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WHITEPAPER

US MUNICIPAL DEBT MARKET

New winner in the post-Covid-19 scenario

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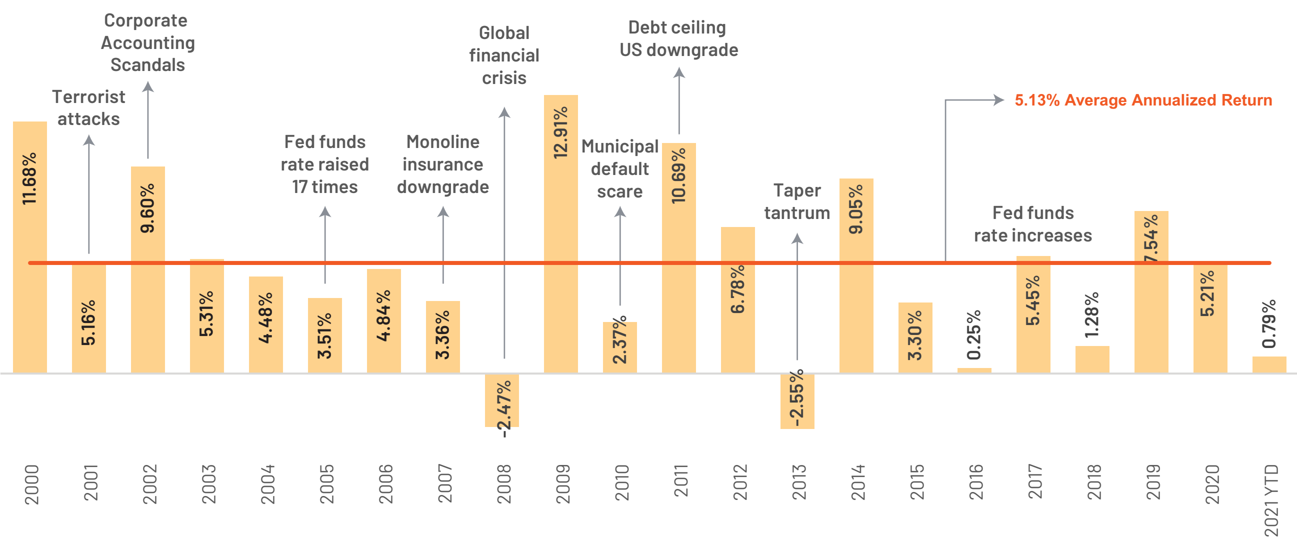
Executive summary

FALL, RECOVER, REPEAT – the USD4.0tn US municipal debt market has done this several times over the past decade and has come out not just unscathed but stronger from adverse events. Municipal bonds (munis) witnessed bouts of steep sell-offs during the Great Recession (2008-09), prominent bankruptcies (bankruptcies of Detroit and Puerto Rico in 2013 and 2017, respectively), the Federal Reserve's (Fed's) rollback of easy money policies (2015-18), tax reform anticipations following Trump's victory (2016) and the pandemic (2020). However, none of these could derail munis from their upward trajectory in both primary and secondary markets for long.

This whitepaper takes a look at the factors that make munis an attractive asset class, summarising the key trends that have evolved in this market and presenting supporting historical data.

» Despite the crisis led by the pandemic, FY20 and 9M21 saw muni issuances amounting to USD485bn (record annual supply) and c.USD360bn, respectively
» The stellar performance was mirrored in the secondary markets as well, with munis returning 0.79% until 9M21, while Treasury and IG corporates eroded wealth with negative returns of 2.50% and 1.27%, respectively
» Munis stand to directly benefit from Fed schemes, such as the American Rescue Plan, the American Jobs Plan and the American Families Plan under the USD7tn Build Back Better Act
» Strengthening credit fundamentals, normalisation of economic activity, an improvement in tax collection and a balanced budget are expected to keep muni issuance buoyant

Chart 1: Bloomberg Municipal Bond Index returns (%)



Source: Bloomberg (data as of 30 September 2021)

Overview and outlook for the US muni market

A whopping USD8.1tn of munis have been issued since 2000, with the yearly supply leaping to USD360bn in 9M21 (+13.6% y/y; USD485bn in 2020), primarily driven by a spike in taxable munis. Some of the key trends that have emerged in the market over the past decade are listed below:

» Rising foreign holdings of munis, up from USD51bn in 2008 to over USD100bn for the first time in 2017. Key factors that have contributed to this are
  a. Attractive spreads versus European/Japanese fixed income assets
  b. Longer average tenors of munis attributed to the nature of projects being financed
  c. Portfolio diversification benefits
  d. Low default rates and better credit ratings than global corporate debt
  e. Lower volatility with strong risk-adjusted returns

» Increase in institutional ownership over the past decade, with the shares of mutual funds and banking institutions rising to 27.0% and 12.0%, respectively, in 2020 (vs. 25.3% and 7.0% in 2010)

» Surge in taxable bonds to 28.5% in 2020 (vs. 6-8% for average share) – which was last seen during the 2009-10 Build America Bonds programme under the American Recovery & Reinvestment Act (ARRA) – due to low interest rates and the 2017 Tax Cut and Jobs Act (TCJA), which prohibited the use of tax-exempt bonds for advanced refunding transactions

Chart 2: Rising share of taxable bonds

Source: Securities Industry and Financial Markets Association (SIFMA; data as of 30 September 2021)

Resilient performance during the pandemic (2020) and in the post-pandemic period

2020 was a rollercoaster ride for most asset classes, and US munis were no exception. In March, investors withdrew a record USD45bn from muni funds, and 10-year muni yields spiked above 3% (from less than 1% a month ago). Investment-grade (IG) and high-yield (HY) muni indices were down 3.63% and 11.00%, respectively, during the month, as represented by the Bloomberg Barclays Indices. Consequently, the muni/Treasury yield

(M/T) ratio skyrocketed to all-time highs (Table 2). As a rule of thumb, munis are inexpensive if this ratio exceeds 80%, and investors effectively receive a tax exemption for free if the ratio is above 100%.

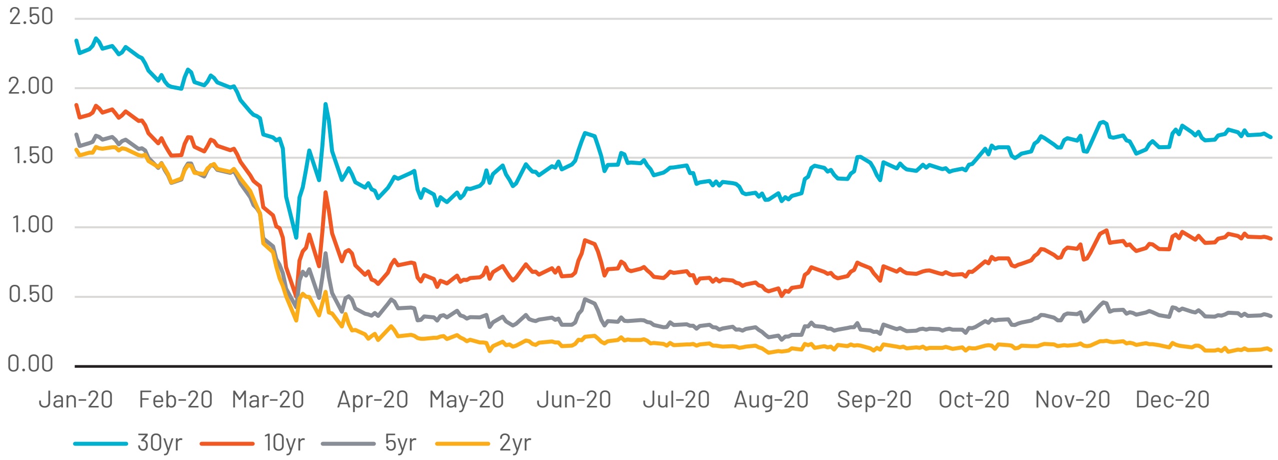
However, the remaining part of the year saw secular tightening of spreads aided by liquidity measures, such as the CARES Act, the Municipal Liquidity Facility (MLF) and rate cuts. Barring the short end up to two years, the entire AAA-muni curve traded inside the US Treasury at the end of 2020 (Table 1).

Table 1: Yields of AAA-muni and US Treasury across the curve

Tenor	AAA-muni	US Treasury	M/T ratio
2-year	0.15%	0.12%	125.0%
5-year	0.20%	0.36%	61.1%
10-year	0.68%	0.92%	73.9%
30-year	1.41%	1.65%	85.5%

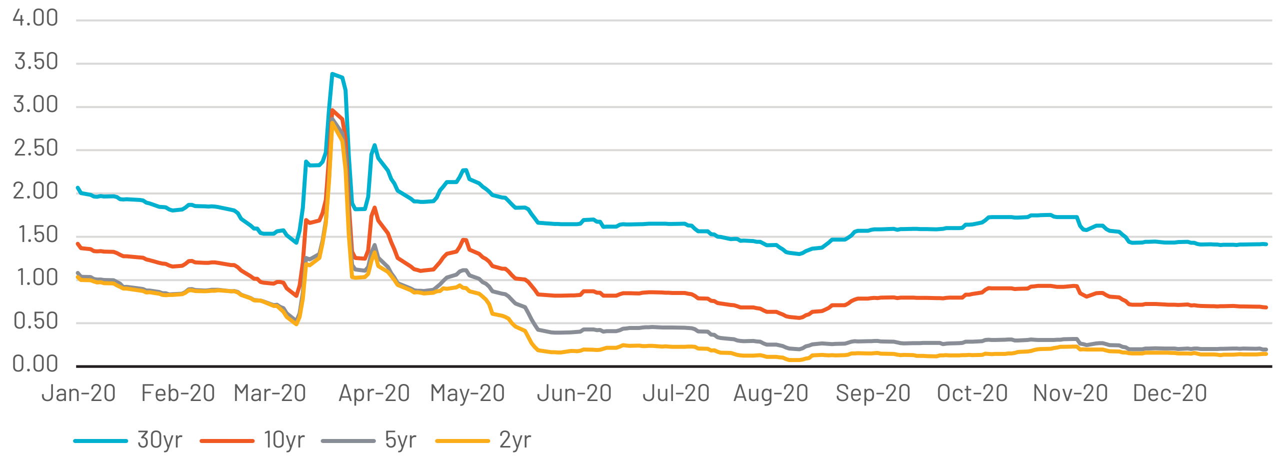
Source: Factset (data as of 31 December 2020)

Chart 3: US Treasury yields – 10-year and 30-year yields back to pre-pandemic levels



Source: Factset

Chart 4: AAA-muni yields – below pre-pandemic levels



Source: Factset

Table 2: M/T ratios – all-time highs in March 2020 vs all-time lows in February 2021

Tenor	All-time high M/T in March 2020	All-time low M/T in February 2021
5-year	654%	37.3%
10-year	369%	54.7%
30-year	251%	69.0%

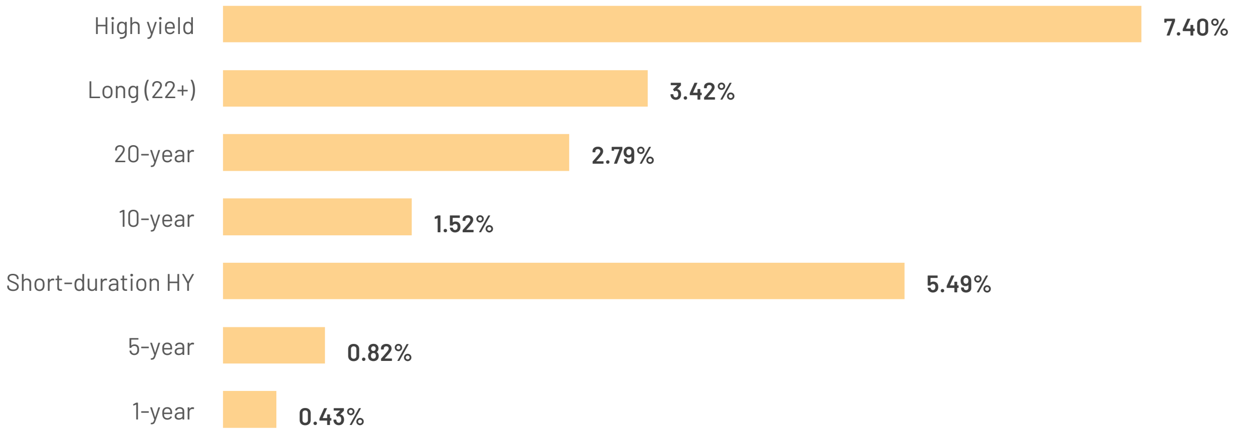
Source: Factset

2021 – Strong performance driven by fiscal support measures and opening up of economy

2021 started out strong on the back of favourable supply-demand conditions, fiscal stimulus, increasing tax revenues and sector outlook revisions from rating agencies. In addition, attractive valuations and the hunt for tax-exempt income in anticipation of rising taxes will continue to bolster demand for taxable bonds (street estimates of one-third of total issuance). According to SIFMA, USD358.7bn of munis had been supplied as of 30 September 2021, with 23.2% of these in taxable bonds.

As of 30 September, the US Municipal Bond Index returned 0.79% YTD, comfortably beating the negative returns of the US Treasury Index and the US Corporate Bond Index. Taxable munis returned 0.50% over the same period.

Chart 5: Performance of munis across the spectrum in 2021 led by HY



Source: Bloomberg (data as of 31 July 2021)

Demand for munis remained robust as investors continued to pour money into muni mutual funds, with net inflow for 9M21 crossing USD76bn. Since May 2020, there have been continuous positive flows each month until September 2021.

We expect some volatility in the coming months, as inflation has remained high (6.8% in November 2021) and the Fed began tapering asset purchases by USD15bn per month in November. Debt ceiling negotiations and any possible resurgence of COVID-19 variants could add to the uncertainty. Nevertheless, a strong economic recovery, encouraging vaccination rates (66% were fully vaccinated and 76% had received the first dose as of end-3Q21), significant progress on Puerto Rico's debt restructuring and revised rating outlooks for state and local government sectors would be tailwinds for munis.

Table 3: Outlook revisions by sector, Moody's (2021)

Category	Sector	2021 outlook	2020 outlook
Transportation	Airport	Positive	Negative
	Mass transit	Stable	Negative
	Public ports	Positive	Negative
	Toll roads	Positive	Negative
Higher education	Private institutions	Stable	Negative
	Public institutions	Stable	Negative
	Community colleges	Negative	Stable
General obligation	State governments	Stable	Negative
	Local governments	Stable	Negative
Utilities	Public power	Stable	Stable
	Water/sewer	Stable	Stable
Healthcare	Not-for-profit hospitals/healthcare	Negative	Negative
Other	Housing	Stable	Stable

Source: Moody's (data as of 30 September 2021)

Munis – an attractive investment

Despite investors' differing risk profiles and investment horizons, munis have remained an attractive investment option. This may be attributed to the following factors:

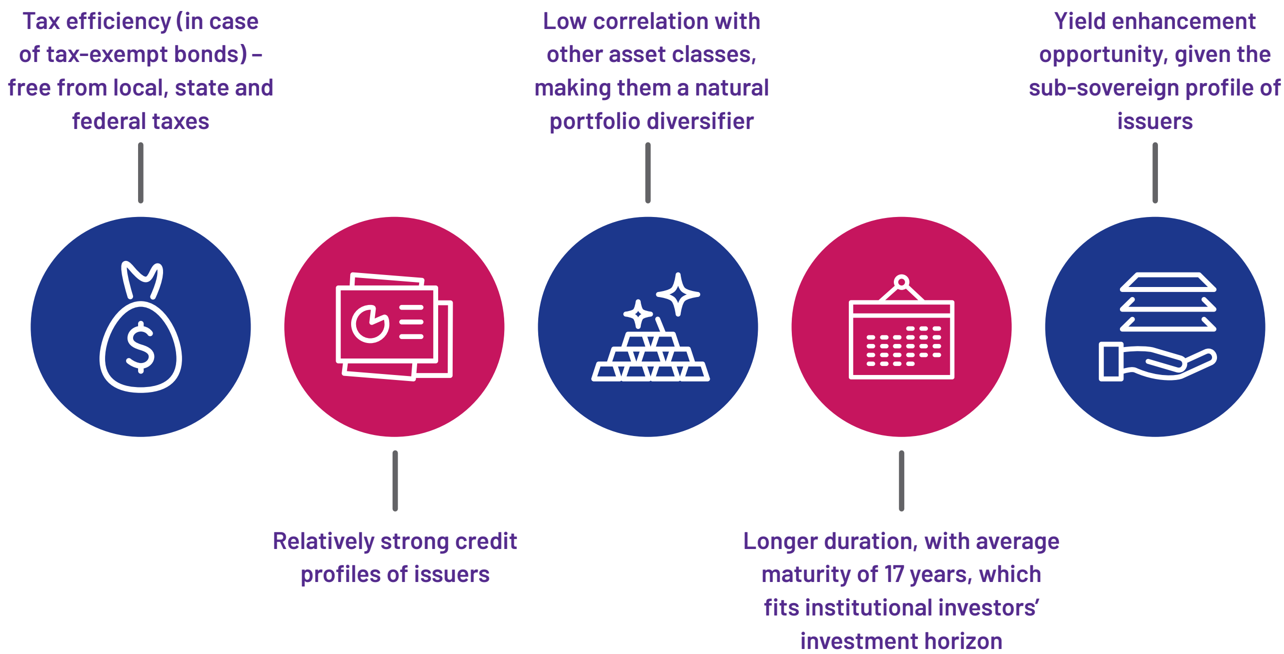
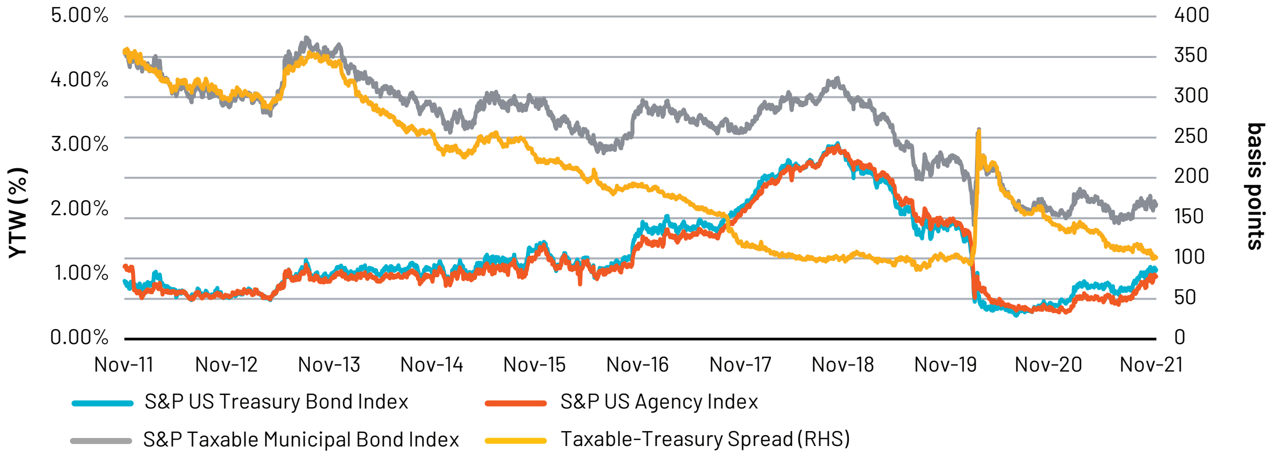


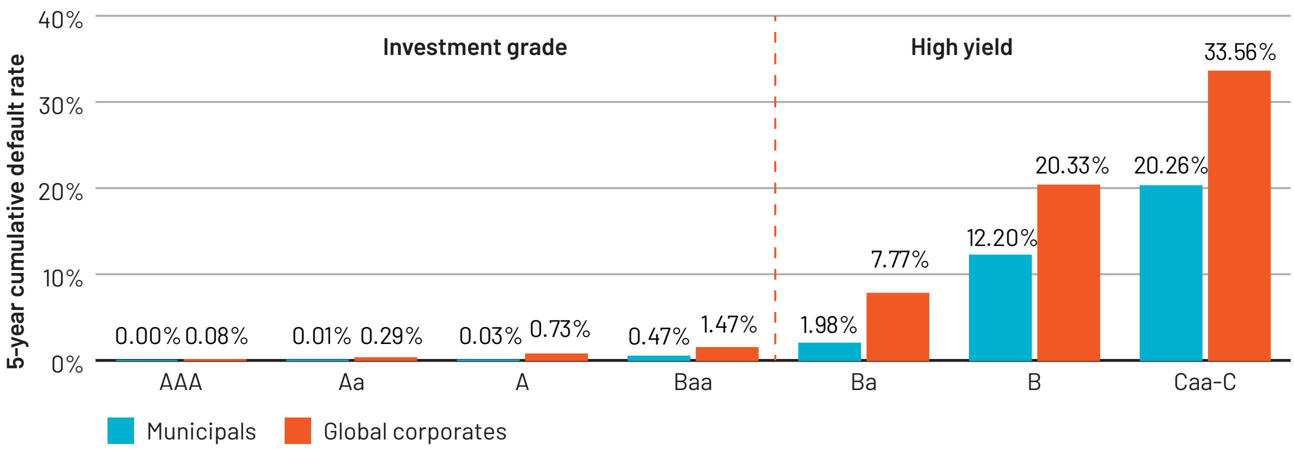
Chart 6: Yield to worst (YTW) for taxable munis, agency bonds and treasuries



Source: Bloomberg (data as of 30 November 2021)

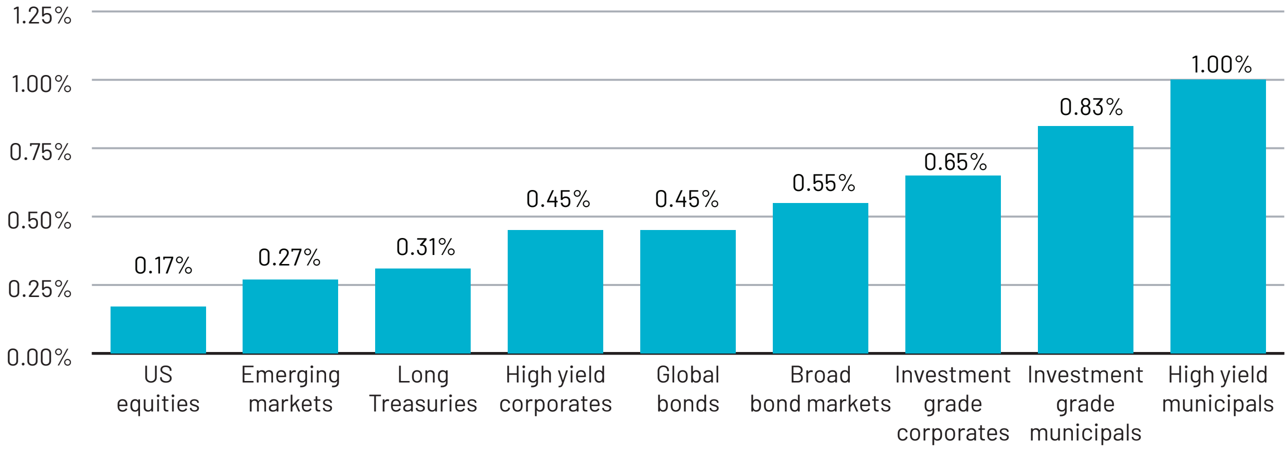
Municipal debt is regarded as a safe haven given its relatively strong credit profile; almost two-thirds of outstanding bonds are rated AA or higher, compared with a paltry 7% for US corporate bonds. Furthermore, the default rates on munis have remained low historically, at 0.16% over 1970-2018 vs. 10.13% for US corporates. A majority of the defaults reported in the municipal debt space have been in the HY or the non-rated segments, which underscores the need to be selective and the relevance of comprehensive bottom-up research on issuers. This trend repeated in 2020, when the overall number of municipal defaults (0.2% of the USD3.9tn muni market) was concentrated in traditional HY sectors, such as assisted living and skilled nursing facilities and land-secured and industrial development revenue bonds.

Chart 7: Five-year cumulative default rate of munis vs. global corporate bonds



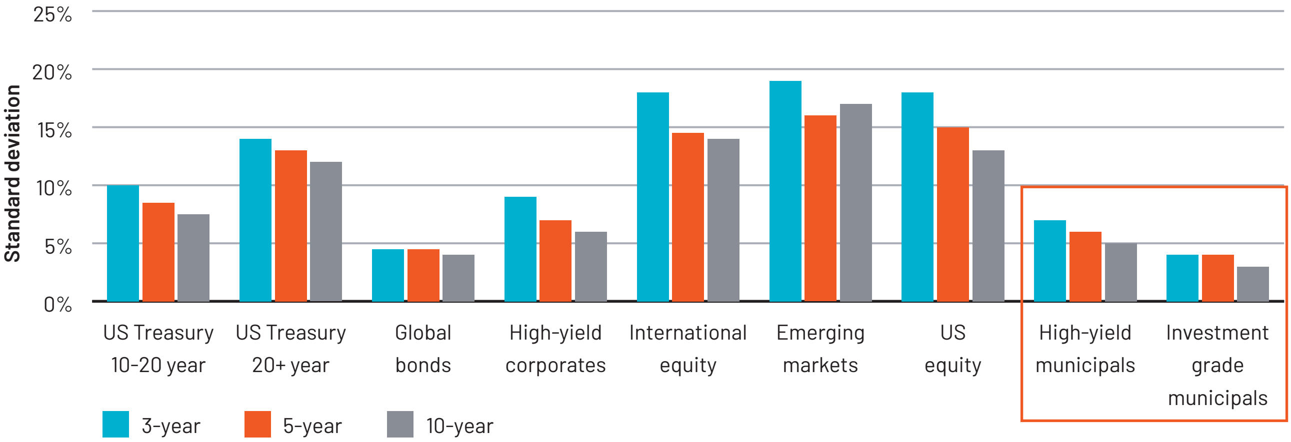
Source: Moody's Investors Service (data as of 15 July 2020)

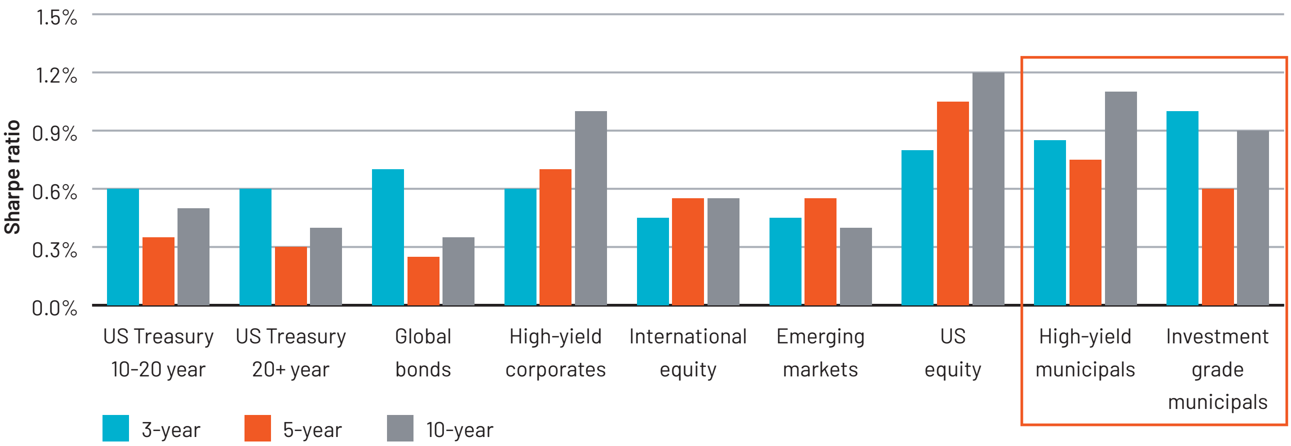
Chart 8: 10-year correlation for HY munis vs. other asset classes



Source: Morningstar Direct (data as of 31 December 2020)

Chart 9: Lower volatility of municipals vs. other asset classes

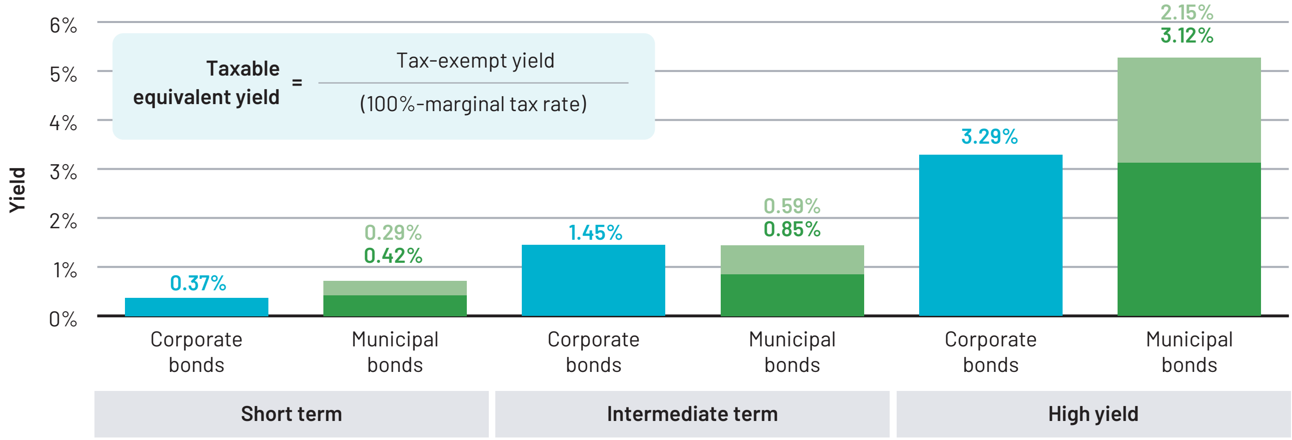




Source: Nuveen Municipal Bond Market Update presentation. Representative indices: Bloomberg Barclays US 10-20 Year Treasury Index, Bloomberg Barclays US 20+ Year Treasury Index, Bloomberg Barclays Global Aggregate Unhedged Index, Bloomberg Barclays High Yield Corporate Index, MSCI EAFE Index, MSCI Emerging Markets Index, S&P 500 Index, S&P Municipal High Yield Index, Bloomberg Barclays Municipal Bond Index

Munis have given superior risk-adjusted returns against all major asset classes over the past 3-10 years, with low volatility. The asset class has also provided robust post-tax returns, especially in the highest-income tax brackets.

Chart 10: Superior post-tax returns of munis vs. corporate bonds



Source: Nuveen Municipal Bond Market Update presentation

Economic growth, government support packages and strengthening credit quality support munis

In 2020, municipal entities incurred additional expenses to meet increased healthcare, community support and governance-related costs due to the pandemic. These were in part funded through federal support initiatives, starting with the CARES Act and being continued through the Build Back Better Plan (BBB Plan) under President Joe Biden. The plan is divided into three parts: the American Rescue Plan, the American Jobs Plan and the American Families Plan. While BBB is anticipated to extend support to all the sectors of the economy, state and local governments and the healthcare, education and infrastructure sectors are expected to gain the most. This also explains the outlook revision on these sectors (Table 3) to Stable and Positive earlier this year from Negative.

The American Rescue Plan Act of 2021 (ARPA) is a USD1.9tn coronavirus rescue package primarily focused on providing unemployment compensation and community support, compensating state and local governments for lost tax revenues and supporting recovery in the healthcare and primary education sectors. Under the USD2.3tn American Jobs Plan (AJP), USD1.3tn has been allocated for community and transportation infrastructure expenditure and the remaining USD980.0bn for investments in research and development, workforce development, manufacturing and elder care. The USD1.8tn American Families Plan (AFP) is expected to provide USD1tn in investments in the healthcare and education sectors and USD800bn in tax cuts to American families and workers. AFP will provide support to families, thereby expanding and strengthening the American middle class. AJP and AFP were not passed in their originally proposed formats.

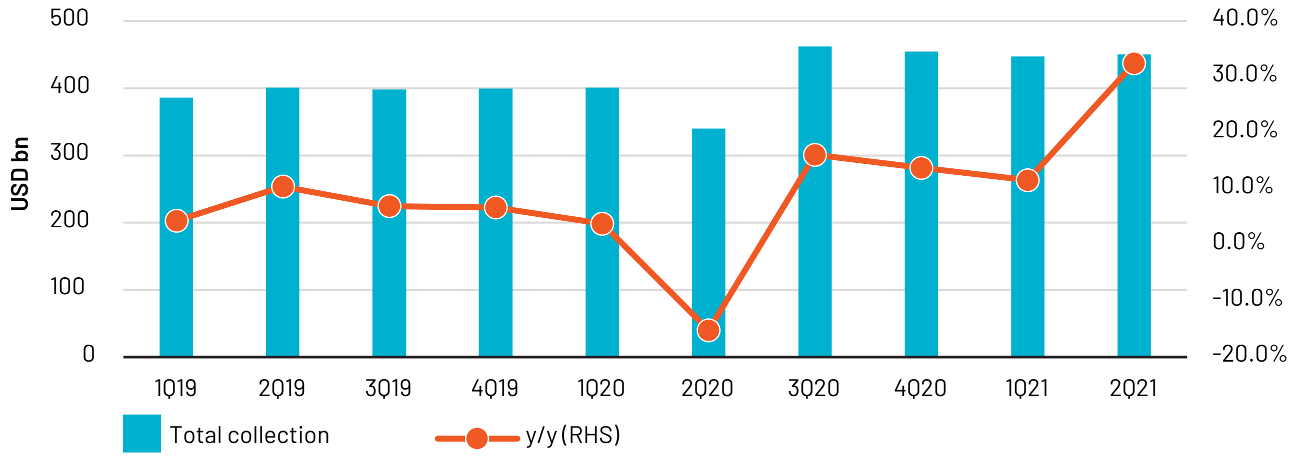
Table 4: Major fund allocations proposed under AJP and AFP

American Jobs Plan		American Families Plan	
Sector	Allocation	Sector	Allocation
Transportation infrastructure	USD600bn	Pre-kindergarten	USD200bn
Community infrastructure	USD700bn	Community college	USD300bn
R&D, manufacturing, workforce support	USD600bn	Childcare	USD200bn
Elder care	USD400bn	Insurance subsidies for healthcare programmes	USD200bn

Source: https://www.whitehouse.gov/

On 28 October, the federal government introduced a USD1.75tn combined plan, allocating funds for family aid, Medicare expansion and climate change. This should also support the healthcare and education sectors. Local government (cities and counties) revenues were mostly resilient and not affected much by the pandemic owing to the stable nature of their primary revenue source, i.e., property taxes. Most states were expected to experience significant drops in revenue as they were heavily dependent on income tax revenue. However, job and income losses were concentrated in low-wage sectors, such as tourism and hospitality; hence, the impact on state revenues was limited. Some states, such as California, also benefitted from good performance of capital markets via capital gain taxes. A majority of the states experienced revenue loss in 2020, but these losses were significantly lower than projections. Growing economic activity, an improving labour market and continued government support should strengthen the credit metrics of state and local governments.

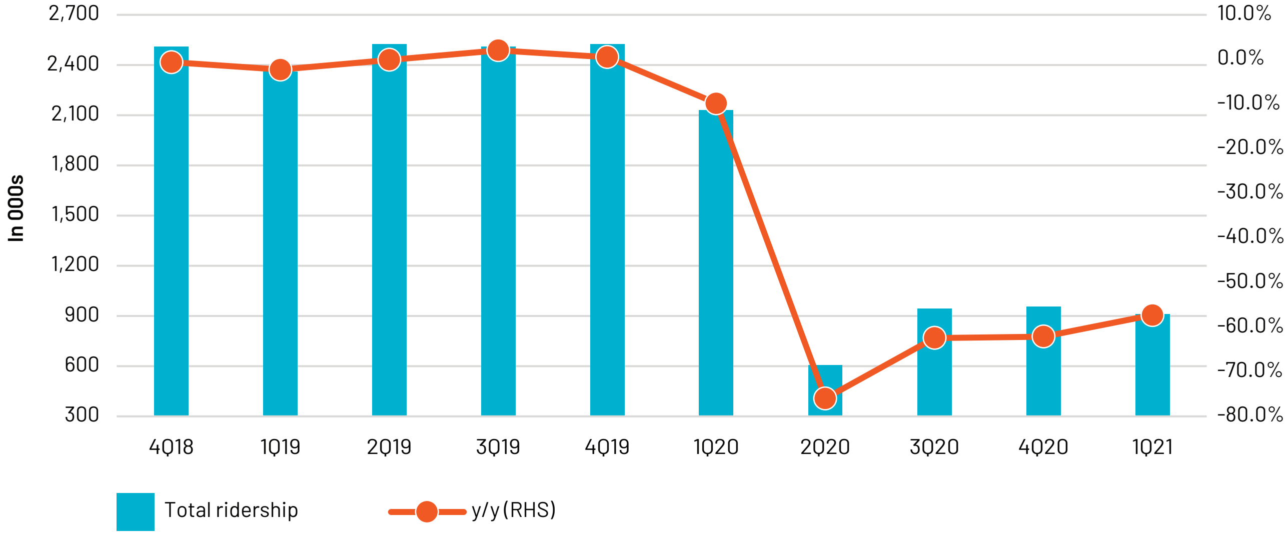
Chart 11: State and local government tax revenue, quarterly total



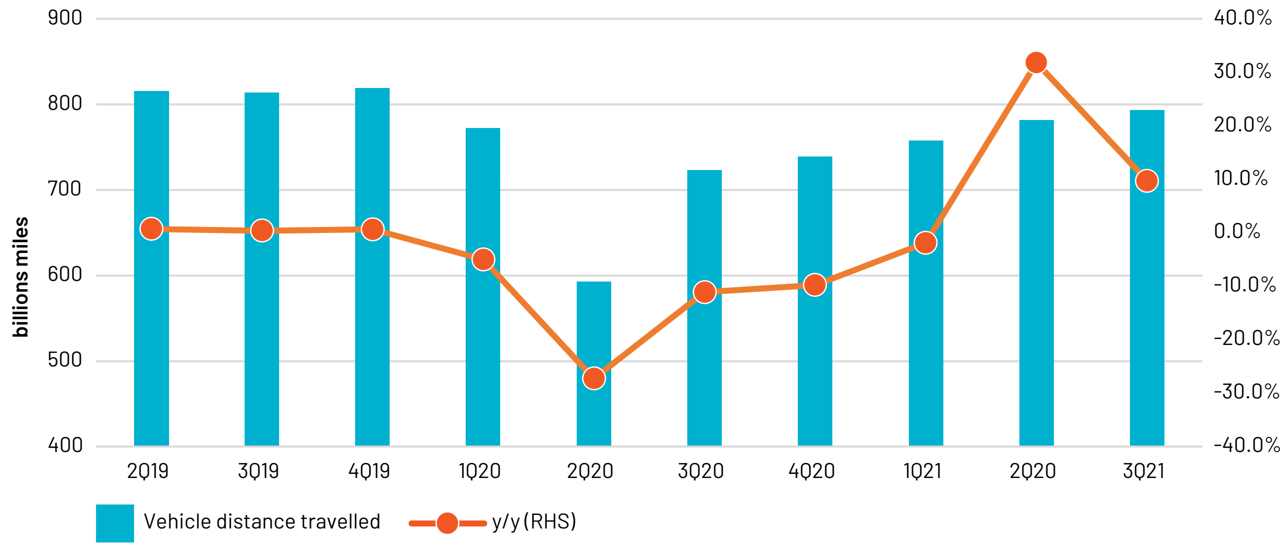
Source: US Census Bureau

During the pandemic, while public utilities remained the most resilient among munis, transportation-related entities were the most severely affected. The transportation sector was able to survive the pandemic mostly on the back of strong government support. Under the AJP, community infrastructure projects (worth USD707.0bn) related to water, electricity, housing and transportation (worth USD621.0bn) are expected to give a major boost to the country's infrastructure. With the ongoing economic recovery and growing investments, operating efficiency and utilisation levels are expected to rise and, in turn, lead to an improvement in the credit quality of munis.

Chart 12: Highway passenger travel and US air carrier passenger data



Source: American Public Transportation Association



Source: Federal Highway Administration

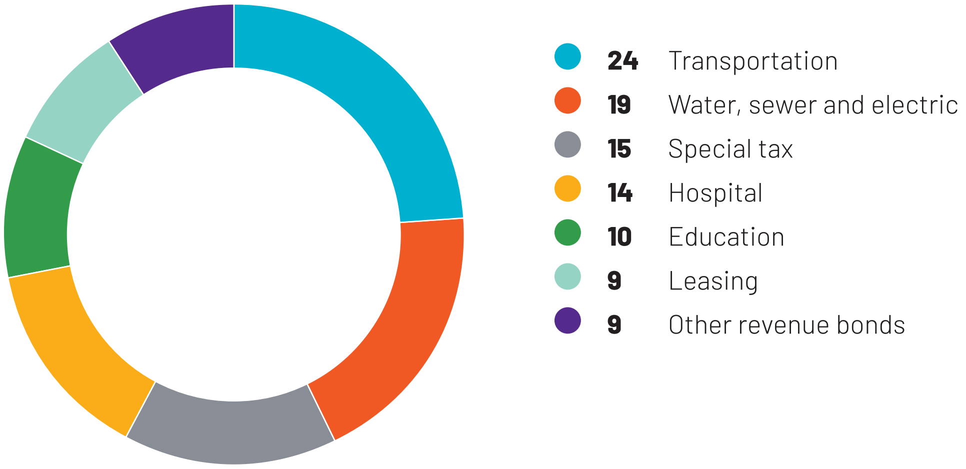
The operations and finances of healthcare entities were heavily stressed during the pandemic, but they were able to stay afloat owing to funds from the USD2.2tn CARES Act and are expected to continue to get support from the BBB plan. The liquidity and margins of most of these entities have improved from the levels seen during the pandemic. In the coming years, USD400.0bn are expected to be spent on home and community-based care facilities for senior citizens and people with disabilities, and USD40.0bn on improving childcare facilities, with the enhancement of existing healthcare acts. Given these factors, the credit profiles of these entities are expected to strengthen going forward.

The education sector did see some impact during the pandemic, but this was mostly restricted to the instruction medium, with financial profiles remaining minimally affected. K-12 schools and colleges have access to direct funds of USD120bn and USD40bn, respectively, under ARP; they also stand to benefit from additional support towards infrastructure improvement and increased financial aid for students. Direct and enhanced support from state and federal governments is a credit positive for this sector.

Challenges in municipal debt investing

Investors can benefit from the size and diversity of munis and can choose from a gamut of offerings to suit their portfolio risk-reward profile. That said, almost two-thirds of the munis issued are backed by specific revenue streams (revenue bonds) and hence vary significantly in terms of credit quality and expected returns. The complexities add up further when investors consider the issuing entities' geographies and sectors. In terms of geographic concentration, California, New York and Texas are the top-three issuing states for munis. As of December 2020, the sector composition of Barclays Municipal Bond Index was as follows:

Chart 13: Composition of Barclays Municipal Bond Index



Source: Bloomberg Barclays Municipal Bond Index as of 01 December 2020; "Other revenue bonds" include industry development revenue (IDR)/pollution control revenue (PCR), housing and resource recovery indices

Given the wide array of choices, asset managers are left with the daunting task of screening the securities, performing the credit analysis of sponsor entities, understanding the legalities involved and timing the investment considering the macro environment.

Table 5: Challenges faced by investors in muni investing

Challenges	Description
Large universe of munis	» Over 50,000 issuers and 1m outstanding bonds » Significant time and resources to maintain a database » Keeping track of issuance/redemption calendars » Monitoring fund flows and trading activity
Multiple sectors and geographies	» Issuers from various sectors – such as healthcare, infrastructure, utility and education – and geographies » Several sub-sectors under every sector » Need for investor to remain current on developments in all sectors, such as government policies, cyclicality, macroeconomic environment and taxation » Changing sector mix
Regulatory and economic expertise	Need for investor to » stay abreast of policy changes (fiscal and monetary) » have knowledge of various taxation regimes depending on investor/issuer domicile » collect information from state and local governments
Portfolio monitoring	» Benchmarking the portfolio » Adjusting the portfolio composition to align with risk-return profiles » High quantum of low value-add repetitive tasks that can be outsourced

How Acuity Knowledge Partners can help – strategic benefits of an offshore team model

Acuity Knowledge Partners (Acuity) has a proven track record of supporting asset managers for over 15 years and providing them scalable and customised solutions. Our fixed income research team has covered more than 20,000 issuers over these years and have developed sector and asset class expertise. Given the large volume of issuers and the level of understanding required (sector, macroeconomics and capital structure), an optimum mix of onshore and offshore teams could help identify opportunities.

Enhanced coverage

- Increase in coverage universe through additional resource support
- Time-zone benefits through overnight turnaround driven by global delivery centres

Customised products

- Broader range of services in the research value chain, starting from database management to high-level analytical research (credit models, tear sheets, credit reports, screens, sector research and thematic reports)
- Customised products, according to requirement
- High efficiency in working on a client-approved standardised template
- Ability to work on ad hoc projects
- Automation to build and monitor databases

Operational flexibility

- Shifting of workload to the offshore team reduces the need to spend long hours and enables onshore job satisfaction
- Ease of scaling up or down the coverage
- Ability to utilise the municipal sector expertise of onshore/offshore teams
- Option to select resource models (e.g., dedicated and pooled resources, resources for a time duration etc.)

Cost savings

- Reduction in onshore costs by 30-70%
- Margin expansion for the fund/firm through offshoring

	Issuer screening	Financial review	Fundamental review	Relative valuation
Focus areas for onshore team	*» Detailed business reviews » Identification of key drivers » Regulatory environment assessment*	*» Financial review » Covenant tracking » Stress testing » Recommendation on financial strength*	*» Buy/Hold/Sell recommendation » Internal scoring » ESG engagement with investor relations team and management » Assigning forward view*	*» Sector assessment » Issuer recommendations » Benchmarking*
Key functions that Acuity can deliver	» Data collection » Operational metrics » Obligor review » Bond portraits » Short issuer profiles » Key events	» Data spreading » Comp sheets » Financial models » Liquidity and funding » Assisting in scenario and stress testing	» Initiation of issuers » Maintenance reports » Issuer recommendation » Rating recommendation » ESG review	» Weekly/monthly reports » Tracking spreads » Preparing relative valuation assessments » New issuance review

Case studies – credit research support on US munis

	Investment management arm of a large private equity player	Large US-based investment manager	Mid-sized US-based asset manager
Product segments	**Segments covered** » US munis (75% of coverage) » North American Financial (15%) » North American Corporate (10%)	**Segments covered** » Customised credit + tech solutions	**Segments covered** » US munis (82% of coverage) » Canadian sub-sovereign issuers (18%) » Ad hoc tasks
Client concerns	» Expand primary and secondary universe » Reduce time spent on high-volume tasks	» High volume of work » Existing vendor had no experience in developing a customised tech-based muni solution	» Limited capacity onshore » High volumes » Support to monitor a large public finance portfolio
Acuity's solution	4 mid- to senior-level analysts Services and tasks: » Set up a team experienced in covering munis, corporate and financial issuers » Initiate c.175 issuers in a year » Ensure periodic maintenance » Provide credit rating recommendations	3 mid- to senior-level analysts Services and tasks: » Set up a team with mixed experience on munis and tech » Automate financial data extraction » Deploy power BI and business analytics » Provide access to a coverage universe of c.10,000 issuers	4 mid-level analysts Services and tasks: » Prepare short-form review reports » Provide issuer and obligor reviews on general obligation and revenue bonds » Initiate annual coverage of 1,000 issuers » Collate final-form research with detailed financial reviews
Value delivered	» USD0.6m in annualised cost savings » 2x increased coverage	» USD1m in annualised cost savings » 55% release of onshore capacity	» USD0.4m in annualised cost savings » 100% of compliance requirements met

Market leader in credit research solutions

STRONG CREDIT FRANCHISE

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Client analysts

80+
Clients

10,000+
Credit coverage

ONE-STOP SOLUTION

Investment grade | High yield | Distressed debt | EM | Municipals | Sovereigns | Leveraged loans | Direct lending | Collateralised loan obligations

DIVERSE CLIENTELE

Asset managers | Investment managers | Investment banks | Corporate and Commercial banks Pension funds | Direct lending | Trading desks

GLOBAL EXPERTISE

Americas

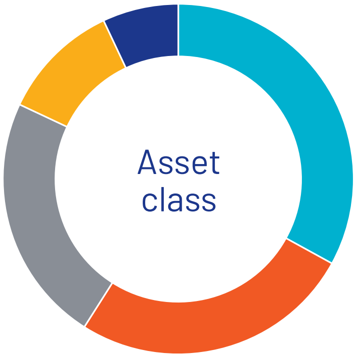
Europe

Asia Pacific

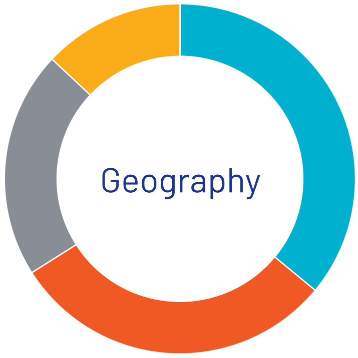
CLIENT ROSTER

5 of top 15 global asset managers | 5 of top 15 investment banks | Top US and EU commercial banks |
Top global alternative investment managers

Research coverage mix



- **33%** High yield
- **26%** Investment grade
- **23%** Emerging markets
- **11%** Sovereign
- **7%** Public finance



- **36%** US
- **30%** Europe
- **21%** Asia Pacific
- **13%** Others

- **75%** Buy-side
- **25%** Sell-side

Investment grade

» Rating/bond recommendation report
» Detailed financial models
» Off-balance-sheet
» Industry analysis
» Rising Star/Falling Angel analysis
» Company analysis
» Daily news tracking
» Events monitoring
» News summaries

High yield/distressed debt

» Rating/bond recommendation report
» Financial models
» Capital structure review
» Group structure
» Stress testing
» Scenario analysis
» Off-balance-sheet
» Indenture screening
» Thematic research
» Earnings support

Emerging market

» Country packs
» Shadow rating
» Rating/bond recommendation report
» Detailed financial models
» Stress testing
» Scenario analysis
» Thematic research
» Factual issuer analysis
» Earnings support

Special situation

» Stressed-distressed-defunct reviews
» Opportunity screening
» Detailed models
» Cap-structure review
» Scenario and stress testing
» Indenture screening
» Covenant/liquidity review
» Sector dislocations

Private tradeable

» Issuer review reports
» Detailed financial models
» Call/deal summaries
» Warehouse and conduit support
» Capital structuring, waterfall modeling support
» Thematic reports
» EV/EBITDA multiples

Sovereign and public finance

» Detailed macro review
» Country pack
» Banking sector analysis
» Rating assessment
» Events monitoring
» General obligation/revenue bonds analysis
» Macro database
» Initiations and periodic reviews
» Detailed financial models

Authors

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Nitin has over nine years of experience in fixed income markets, with a focus on credit analysis of corporates and hands-on exposure to bonds origination for sovereigns, supranationals and local agencies. He has also worked on designing the annual funding strategies and issuance plans of government-owned companies. He currently supports an alternative asset manager with a focus on distressed assets. Nitin provides support by doing bottom-up analysis and finding opportunities in distressed and HY issuers. He holds a Master of Business Administration in Finance and a Bachelor of Technology in Mechanical Engineering.

Ashutosh Pandey
Delivery Lead, Investment Research

Ashutosh has over seven years of experience in credit research, with expertise in US municipal markets and not-for-profit corporates. He currently supports a US based global investment manager, with a focus on taxable and tax-exempt US muni debt. Ashutosh provides investment recommendation and commentary on the credits by doing periodic review and keeping a track of regular developments. He holds a Master of Business Administration in Finance and a Bachelor of Technology in Electrical and Electronics Engineering.

Additionally, the authors of this paper would like to give their sincere thanks to Vishakha Suri for her contribution towards the development of this paper.

About Acuity Knowledge Partners

Acuity Knowledge Partners (Acuity), formerly part of Moody's Corporation, is a leading provider of bespoke research, analytics, staffing and technology solutions to the financial services sector.

Headquartered in London, Acuity Knowledge Partners has nearly two decades of experience in servicing over 400 clients by deploying its 4,000 specialist workforce of analysts and delivery experts across its global delivery network. We provide our clients with unique assistance to innovate, implement transformation programmes, increase operational efficiency, and manage costs and improve their top lines.

Our expertise includes the following:

» Investment Banking: origination and trading support
» Investment Research support: covering all asset classes in terms of ideation, data science, and research support across the buy side and sell side
» Commercial Lending support: across origination, credit assessment, underwriting, and covenant and portfolio risk for all lending types
» Private Equity: origination, valuation and portfolio monitoring support
» Asset Management services support: across marketing, investment research, portfolio management/ optimisation, risk and compliance
» Corporate and Consulting services: market and strategic research; survey work; treasury and counterparty risk support; and CEO office support, including M&A, FP&A and investor relations support
» Compliance support: AML analytics, KYC, counterparty credit risk modelling and servicing across banks, asset managers and corporates
» Data Science: web scraping, data structuring, analytics and visualisation These services are supported by our proprietary suite of Business Excellence and Automation Tools (BEAT) that offer domain-specific contextual technology.

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Acuity Knowledge Partners is backed by Equistone Partners Europe, a leading private equity organisation that backs specialist growth businesses and management teams.

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