SUMMARY

US municipal bonds are not as well known around the world as corporate bonds. The tax-exempt variety is often dismissed on the global stage because of its low yield and occasional lack of liquidity, but can provide investors of all types with attractive and scalable real returns. The taxable variety has grown in recent years, offers similar yields to corporate bonds and provides insurers and pension investors with some of the best regulatory capital-efficiency. Financial regulation is constantly evolving around the world and reshaping the way investors approach the capital markets. In this report, we introduce several regulatory applications of municipal bonds with a primary emphasis on the taxable bond variety.

OVERVIEW OF MUNICIPAL BONDS

Municipal bonds serve a vital role in building and maintaining America's infrastructure. They were a major source of financing canals, roads, and railroads during the country's westward expansion in the late 1800s. The proceeds today fund a wide range of state & local infrastructure such as schools, hospitals, airports, universities, highways, and water and sewer systems.

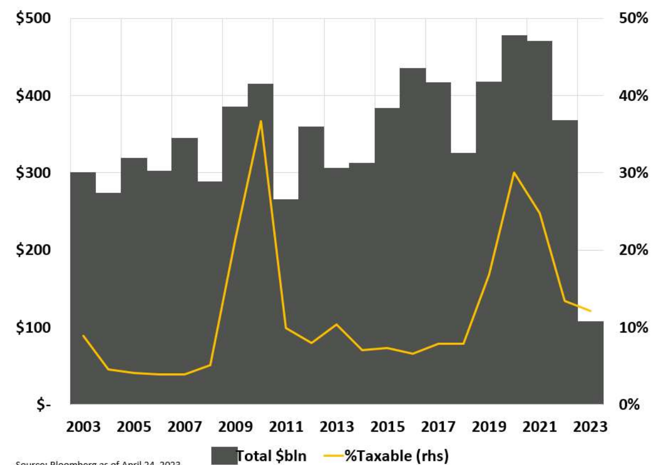
Municipal bonds are primarily issued by US state & local governments (municipalities) and eligible not-for-profit corporations. When an investor purchases a municipal bond, they are lending money to finance public projects that are often monopolistic in nature and essential in purpose.

Municipal bonds fall into two categories: general obligation or revenue bonds. General obligation bonds are issued by entities such as US states, cities, counties, and school districts, and are secured by the issuing municipality's pledge to use all legally available resources to repay the bonds. Revenue bonds are secured by a specific source of revenue typically used to finance infrastructure projects such as water & sewer authorities, electric utilities, airports, toll roads, hospitals, universities, multi-family housing, and other not-for-profit entities.

Municipal bond interest payments are traditionally exempt from US federal income taxes and sometimes state & local income taxes. Individuals, institutions, foundations, endowments, and trusts subject to top US tax rates typically focus on tax-exempt municipal bonds.

Foreign investors, pension investors and other entities exempt from US tax typically focus on taxable municipal bonds because they trade at a higher yield than tax-exempt municipal bonds, often the same yield as corporate bonds.

[1] MUNICIPAL NEW ISSUE SUPPLY



NAIC RISK-BASED CAPITAL (RBC), US INSURERS

The National Association of Insurance Commissioners (NAIC) risk-based capital (RBC) framework was created in 1991 after a series of insurance company insolvencies. The purpose of RBC is to identify weakly capitalized companies and facilitate regulatory actions to ensure policyholders receive the benefits promised. The regulatory framework was modernized in June 2021 to reflect changes that have occurred over the years such as the economy, interest rates, default risk and portfolio exposures.

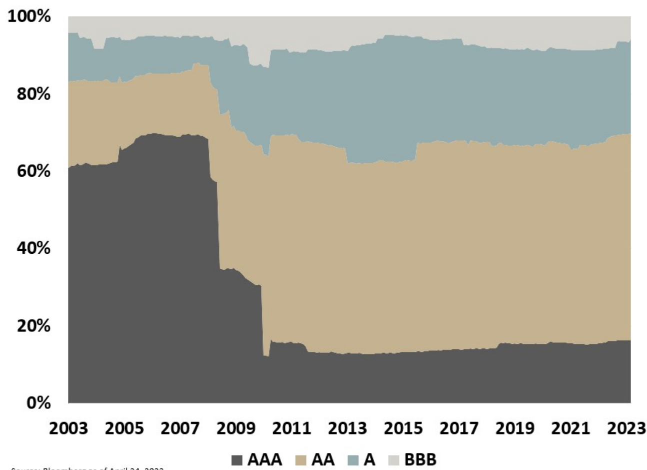
The NAIC revisions impacted the RBC capital factor and portfolio adjustment factor applicable to US insurers. RBC capital factors determine the amount of capital that must be held by insurers when investing and is based on a bonds credit rating. The RBC portfolio adjustment factor is a portfolio diversification framework which can help insurers decrease base capital requirements once an approximate number of issuers are held in a portfolio.

The revised RBC capital factor framework now has more granular risk charges for bonds in the RBC formula. Highly rated securities (AAA/AA+) have less capital charge requirements, whereas lower-rated securities (single-A to

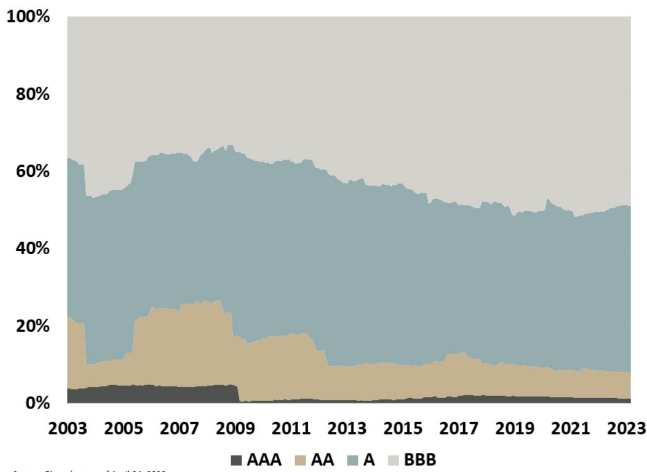
BBB rated) have more. The RBC portfolio adjustment factor was revised and now further decreases base capital requirements, most meaningfully in the 200-400 portfolio issuer count range.

Insurance companies looking to increase yield and match liabilities need to evaluate capital-adjusted yield attractiveness. The evaluation process needs to include spreads and other factors when determining asset allocation. US taxable municipal bonds offer a broad range of high-quality credits, with long-dated structures that compete with corporate bond yields, and can be scaled to maximize NAIC capital efficiency.

[2] MUNICIPAL BOND CREDIT RATING BREAKDOWN



[3] CORPORATE BOND CREDIT RATING BREAKDOWN



SOLVENCY II MA, EUROPEAN LIFE INSURERS

Solvency II Matching Adjustment (MA) in Europe was introduced in 2009 and applies to insurance companies in the UK most particularly. It sets forth guidelines and requirements tailored to specific risks each insurer owns, specifically the amount of capital that must be set aside to reduce the risk of insolvency. In 2016, Solvency II was amended to include infrastructure investments located in Europe and other Organized Cooperation and Development (OECD) countries such as the US. Under the new regulation, insurance companies can benefit from favorable capital treatment if infrastructure investments satisfy certain criteria:

The project revenues are derived from infrastructure assets. This excludes certain municipal debt issued by governments or their authorities since most of that revenue is not derived from owning infrastructure specific assets. However, debt issued by authorities of municipalities for an infrastructure system may qualify which includes the majority share of the US taxable municipal bond market.

Cashflows are strong and predictable. Municipal infrastructure, in general, has strong cashflows and is considered monopolistic in nature, providing essential services for public purposes. Most of the debt is not subject to rate regulation and is controlled by the obligor that provides strong debt protections.

Investments have regulatory or contractual protections. This relates to trust agreements, covenants, events of default, and remedies. The trust agreement in the US is considered a contractual obligation.

The holding period is long. US taxable municipal bonds finance infrastructure that is long dated. The market provides a natural liability match for buy-and-hold insurers seeking high-quality yield with low default risk and low rating transition risk. While the asset class at times may be less liquid than corporate bonds, taxable municipal bonds offer buy-and-hold investors a larger premium, a more positively sloped spread curve, and a lower volatility profile.

Credit ratings are investment-grade. The median rating of municipal issuers is AA-, compared to BBB- for global

corporate bonds. Municipal bonds, in general, are second only to US treasuries in terms of credit quality.

Taxable municipal bonds under Solvency II Matching Adjustment provide recurring issuance of qualifying bonds that can help insurers achieve capital-efficiency using more infrastructure debt. Unlike the tax-exempt market many taxable municipal bonds are structured without a 10-year call option making it more efficient for insurers to match liabilities.

[4] MUNICIPAL DEFAULT RATES LOWER THAN GLOBAL CORPORATES FOR ALL BROAD CATEGORIES; CUMULATIVE DEFAULT RATE (YEAR 10), AVERAGE OVER THE PERIOD 1970-2021

RATING		MUNICIPAL	CORPORATE
IG	Aaa	0.00%	0.35%
	Aa	0.02%	0.76%
	A	0.10%	1.96%
	Baa	1.06%	3.45%
HY	Ba	3.40%	14.78%
	B	16.70%	33.42%
	Caa-C	23.71%	49.04%
Investment-grade		0.09%	2.17%
Sepeculative-grade		6.94%	28.92%
All rated		0.15%	10.36%

Source: Moody's Investors Service as of April 21, 2022

[5] MUNICIPAL RATINGS TRANSITION LESS FREQUENTLY THAN GLOBAL CORPORATES; AVERAGE ONE-YEAR RATING TRANSITION RATES, 1970-2021

MUNICIPAL										
Rating		Aaa	Aa	A	Baa	Ba	B	Caa-C	Withdrawn	Default
IG	Aaa	95%	11.80%	0.10%	0.03%	0.01%	0.00%	0.00%	3.82%	0.00%
	Aa	0.32%	95%	1.03%	0.02%	0.01%	0.00%	0.00%	4.00%	0.00%
	A	0.03%	1.85%	93%	0.61%	0.13%	0.01%	0.00%	4.72%	0.00%
	Baa	0.02%	0.08%	3.48%	89%	1.71%	0.20%	0.04%	5.17%	0.03%
HY	Ba	0.03%	0.21%	1.98%	4.86%	81%	2.69%	0.61%	8.78%	0.22%
	B	0.00%	0.24%	0.86%	0.98%	5.64%	76%	5.53%	8.46%	2.54%
	Caa-C	0.00%	0.00%	0.65%	0.23%	1.41%	2.62%	73%	13.94%	7.75%

CORPORATE										
Rating		Aaa	Aa	A	Baa	Ba	B	Caa-C	Withdrawn	Default
IG	Aaa	88%	7.71%	0.58%	0.07%	0.02%	0.00%	0.00%	3.69%	0.00%
	Aa	0.76%	85%	8.36%	0.40%	0.06%	0.03%	0.02%	4.88%	0.02%
	A	0.05%	2.44%	87%	5.03%	0.43%	0.09%	0.04%	4.55%	0.05%
	Baa	0.03%	0.12%	3.78%	87%	3.45%	0.61%	0.15%	5.11%	0.14%
HY	Ba	0.01%	0.40%	0.38%	5.96%	77%	6.93%	0.81%	8.33%	0.79%
	B	0.01%	0.03%	0.12%	0.41%	4.75%	74%	7.25%	10.68%	2.97%
	Caa-C	0.00%	0.01%	0.02%	0.07%	0.27%	5.58%	70%	14.77%	8.90%

Source: Moody's Investors Service as of April 21, 2022

SUSTAINABLE FINANCE DISCLOSURE REGULATION (SFDR), EUROPEAN UNION

The European Union is at the forefront of Environmental, Social and Governance (ESG) regulation while the US and UK do not appear to be far behind. The Sustainable Finance Disclosure Regulation (SFDR) is European regulation that was designed to improve transparency in the market for sustainable investment products, to prevent greenwashing, and to increase transparency around sustainability claims made by asset managers, pension funds, and insurance firms.

US municipal bonds finance vital infrastructure that lend themselves, in general, to the UN Sustainable Development Goals. UN Sustainable Development Goals (SDGs) are a collection of 17 global goals set by the UN that is a call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity.

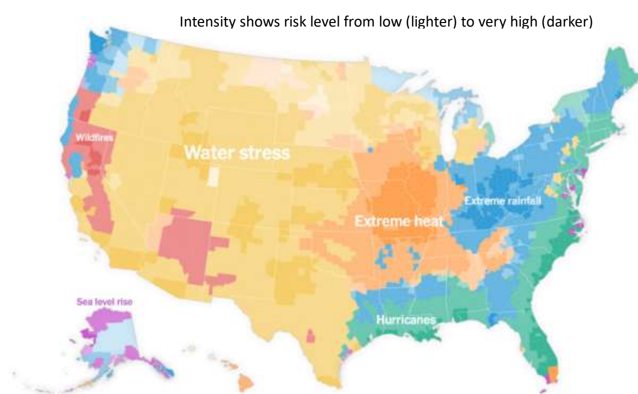
Taxable municipal bonds have many positive externalities that also can target various impact initiatives such as sustainability and social. Physical risk associated with climate change can be measured by the effects of changes in mortality rates, labor productivity, heating and cooling demand, changes on expenditures, agricultural productivity, and expected annual average loss from hurricanes. Social opportunities can be measured by investment practices related to racial equity, community engagement, sustainable employment, preventative healthcare, mental health, affordable housing, and social justice. There are also many viable broker-dealers to trade with that are minority, women, and/or military veteran owned.

[6] UN SUSTAINABLE DEVELOPMENT GOALS (SDG)

Source: United Nations

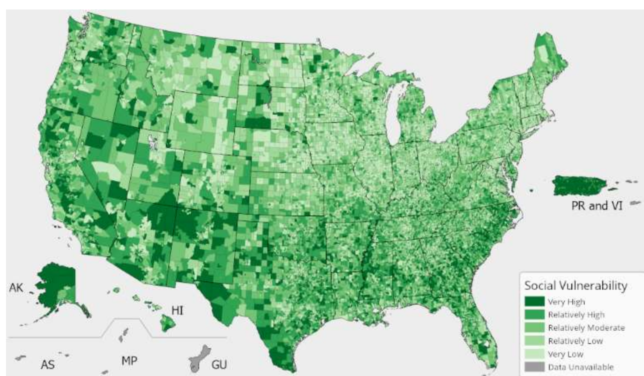
The municipal asset class neatly maps to the EU Taxonomy Regulation. Distinct demographic areas and bonds can be screened by regions that have lower economic impact from climate change, target under-supported communities, while still offering strong credit profiles. Roughly half of the overall municipal bond market qualifies for favorable SFDR capital treatment whether naturally rated or labeled directly as a green, sustainable, or social bond. The US economy is the sum of its parts, and the municipal market is its foundation.

[7] CLIMATE THREAT MAP



Source: Four Twenty Seven

[8] SOCIAL VULNERABILITY MAP



Source: FEMA National Risk Index

ASIA-PACIFIC REGULATION, LIFE INSURERS

Unliked Europe, insurance regulation across Asia is evolving at a slower speed and has not been fully adopted. However, Asian insurance companies are already moving towards a more advanced risk-based capital regime in anticipation. Many countries in the region seem to be aligning local regulation with the Global Insurance Capital Standards (ICS).

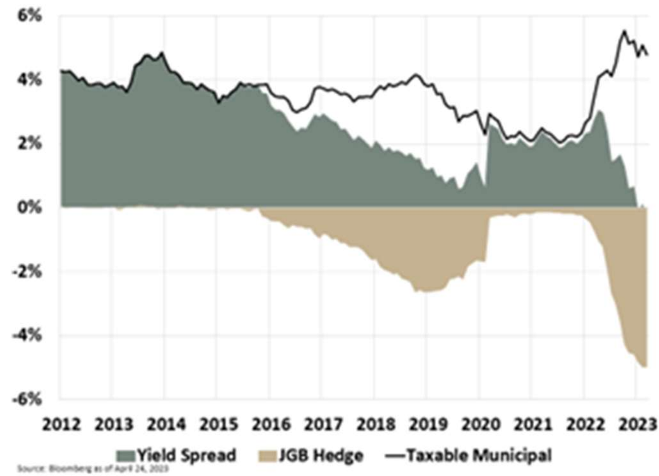
Under most existing regimes in Asia, bond investments are subject to a capital charge based on credit risk, interest rate risk, and currency risk. Typically, there is no dedicated capital charge for municipal bonds. They may be treated in the same manor as corporate bonds, yet they provide unique qualities. Under regimes such as the ICS, municipal bonds also may be classified as public sector bonds which are subject to a lower capital charge than corporate bonds.

FX hedging costs not just for Asian insurers, but for all non-USD balance sheets, require additional considerations. For institutions to efficiently hold taxable municipal bonds for a non-USD balance sheet it might require additional capital. Many taxable municipal bonds are structured without a 10-year call option making it more efficient for all insurers from a hedging perspective.

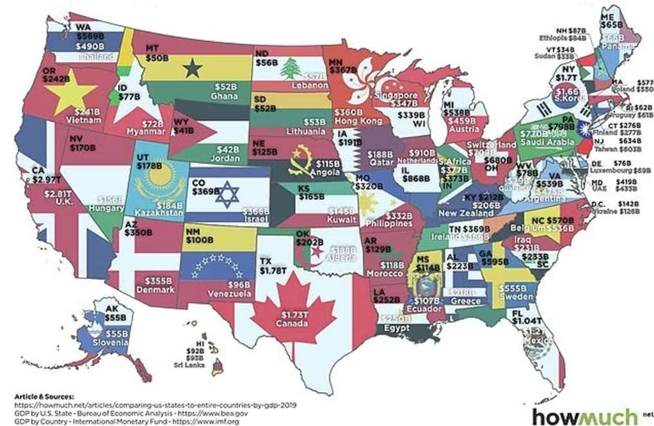
US taxable municipal bonds are particularly attractive when regulation treats them like corporate bonds. They naturally provide insurers with a broader universe of higher rated debt thereby receiving a lower credit risk charge. They also exhibit a lower volatility profile in terms of interest and credit risk that scores better from an FX perspective.

Currently, credit spreads, interest rates, and FX fluctuations have reduced the economic incentive of owning taxable municipal bonds on a hedge basis. When value is restored and/or when secondary market liquidity events dictate, it is important for investors to have an account on-boarded to enable swift execution.

[9] JPY TAXABLE MUNICIPAL FX HEDGED



[10] US STATE GDP BY COUNTRY EQUIVALENT

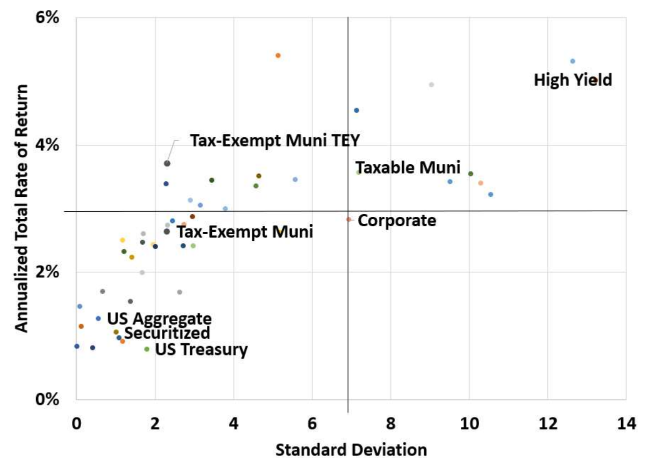


Source: Voanews.com

CONCLUSION

Municipal bonds have many applications around the world, not just to top US tax rate payers. Opportunities are driven by the markets broad and persistent demand, routine supply of credit, favorable capital treatment, and having infrastructure characteristics at corporate equivalent yields. Insurers and pension investors globally should consider taxable municipal bonds, most specifically for regulatory capital-efficiency.

[11] HISTORICAL ANNUALIZED RETURN VS VOLATILITY; UNADJUSTED FOR DURATION AND HEDGING



Source: Bloomberg as of April 24, 2023; 2012-2022; TEY adjusted for top US individual tax rate payer

16ROCK ASSET MANAGEMENT

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