	High	E: Limited effect across the sectors S: Responsible investing is part of business model but social profile is important post GFC G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Other Industrial	Low/Medium	Low	High	E: Industrial companies have slightly larger environmental footprint but very credit specific S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Technology	Immaterial/Low	Low	High	E: Limited effect across the sector S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Transportation	Medium	Low	High	E: Airlines and amount of carbon emissions are primary factors within this small industry S: Labor management can be of heightened concern, no more than other industries G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
	Utilities	High	Low/ Medium	High	E: Power production and generation source are key considerations for investment S: Labor management can be of heightened concern as well as health & safety in workplace G: Ownership, accounting, regulatory & anti-competitive practices significant considerations
Securitised	Agency RMBS/ Agency CMBS	Low	Low	High	E: Geographically concentrated securities a key consideration S: Borrower/servicer dynamics could impact prepayments & defaults G: Conservatorship of the GSEs & management/oversight of GSEs significant considerations
	Non-agency MBS	Low	Low	High	E: Geographically concentrated securities a key consideration S: Borrower/servicer dynamics could impact prepayments & defaults G: Business ethics of issuer & trustee significant considerations; potential for fraud in underwriting of loans
	CMBS	Low/Medium	Low	High	E: Key considerations: geographic concentration, environmental impacts, LEEDS, access to green financing S: Sourcing and underwriting of underlying loans G: Considerations: business ethics of issuer/borrower/trustee; zoning restrictions; land regulatory requirements
	ABS*	Low	Low/ Medium	High	E: Key considerations: energy efficiency of collateral & carbon footprint, geographically concentrated securities S: Key considerations: sourcing, underwriting & servicing of underlying loans; predatory lending; reputation risk G: Key considerations: business ethics of issuer/borrower/trustee; potential for underwriting fraud
Rates	Developed Markets	Low	Low/ Medium	High	E: Energy intensity of GDP, renewable energy and energy imports S: Unemployment rates, demographics, education and competitiveness G: Government finances (deficit & debt) and control of corruption
EMD	Local Ccy Sovereign	Low/Medium	High	High	E: Reliance on particular sectors (oil, coal) for country financing poses a risk, though very country specific S: Treatment of minorities, welfare, education, unemployment rates, labor management and competitiveness G: Stability, effectiveness, regulatory quality, transparency, corruption; elections & political tensions
	Hard Ccy Sovereign	Low/Medium	High	High	
	Hard Ccy Corporate**	Medium	Medium	High	E: Significant variation across industries & credits, extent to which they alter, pollute, corrupt natural landscape S: Labor management, health & safety in workplace, data security, product safety or mis-selling G: Ownership, board structure, accounting, regulatory & anti-competitive practices significant considerations

	Industry	Environmental	Social	Governance	Comments
Municipals	Electric Utilities	High	High	High	E: Pollution abatement and gov't standards (infrastructure meets federal/state pollution control requirements) S: Costs of pollutants are potentially high and immediate, sustainability and reliability of supply required G: Transparency, financial controls, independence, resoluteness, fiscal balance, thoughtful capital planning
	Water & Sewer	High	High	High	E: Pollution abatement and water purity & conservation S: Sufficient supply for community and public confidence in quality safe water G: Transparency, financial controls, independence, resoluteness, fiscal balance, thoughtful capital planning
	Healthcare	Low	High/ Medium	High/ Medium	E: Energy efficiency/LEED standards S: Community benefit (patient care, education); access for poor/uninsured; creates job opportunities G: Transparency, financial controls key considerations
	Higher Education	Low	High/ Medium	High/ Medium	E: Campus projects to reduce carbon footprint; compliance with state/federal environmental guidelines S: Broader access, affordability and demographic diversity G: Transparency, board and management accountability, financial controls key considerations
	Student Loans	Low	High/ Medium	High/ Medium	E: Limited effect across the sector S: Affordable access to higher education financing programs G: Transparency, financial controls, political & governance independence key considerations
	Housing	Low	High/ Medium	High/ Medium	E: Projects to achieve reduction/improvement of housing project's environmental footprint S: Provides housing for those meeting certain income restrictions G: Transparency, financial controls, political & governance independence key considerations
	Transportation	High/Medium	Medium	High/ Medium	E: Pollutant reduction & land conservation (public transit); fuel saving (high occupancy lanes) S: Affordable access; mobility for those who cannot drive/limited mobility; creates job opportunities G: Transparency, financial controls, political & governance independence key considerations
	States, Cities, Local Gov't	Medium	High/ Medium	Medium	E: Projects addressing environmental hazards; regulatory compliance S: Provide infrastructure for public use/demand (schools, libraries, parks, etc.); fairness/access to adjudication G: Transparency, financial controls, checks & balances, institutionalised process
	School Districts	Low	High/ Medium	Medium	E: Implementation of eco-friendly projects aimed at improving environmental footprint of school districts S: Provide infrastructure for public use/demand G: Transparency, financial controls, checks & balances, institutionalised process

Source: J.P. Morgan Asset Management Global Fixed Income Currency & Commodities Group. For illustrative purposes only. Subject to change. As at December 2018. *Environmental considerations for ABS – cards, ABS – consumer loans, and ABS – student loans not applicable. Social considerations for ABS – airplanes not applicable. E / S / G risks will vary across different types of ABS. **E / S / G risks will vary meaningfully across different EM corporates.

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At J.P. Morgan Asset Management, collaborating with our clients in an effort to build stronger portfolios drives everything we do.

We are committed to sharing our expertise, insights and solutions to help make better investment decisions. Whatever you are looking to achieve, together we can solve it.

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