SIFMA Research Quarterly – 2Q22

US Fixed Income Markets – Issuance & Trading

July 2022

The SIFMA Research Quarterlies contain data and statistics on U.S. markets. The fixed income reports are split into two – (1) issuance and trading, (2) outstanding – given a delay in the reporting of outstanding data. The reports cover data on total U.S. fixed income markets, as captured in the SIFMA Research databases: U.S. Treasuries, mortgage-backed securities, corporate bonds, municipal securities, federal agency securities, asset-backed securities, money markets (outstanding only), repurchase agreements (outstanding only) and secured overnight financing rate. This report also contains statistics on fixed income ESG issuance for green, social, and sustainability bonds.

All reports, including the equity quarterly, and corresponding databases can be found at: www.sifma.org/research

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Associated Reports

Please also see SIFMA Research Quarterly Report: US Cash Equities, ETFs, Multi-Listed Options and Capital Formation, SIFMA Research Quarterly Report: US Fixed Income Markets – Outstanding and US Financial Institutions – Financial & Regulatory Data, which can be found at: www.sifma.org/research

SIFMA Insights Primers: The SIFMA Insights primer series is a reference tool that goes beyond a typical 101 series. By illustrating important technical and regulatory nuances, SIFMA Insights primers provide a fundamental understanding of the marketplace and set the scene to address complex issues arising in today's markets. The SIFMA Insights market structure primer series includes: Global Capital Markets & Financial Institutions; Primary, Secondary & Post-Trade Markets; Electronic Trading; U.S. Fixed Income; SOFR, the Transition from LIBOR; U.S. Equity; U.S. Multi-Listed Options; U.S. ETFs; U.S. Capital Formation and Listings Exchanges; and Evolution of the Fintech Narrative. The primers and other Insights reports can be found at: www.sifma.org/primers

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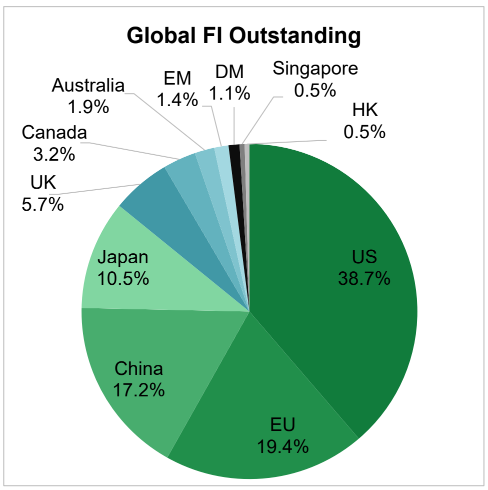
Executive Summary

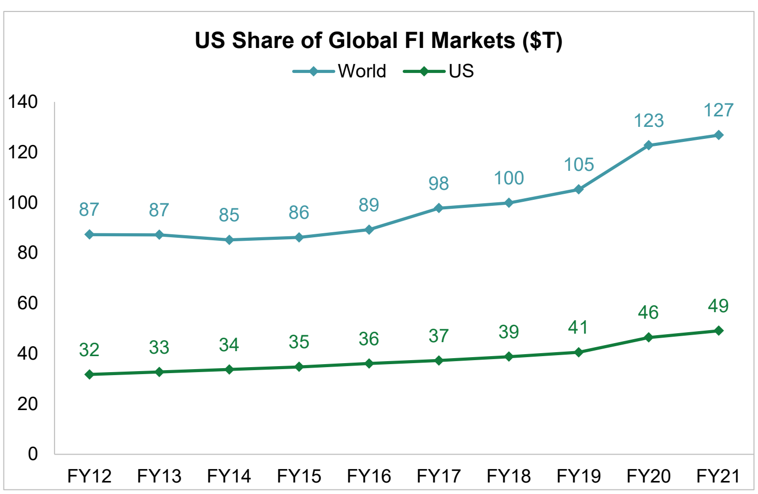
US Fixed Income Markets vs. Rest of World

The U.S. fixed income markets are the largest in the world, comprising 38.7% of the $127 trillion securities outstanding across the globe, or $49 trillion (as of 4Q21). This is 2.0x the next largest market, the EU. U.S. market share has averaged 38.6% over the last 10 years, troughing at 36.3% in 2012 and peaking at 40.4% in 2016.

US Market Share – Current



US Market Share – Historical Trends



Source: Bank for International Settlements (4Q21, BIS data for all countries has a lag)
Note: Country classification based on World Bank list of economies

Quarterly Performance

In this report, we utilized SIFMA Research's comprehensive fixed income and securitized products databases (www.sifma.org/statistics) to recap statistics for total U.S. fixed income markets, U.S. Treasuries (UST), mortgage-backed securities (MBS), corporate bonds (corporates), municipal securities (munis), federal agency securities (agency), asset-backed securities (ABS), money markets (MM), repurchase agreements (repos) and the secured overnight financing rate (SOFR). We also analyze trends in ESG issuance for green, social, and sustainability bonds.

Quarterly & YTD Highlights

Issuance ($B)	2Q22	1Q22	2Q21	Q/Q	Y/Y	YTD 2022	YTD 2021	Y/Y
Total Market	**2,253**	**2,807**	**3,477**	**-19.8%**	**-35.2%**	**5,060**	**7,160**	**-29.3%**
UST	1,042	1,150	1,336	-9.5%	-22.1%	2,192	2,625	-16.5%
MBS	577	772	1,184	-25.3%	-51.3%	1,349	2,498	-46.0%
Corporates	308	531	530	-41.9%	-41.8%	840	1,139	-26.3%
Agency	142	166	169	-14.5%	-16.2%	308	384	-19.9%
Munis	107	102	123	4.7%	-13.3%	208	236	-11.7%
ABS	78	86	135	-9.8%	-42.6%	163	278	-41.3%

Trading (ADV, $B)	2Q22	1Q22	2Q21	Q/Q	Y/Y	YTD 2022	YTD 2021	Y/Y
Total Market	**906**	**1,036**	**922**	**-12.5%**	**-1.7%**	**971**	**969**	**0.1%**
UST	610	697	595	-12.4%	2.6%	654	638	2.5%
MBS - Agency	233	278	273	-16.3%	-14.6%	255	272	-6.3%
MBS - Non Agency	1.5	1.5	1.4	2.2%	4.6%	1.5	1.5	-4.5%
Corporates	41	43	40	-4.6%	3.1%	42	43	-3.3%
Agency	2.6	2.5	2.8	3.4%	-7.4%	2.6	3.3	-22.6%
Munis	16	12	9	29.8%	75.0%	14	9.3	50.0%
ABS	1.7	1.8	1.4	-7.4%	21.5%	1.7	1.5	13.1%

Source: Bloomberg, Federal Reserve Bank of New York, FINRA, Municipal Securities Rulemaking Board, Refinitiv, US Agencies, US Treasury, SIFMA estimates

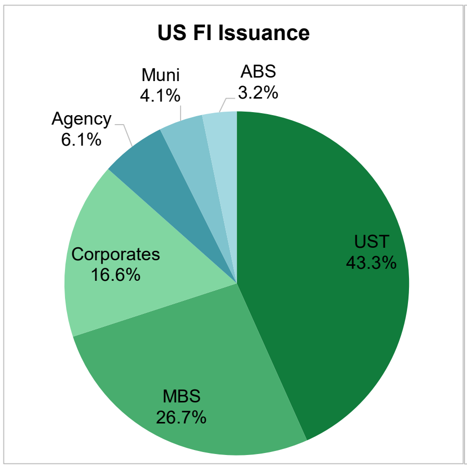
Note: Issuance = Long-term securities only

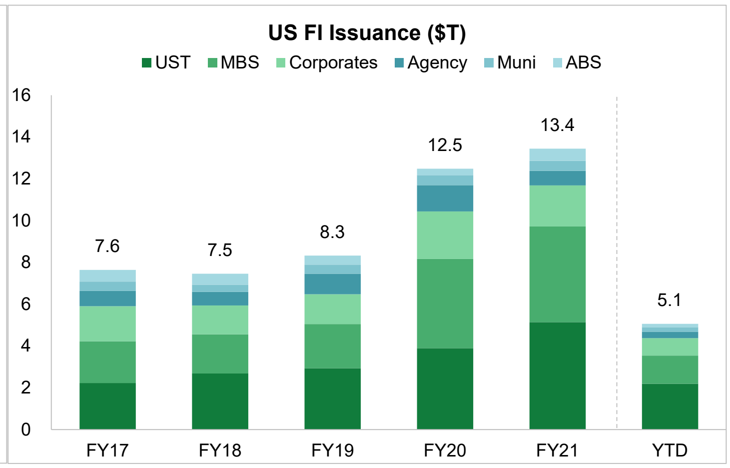
ESG Issuance ($B)	2Q22	1Q22	2Q21	Q/Q	Y/Y	YTD 2022	YTD 2021	Y/Y
Global	**175**	**200**	**227**	**-12.8%**	**-23.0%**	**375**	**495**	**-24.3%**
Green	124	120	126	3.6%	-1.2%	245	251	-2.6%
Social	22	33	48	-33.3%	-53.9%	56	138	-59.7%
Sustainability	28	47	53	-40.4%	-47.1%	75	105	-29.4%
US	**14**	**36**	**41**	**-62.8%**	**-67.4%**	**50**	**78**	**-36.2%**
Green	3	12	19	-73.3%	-82.5%	16	31	-49.0%
Social	1	4	1	-74.5%	37.7%	5	4	26.7%
Sustainability	9	20	22	-53.4%	-58.1%	29	43	-33.3%

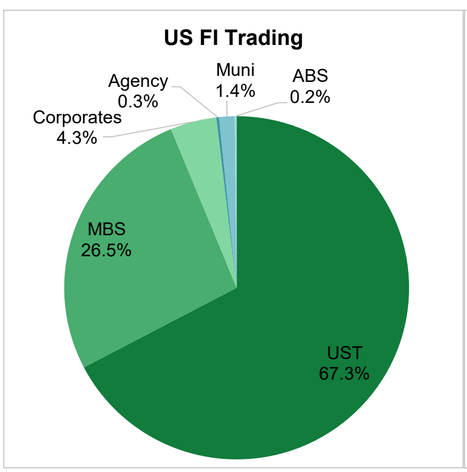
Source: Dealogic, SIFMA estimates

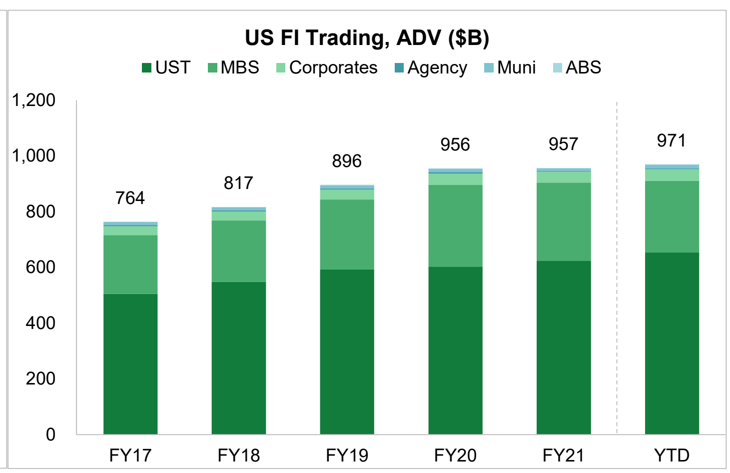
Chart Book: Total Fixed Income

- Issuance: 2Q22 $2.3T, -35.2% Y/Y, -19.8% Q/Q; YTD $5.1T, -29.3% Y/Y
- ADV: 2Q22 $0.9T, -1.7% Y/Y, -12.5% Q/Q; YTD $1.0T, +0.1% Y/Y





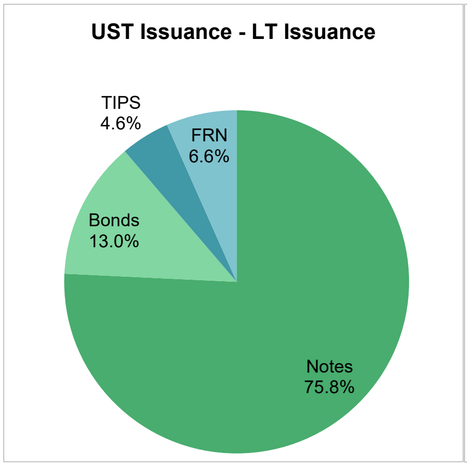


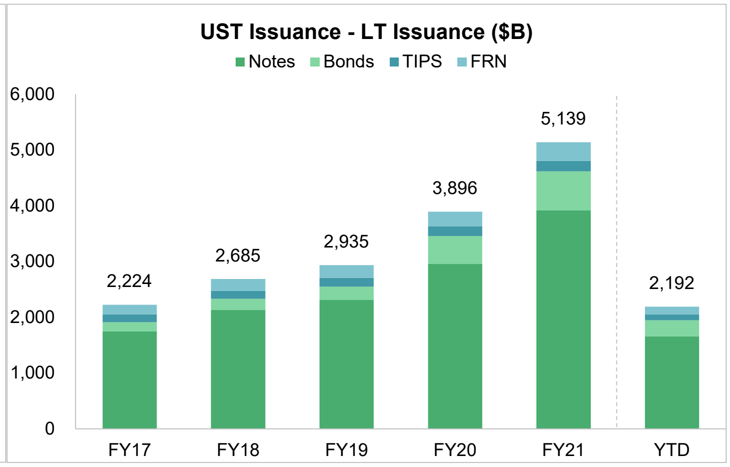


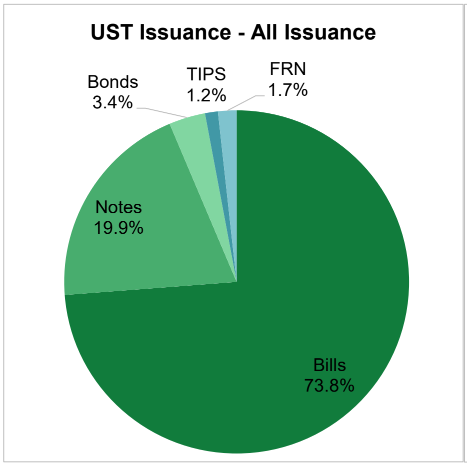
Source: Bloomberg, Federal Reserve Bank of New York, FINRA, Municipal Securities Rulemaking Board, Refinitiv, US Agencies, US Treasury, SIFMA estimates

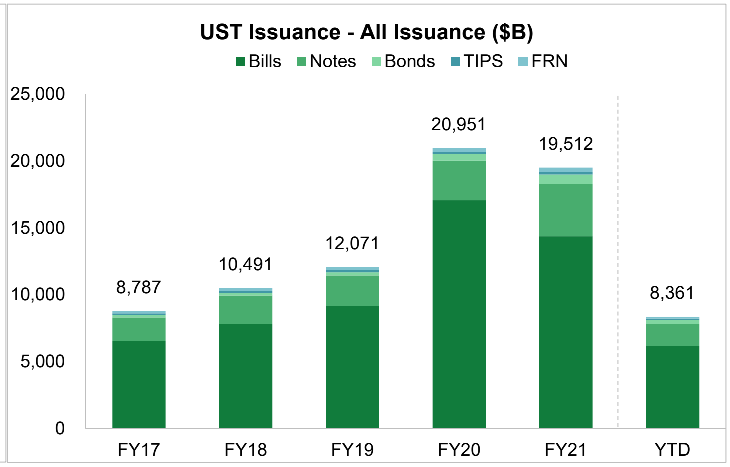
Chart Book: US Treasuries (UST)

- Issuance:
  - LT 2Q22 $1.0T, -22.1% Y/Y, -9.5% Q/Q; YTD $2.2T, -16.5% Y/Y
  - All 2Q22 $3.8T, -25.5% Y/Y, -15.5% Q/Q; YTD $8.4T, -16.7% Y/Y
- ADV: 2Q22 $610.4, +2.6% Y/Y, -12.4% Q/Q; YTD $653.5B, +2.5% Y/Y

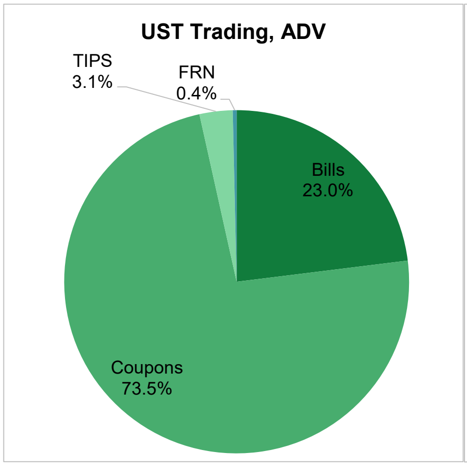


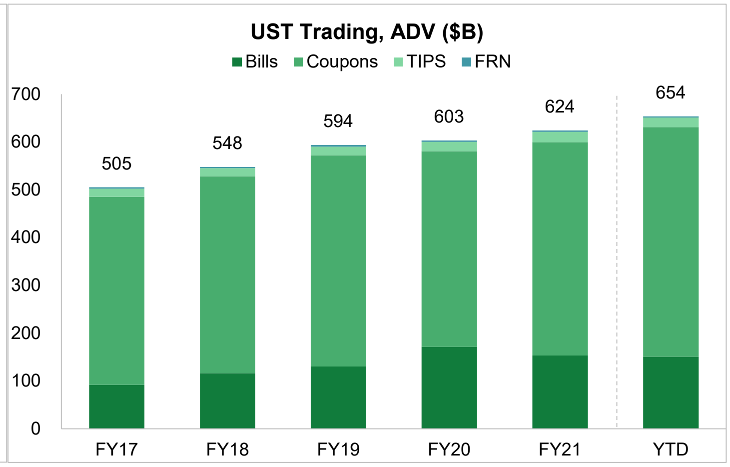


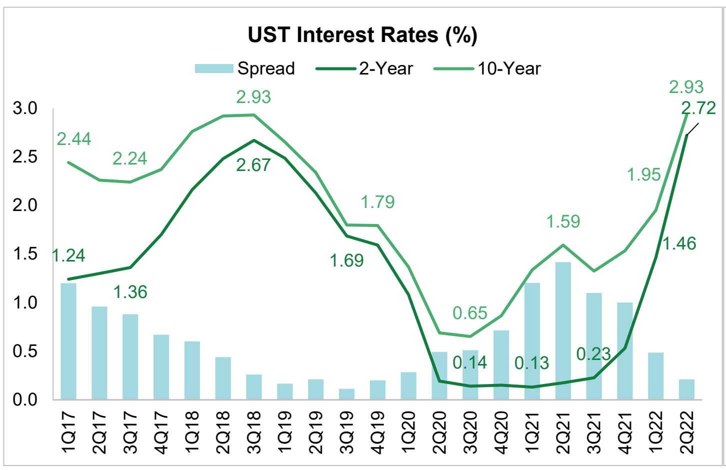


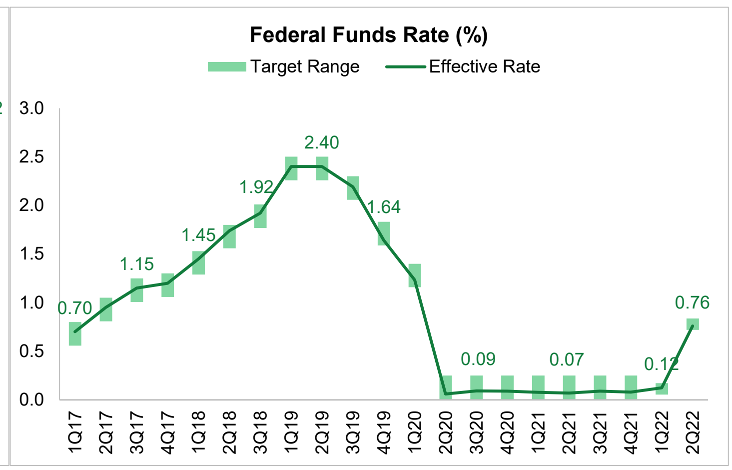


Source: US Treasury, SIFMA estimates
Note: All issuance includes T-Bills





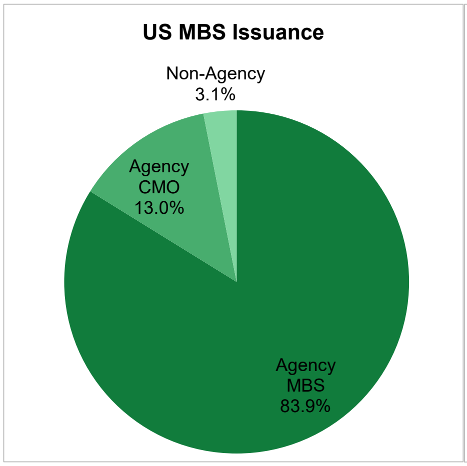


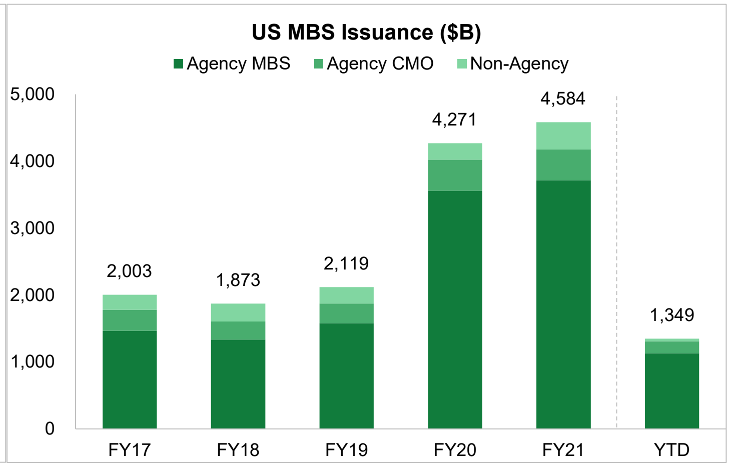


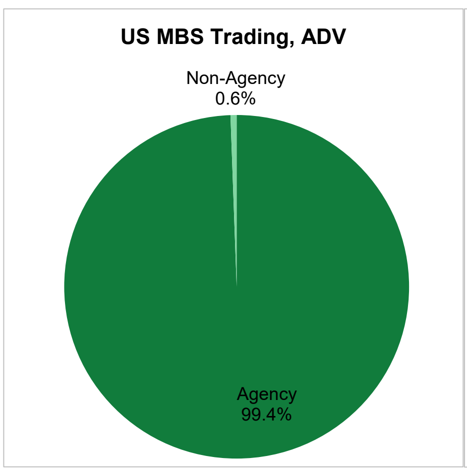
Source: Federal Reserve Bank of New York, US Treasury, SIFMA estimates

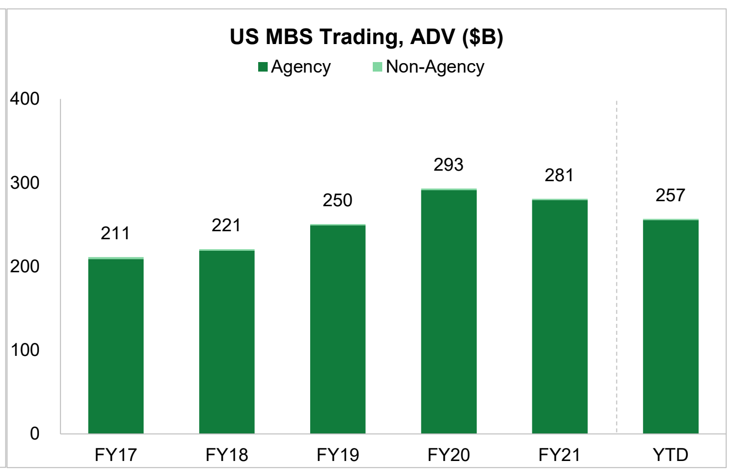
Chart Book: Mortgage-Backed Securities (MBS)

- Issuance: 2Q22 $576.8B, -51.3% Y/Y, -25.3% Q/Q; YTD $1.3T, -46.0% Y/Y
- ADV:
  - Agency 2Q22 $232.7B, -14.6% Y/Y, -16.3% Q/Q; YTD $255.4B, -6.3% Y/Y
  - Non-Agency 2Q22 $1.5B, +4.6% Y/Y, +2.2% Q/Q; YTD $1.5B, -4.5% Y/Y
  - Total 2Q22 $234.2B, -14.5% Y/Y, -16.2% Q/Q; YTD $256.9B, -6.3% Y/Y





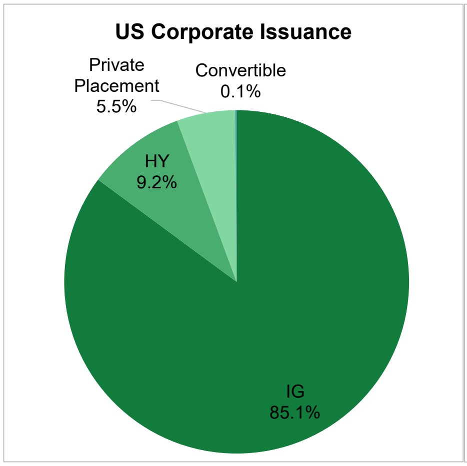


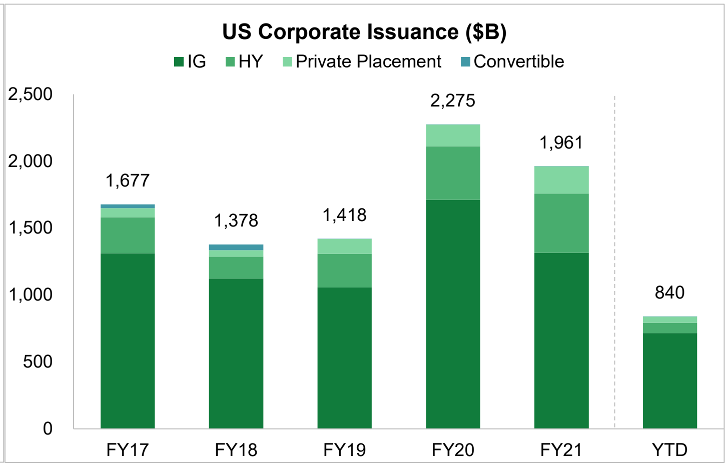


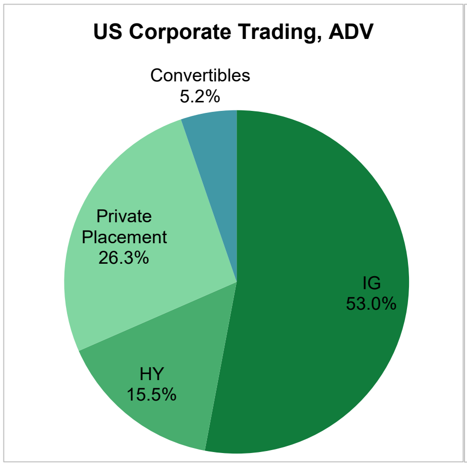
Source: Bloomberg, US Agencies, FINRA, SIFMA estimates

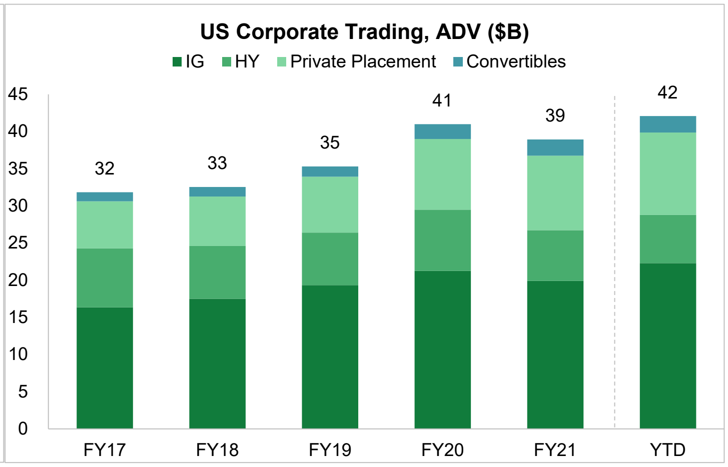
Chart Book: Corporate Bonds (Corporates)

- Issuance: 2Q22 $308.4B, -41.8% Y/Y, -41.9% Q/Q; YTD $839.6B, -26.3% Y/Y
- ADV: 2Q22 $41.2B, +3.1% Y/Y, -4.6% Q/Q; YTD $43.5B, -3.3% Y/Y

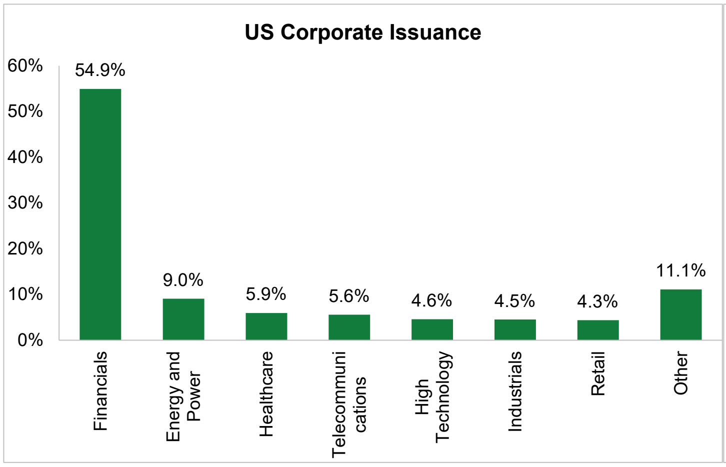


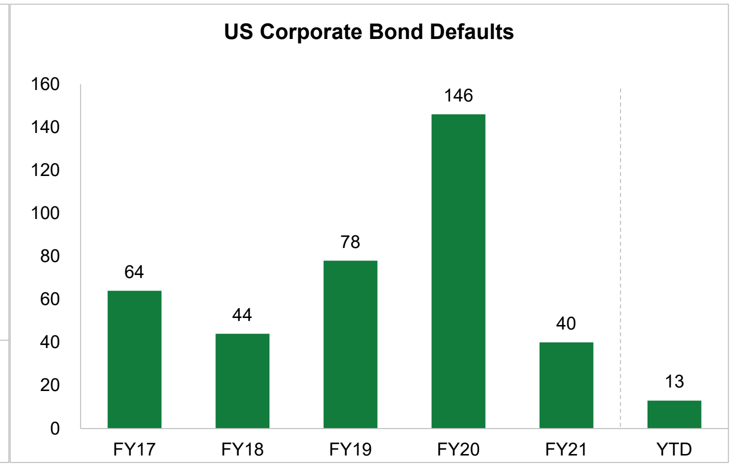


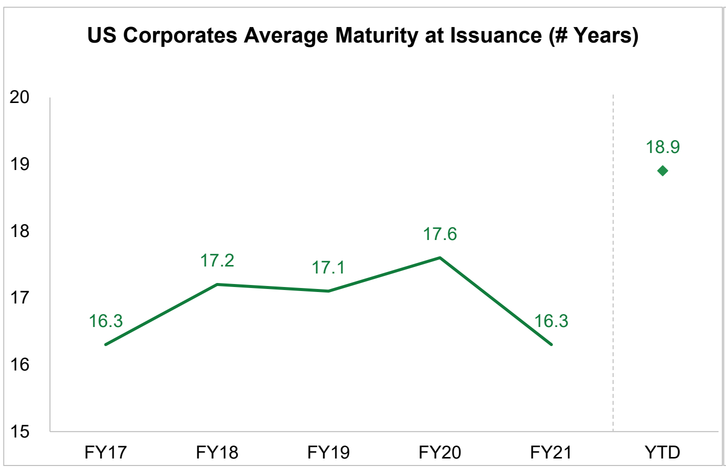


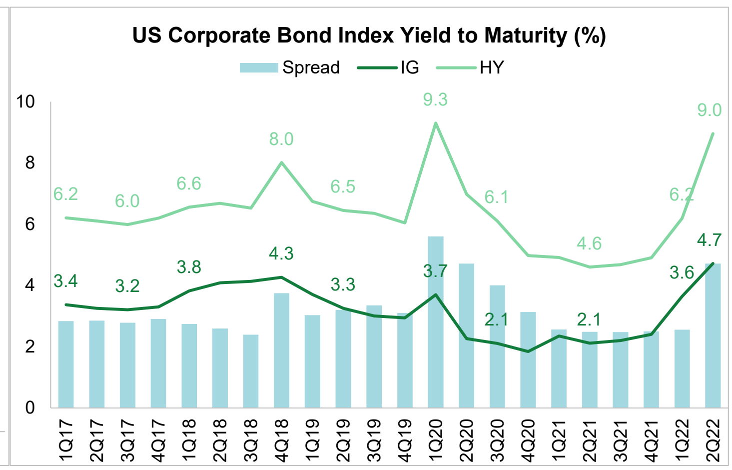


Source: Refinitiv, FINRA, SIFMA estimates





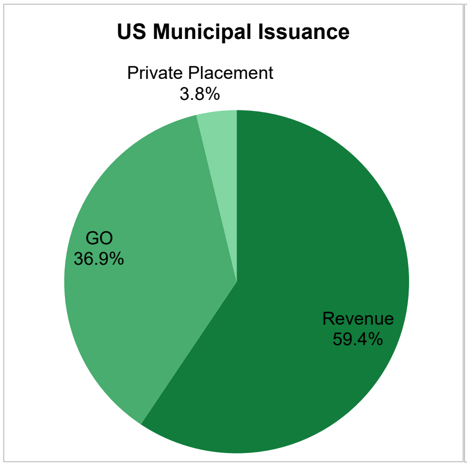


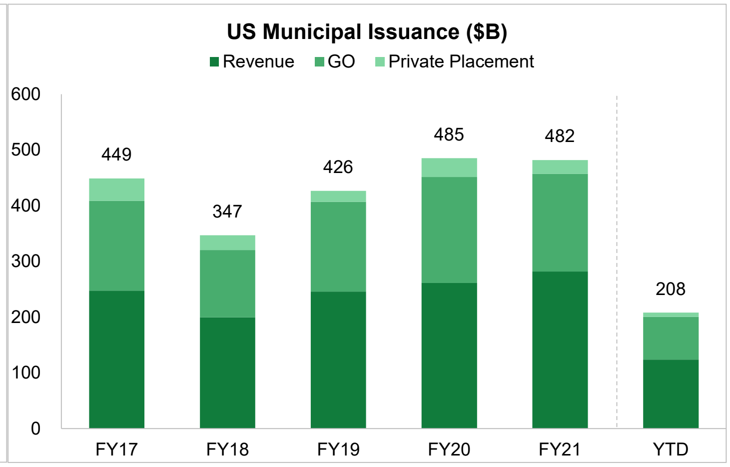


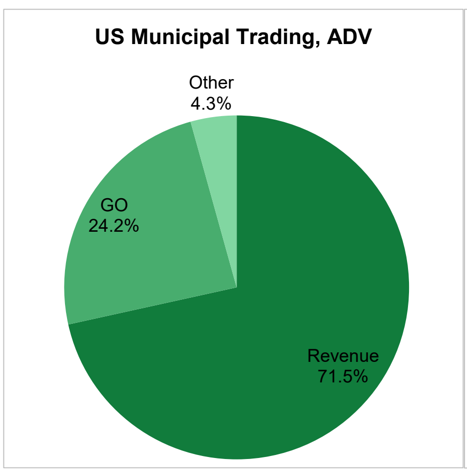
Source: ICE Data Indices, Refinitiv, S&P Global Ratings, SIFMA estimates

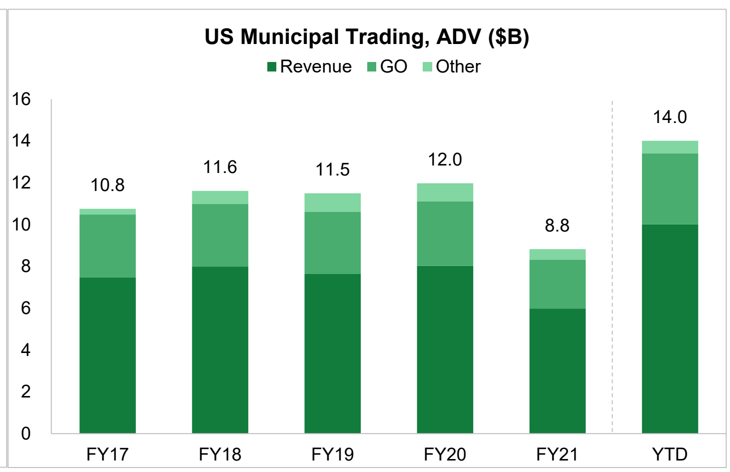
Chart Book: Municipal Securities (Munis)

- Issuance: 2Q22 $106.5B, -13.3% Y/Y, +4.7% Q/Q; YTD $208.2B, -11.7% Y/Y
- ADV: 2Q22 $15.8B, +75.0% Y/Y, +29.8% Q/Q; YTD $14.0B, -+50.0% Y/Y

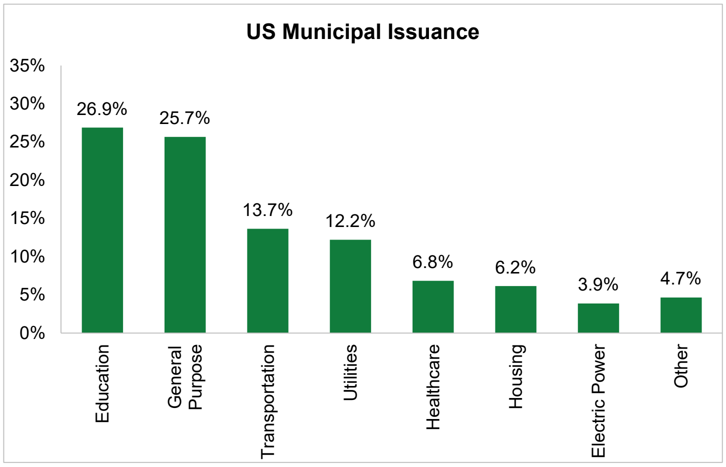


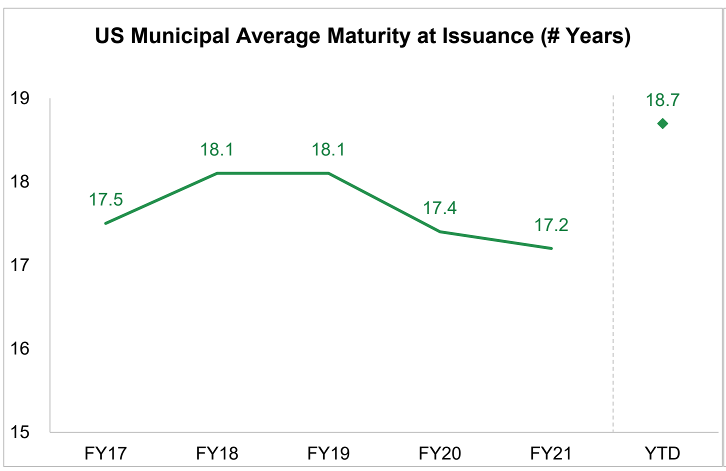


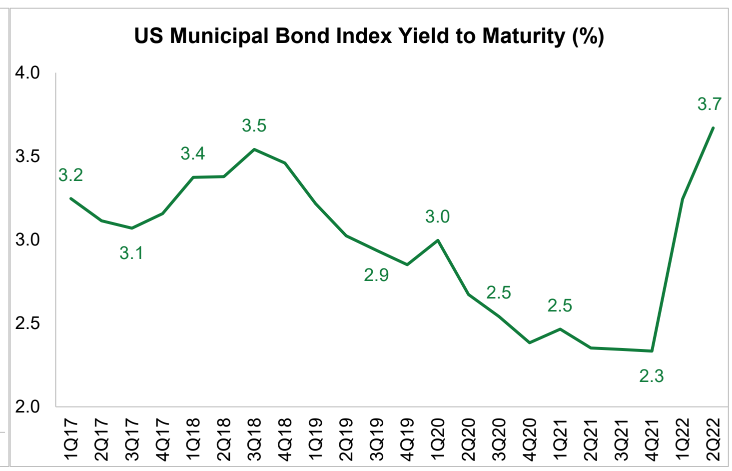




Source: Municipal Securities Rulemaking Board, Refinitiv, SIFMA estimates



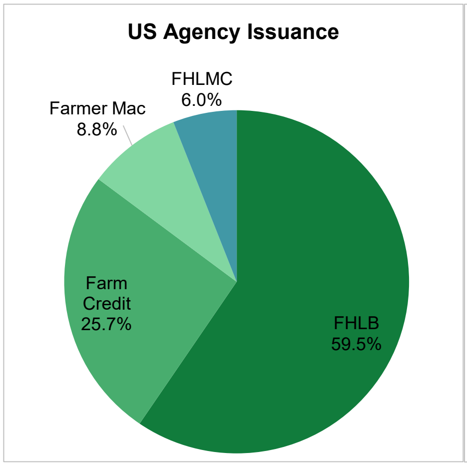


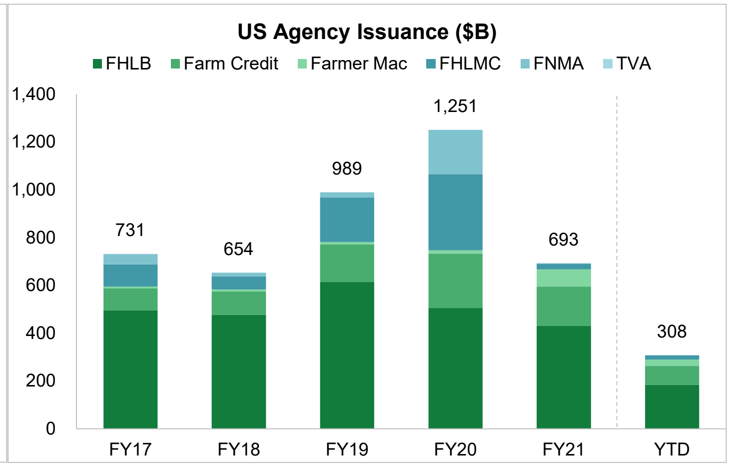


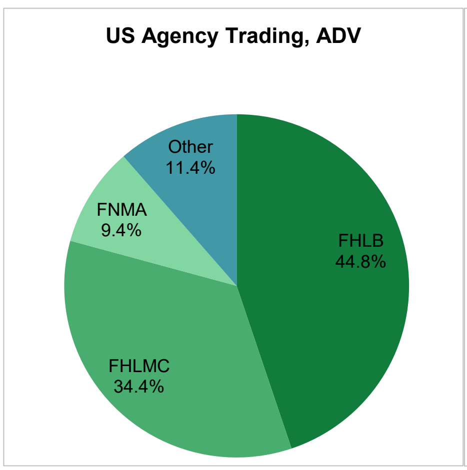
Source: ICE Data Indices, Refinitiv, SIFMA estimates

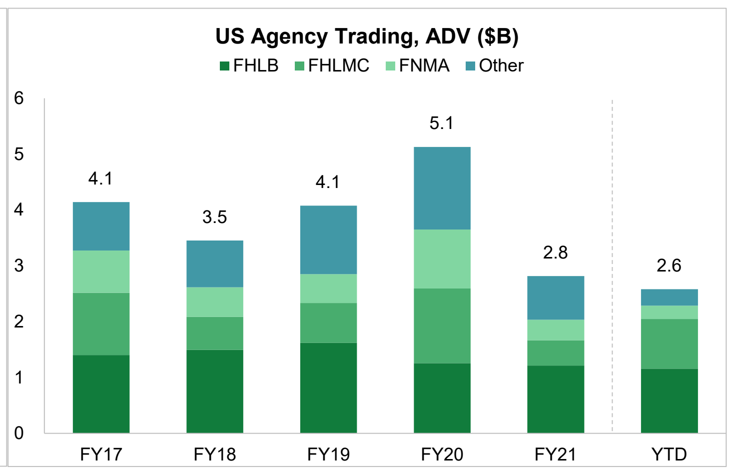
Chart Book: Federal Agency Securities (Agency)

- Issuance: 2Q22 $141.7B, -16.2% Y/Y, -14.5% Q/Q; YTD $307.5, -19.9% Y/Y
- ADV: 2Q22 $2.6B, -7.4% Y/Y, +3.4% Q/Q; YTD $2.6B, -22.6% Y/Y





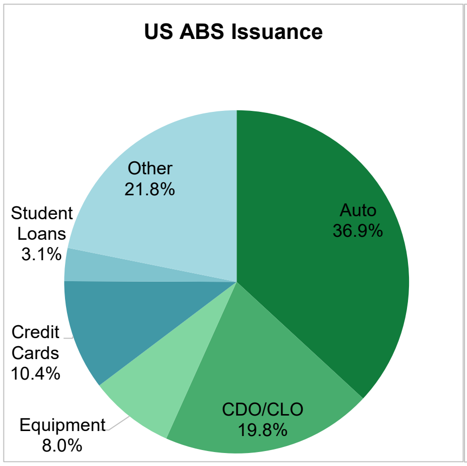


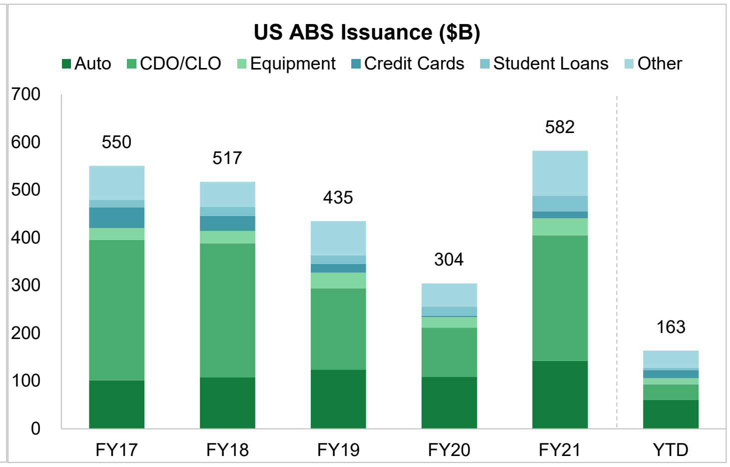


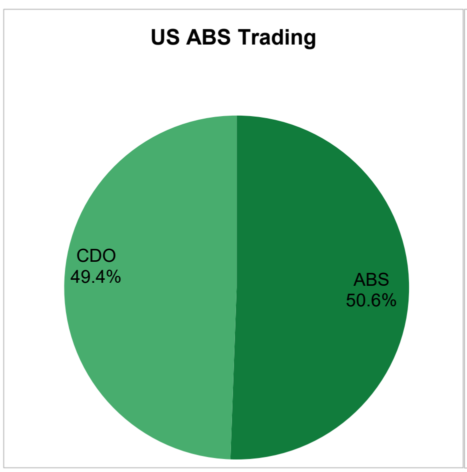
Source: FINRA, US Agencies, SIFMA estimates

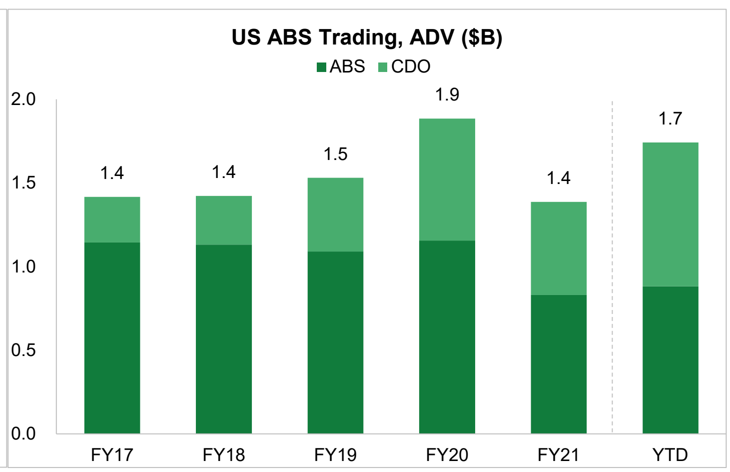
Chart Book: Asset-Backed Securities (ABS)

- Issuance: 2Q22 $77.5B, -42.6% Y/Y, -9.8% Q/Q; YTD $163.5B, -41.3% Y/Y
- ADV: 2Q22 $1.7B, +21.5% Y/Y, -7.4% Q/Q; YTD $1.7B, +13.1% Y/Y





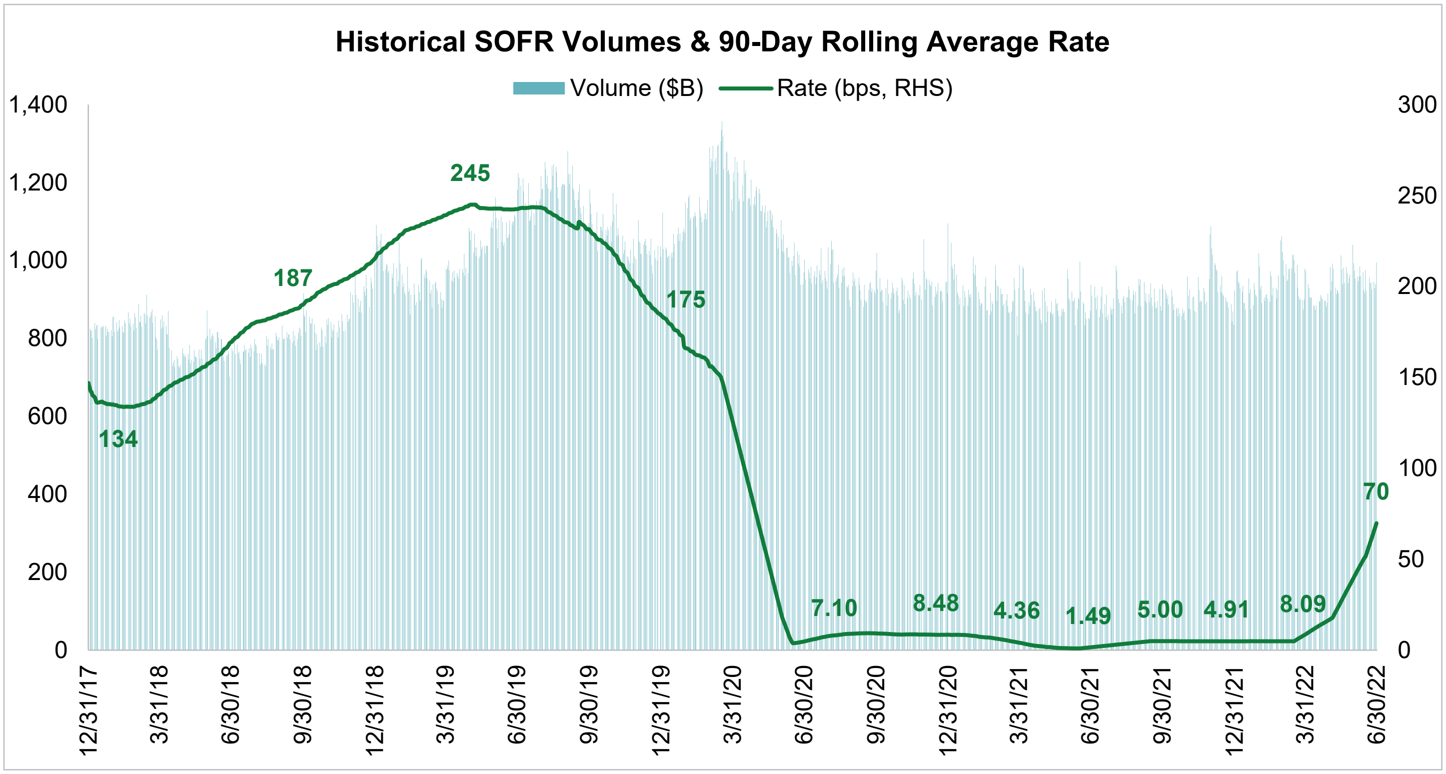




Source: Bloomberg, FINRA, Refinitiv, SIFMA estimates

Chart Book: Secured Overnight Financing Rate (SOFR)

- SOFR Rate (90 day rolling average): As of 3/31/22 = 8.59 bps
- Fed Volumes: As of 3/31/22 = $979B



Source: Federal Reserve Bank of New York, SIFMA estimates

Chart Book: Environmental, Social, and Governance (ESG) Issuance

- Global issuance: YTD $374.8B, -24.3% Y/Y
- U.S. issuance: YTD $49.8B, -36.2% Y/Y
- Category Breakout (% total global, YTD): green 65.3%, sustainability 19.9%, social 14.9%
- Regional Breakout (% total global, YTD): EMEA 52.9%, AsiaPac 28.5%, Americas 18.5% (U.S. 13.3%)

Global ESG Issuance ($B)

	Green	Social	Sustainability	Total
2007	0.8	0.0	0.0	0.8
2008	0.3	0.0	0.0	0.3
2009	0.3	0.0	0.0	0.3
2010	1.1	0.0	0.0	1.1
2011	0.0	0.0	0.0	0.0
2012	0.4	0.0	0.0	0.4
2013	9.1	0.0	0.7	9.8
2014	32.3	0.5	0.8	33.7
2015	35.9	0.0	1.8	37.7
2016	82.0	2.4	5.3	89.7
2017	124.8	10.2	9.1	144.0
2018	148.7	13.5	35.1	197.3
2019	208.8	19.3	64.9	293.1
2020	235.8	144.5	145.4	525.7
2021	500.5	185.4	181.0	866.9
2021 YTD	251.2	138.2	105.5	494.9
2022 YTD	244.6	55.7	74.5	374.8
Cumulative	**1,625.5**	**431.6**	**518.6**	**2,575.6**

Y/Y Change

	Green	Social	Sustainability	Total
2008	-63.6%			-63.6%
2009	6.7%			6.7%
2010	235.1%			235.1%
2011	-98.8%			-98.8%
2012	3255.8%			3255.8%
2013	2036.9%			2194.6%
2014	254.0%		22.6%	243.2%
2015	11.1%	-94.6%	113.5%	12.0%
2016	128.4%	8748.2%	197.7%	137.9%
2017	52.1%	322.9%	72.9%	60.6%
2018	19.2%	32.5%	286.6%	37.0%
2019	40.4%	43.6%	84.7%	48.5%
2020	12.9%	647.6%	123.9%	79.4%
2021	112.3%	28.3%	24.5%	64.9%
YTD	-2.6%	-59.7%	-29.4%	-24.3%

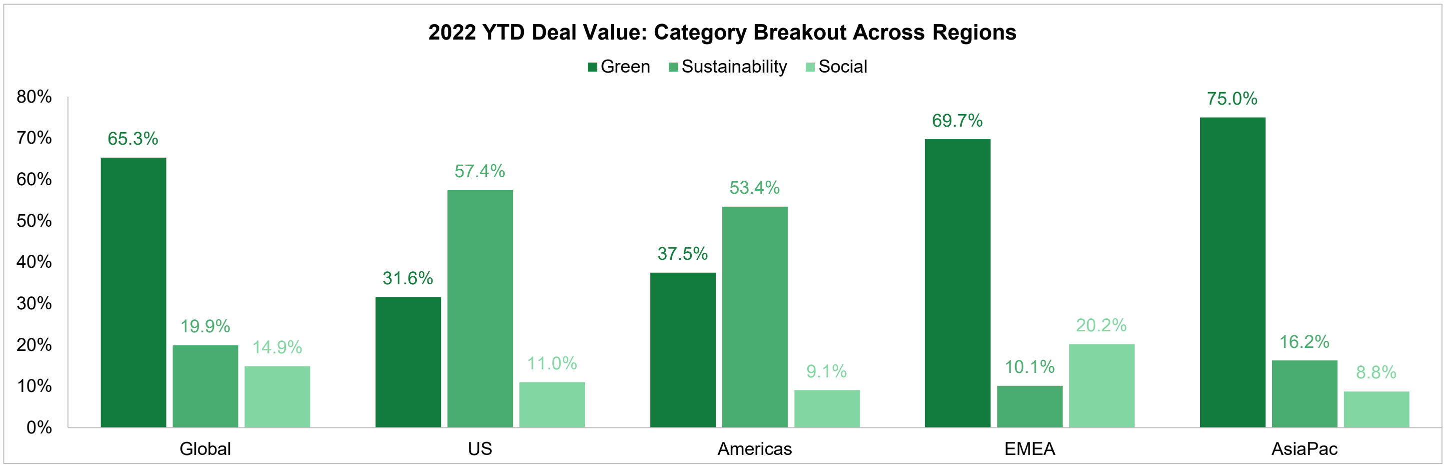
US ESG Issuance ($B)

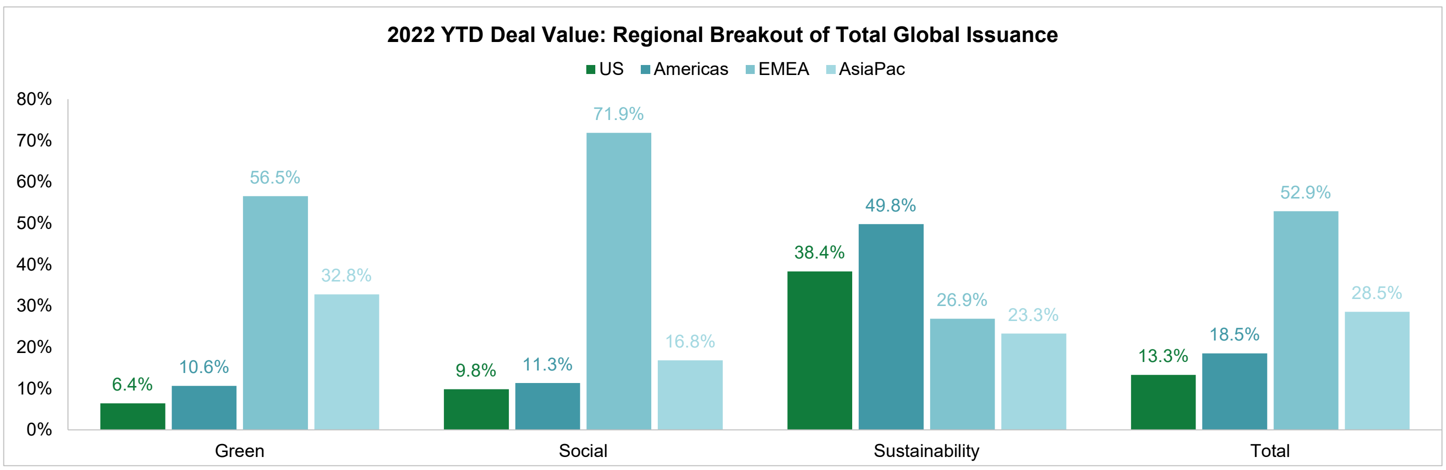
	Green	Social	Sustainability	Total
2007	0.0	0.0	0.0	0.0
2008	0.3	0.0	0.0	0.3
2009	0.0	0.0	0.0	0.0
2010	0.3	0.0	0.0	0.3
2011	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0
2013	3.0	0.0	0.0	3.0
2014	5.8	0.5	0.0	6.3
2015	5.9	0.0	0.0	5.9
2016	9.1	0.1	0.6	9.8
2017	11.9	0.6	0.7	13.2
2018	20.8	1.1	19.9	41.8
2019	34.6	1.2	28.4	64.1
2020	30.9	9.6	94.2	134.8
2021	62.2	8.2	78.6	149.0
2021 YTD	30.8	4.3	42.8	78.0
2022 YTD	15.7	5.5	28.6	49.8
Cumulative	**200.7**	**26.8**	**251.0**	**478.4**

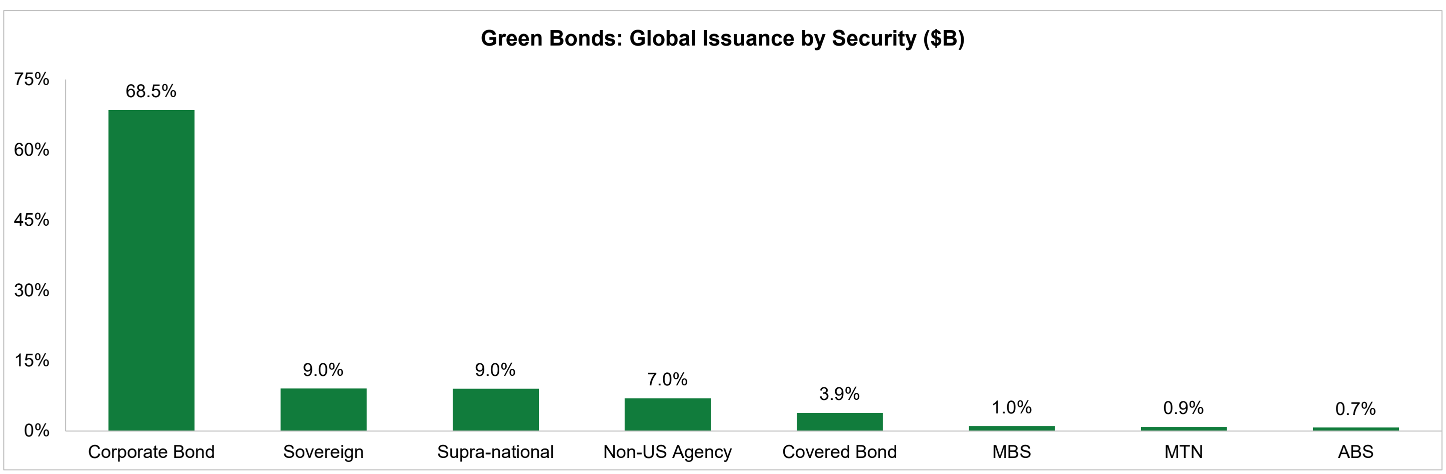
Y/Y Change

	Green	Social	Sustainability	Total
2009	-100.0%			-100.0%
2010				
2011	-96.1%			-96.1%
2012	-100.0%			-100.0%
2013				
2014	89.3%			105.7%
2015	2.4%	-100.0%		-5.8%
2016	54.1%			65.7%
2017	30.7%	546.9%	27.2%	35.5%
2018	75.1%	84.3%	2565.9%	215.9%
2019	66.2%	4.1%	42.5%	53.3%
2020	-10.6%	724.7%	232.2%	110.1%
2021	101.2%	-14.2%	-16.6%	10.6%
YTD	-49.0%	26.7%	-33.3%	-36.2%

Source: Dealogic, SIFMA estimates







Source: Dealogic, SIFMA estimates
Note: MTN = Medium Term Note

Appendix: Fixed Income Securities Definitions & Purpose

In general, fixed income securities are borrowed capital for the issuer to fund government operations, public projects or corporate investments, thereby fueling economic growth. The diversity of fixed income products both increases the amount of funds available to borrow and spreads credit risk across multiple market participants.

- **U.S. Treasury Securities (UST)** – UST are debt obligations of the federal government used to fund its operations. Since UST are backed by the full faith and credit of the U.S. government, these securities are considered by market participants as the benchmark credit. The U.S. government has a AAA rating, meaning it has essentially no credit risk and can easily meet its financial obligations on time and in full. In light of this, UST show a diversity of holders, in both institutional type and foreign holders.

- **Mortgage-Backed Securities (MBS)** – Since mortgages (a debt instrument collateralized by a specified real estate property) are less liquid than other investment vehicles, they can be securitized into MBS, whether in pass-throughs or collateralized mortgage obligations (CMOs).

- **Corporate Bonds (Corporates)** – Corporates are debt securities issued by public and private corporations. They are issued to raise money to fund investments or expansion plans. Corporates are considered riskier than UST, and receive ratings by credit ratings agencies to determine creditworthiness, i.e. probability of repayment of debt in a timely manner.

- **Municipal Bonds (Munis)** – Munis are debt securities issued by state/local governments or government agencies and public entities (utilities, school districts) to fund public projects, predominantly infrastructure related. Efficient muni markets enable states and municipalities to borrow at low rates and finance capital expenditures over a longer time period.

- **Federal Agency Securities (Agency)** – Agency securities are issued by quasi-governmental agencies (federal government, government sponsored enterprises) to fund operations. Unlike UST or munis, these securities are not always fully guaranteed by the U.S. or a municipal government. As such, they can hold credit and default risk.

- **Asset-Backed Securities (ABS)** – ABS are financial securities collateralized by a pool of typically illiquid assets such as auto loans, student loans, credit cards, etc. Pooling these assets creates a more liquid investment vehicle, with a valuation based on the cash flows of the underlying and the structure of the transaction.

- **Money Markets (MM)** – MMs involve highly liquid, short maturity (typically overnight to less than one year) financial instruments (certificates of deposit/CDs, bankers acceptances, commercial paper/CP, etc.), used by investors to borrow and lend in the short term. Transactions in the money markets are wholesale, taking place only between institutional investors (no individual investors) and for large denominations.

- **Repurchase Agreements (Repos)** – Repos are financial transactions in which one party sells an asset to another party with a promise to repurchase the asset at a pre-specified later date (a reverse repo is the same transaction seen from the perspective of the security buyer). Repos can be overnight (duration one day) or term (duration up to one year, albeit some are up to two years and the majority are three months or less). The repo market enables market participants to provide collateralized loans to one another, and financial institutions predominantly use repos to manage short-term fluctuations in cash holdings, rather than general balance sheet funding. Repos aid secondary market liquidity for the cash markets (ex: UST), allowing dealers to act as market makers in a very efficient manner.

- **Secured Overnight Financing Rate (SOFR)** – In the U.S., the transition away from London Interbank Offered Rate (LIBOR) to its chosen alternative reference rate, SOFR, is underway. While LIBOR is not fully transaction based, SOFR is based on the overnight repo markets with ~ $1 trillion of transactions per day. Publication of the SOFR rate began in April 2018. Trading and clearing of SOFR based swaps and futures began in May 2018.

- **Environmental, Social, and Governance (ESG)** – Dealogic classifies ESG bonds by:
    - Green – Any type of bond instrument where the proceeds will be exclusively applied to finance or refinance, in part or in full, new and/or existing eligible Green Projects and which are aligned with the four core components of the Green Bond Principles (GBP)
    - Social – Any type of bond instrument where the proceeds will be exclusively applied to finance or refinance in part or in full new and/or existing eligible Social Projects and which are aligned with the four core components of the Social Bond Principles (SBP)
    - Sustainability – Bonds where the proceeds are exclusively applied to finance or refinance a combination of both Green and Social Projects
    - Region – Deal nationality is a calculated nationality that looks at the business nationality of the issuing entity with the exception of securitizations that are categorized using the nationality of business of the originator or if undisclosed the nationality of risk

Appendix: Terms to Know

Y/Y	Year-over-Year
Q/Q	Quarter-over-Quarter
YTD	Year-to-Date
BPS	Basis Points
PPS	Percentage Points
CAGR	Compound Annual Growth Rate
CUSIP	Committee on Uniform Securities Identification Procedures
CFTC	Commodity Futures Trading Commission
SEC	Securities and Exchange Commission
Fed	Federal Reserve System
FRB	Federal Reserve Bank
NY Fed	Federal Reserve Bank of New York
ARRC	Alternative Reference Rates Committee
ADV	Average Daily Trading Volume
Algo	Algorithm (algorithmic trading)
AT	Automated Trading
ATS	Alternative Trading System
AUM	Assets Under Management
Best Ex	Best Execution
CLOB	Central Limit Order Book
D2C	Dealer-to-Client
D2D	Dealer-to-Dealer
ECN	Electronic Communications Network
ETP	Electronic Trading Platforms
ETD	Exchange Traded Derivative
FI	Fixed Income
FICC	Fixed Income, Currencies and Commodities
GCF	General Collateral Financing
IDB	Inter-Dealer Broker
IIV	Intraday Indicative Value
IOI	Indication of Interest
MM	Market Maker
OI	Open Interest
OTC	Over-the-Counter
VWAP	Volume Weighted Average Price
IBOR	Interbank Offered Rate
LIBOR	London Inter-bank Offered Rate
RFR	Risk Free Rate
SOFR	Secured Overnight Financing Rate
DV01	Dollar Value of Basis Point
DVP	Delivery-versus-Payment
EFFR	Effective Fed Funds Rate
PAI	Price Alignment Interest
Repo	Repurchase Agreement

UST	U.S. Treasury Securities
MBS	Mortgage-Backed Security
Corporates	Corporate Bonds
Munis	Municipal Securities
Agency	Federal Agency Securities
ABS	Asset-Backed Securities
MM	Money Markets
FRN	Floating Rate Note
FRA	Forward Rate Agreement
T-Bill	U.S. Treasury Bill
T-Note	U.S. Treasury Note
T-Bond	U.S. Treasury Bond
TIPS	Treasury Inflation Protected Securities
ABS	Asset-Backed Security
CMO	Collateralized Mortgage Obligation
MBS	Mortgage-Backed Security
CMBS	Commercial MBS
RMBS	Residential MBS
HY	High Yield Bond
IG	Investment Grade Bond
GO	General Obligation Bond
Revenue	Revenue Bond
CD	Certificate of Deposit
CDO	Collateralized Debt Obligation
CLO	Collateralized Loan Obligation
CP	Commercial Paper
ABCP	Asset-Backed Commercial Paper
MMF	Money Market Mutual Funds
FAMC	Farmer Mac/Federal Agricultural Mortgage Corporation
FCS	Farm Credit System
FHLB	Federal Home Loan Banks
FHLMC	Freddie Mac/Federal Home Loan Mortgage Corporation
FNMA	Fannie Mae/Federal National Mortgage Association
GNMA	Ginnie Mae/Government National Mortgage Association
TVA	Tennessee Valley Authority
IR	Interest Rate
IRS	Interest Rate Swap
OIS	Overnight Index Swap
TRS	Total Return Swap
STIR	Short-Term Interest Rate

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