



SIFMA Insights:

US Fixed Income Market Structure Primer

July 2018



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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.

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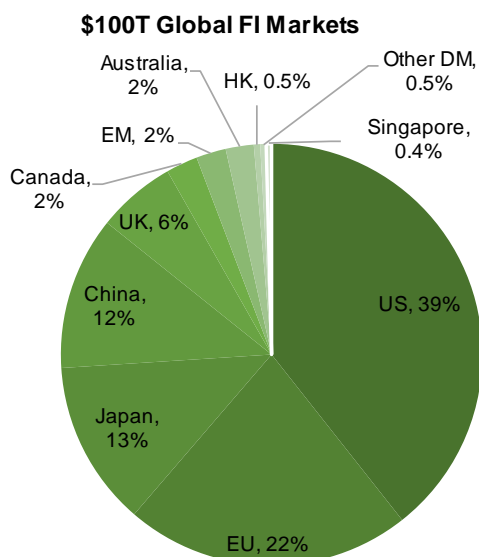
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Executive Summary

The U.S. fixed income markets are the largest in the world, comprising 39% of the \$100 trillion securities outstanding across the globe, or \$39 trillion.



Source: Bank of International Settlements

Note: As of FY17

U.S. capital markets (fixed income and equity) are a critical source of capital for businesses and governments (federal, state and local), funding 65% of total U.S. economic activity. Debt capital markets – providing a more efficient, stable and less restrictive form of borrowing for corporations – are the more prevalent fuel for growth in the U.S., while bank lending prevails in other regions (80%/20% in the U.S., reversed in other developed markets). Fixed income markets are an integral component to economic growth, providing efficient, long term and cost effective funding for governments and companies. This enables them to expand, innovate and provide goods and services society demands.

We have seen a transformation in fixed income markets since the crisis, historically bilateral and performed by banks. Post-crisis regulatory constraints on balance sheets have forced banks to pull back from some fixed income activities. This is coupled with volatility at sustained lows across multiple asset classes and a divergence in central bank policy, as rates begin to rise in the U.S. yet remain low in most other developed nations. To continue servicing clients' needs, markets had to be innovative and leverage product innovation and technology. This led to growth in ETFs and other passive investments as a way for investors to achieve their financial goals. The market landscape has also enabled the development and adoption of electronic market makers, albeit gradual and varying by type of security.

Breaking Out the US Fixed Income Markets

Not One-Size Fits-All

In general, fixed income securities are borrowed capital for the issuer, transferring funds from those that have it to those that need it. These borrowings are used to fund government operations, public projects or corporate investments, thereby fueling economic growth. The buyer of these securities does not receive ownership in the issuing entity, as the debt is repaid at a specified time (repayment of principal). The return for investor comes in interest payments (fee charged for lending the money) at a fixed amount on specified time periods, usually semiannually. Fixed income markets include debt securities, repo instruments and securitized products based on underlying debt securities. The diversity of fixed income products both increases the amount of funds available to borrow and spreads credit risk across multiple market participants.

It is important to note we write fixed income markets as plural for a reason. There is not one market, but several markets based on multiple subcategories within each main category, which we break out as (listed in order of size of markets): U.S. Treasuries, mortgage-backed securities (MBS), corporates, munis, agency, asset-backed securities (ABS) and money markets. The UST and agency markets are referred to as the rates markets, as valuation and bondholder risk is tied to interest rates. The remaining credit markets bring both interest rate and credit risk, or the probability of the borrower defaulting. There are also repos, which aid secondary market liquidity for the cash markets (for example, UST), allowing dealers to act as market makers in a very efficient manner.

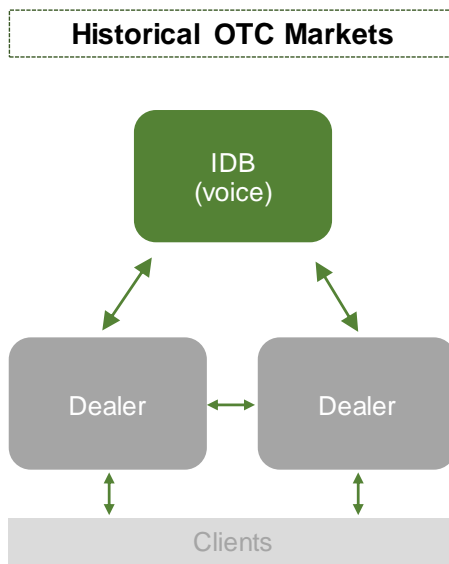
Different markets have multiple sub categories – for example, large companies can have over 40 types of bond (callable, convertible, etc.), and there are public versus private markets for some fixed income segments – which serve different purposes. Fixed income products do not necessarily trade on exchanges (albeit some products have moved in this direction, i.e. the electronification of markets) and are not 100% fungible, as investors experience with U.S. cash equities. For example, a large corporation may have ~1,500 CUSIPs versus only one stock. Therefore, there is no one-size-fits-all way to describe market structure for fixed income securities.

Primary markets, or new issuance, often dominate secondary market trading volumes, acting as an important piece of price discovery for markets. While we look at primary and secondary markets separately in this report, they are symbiotic in nature. Efficiently functioning primary markets maintain the depth and liquidity in secondary markets. Healthy secondary markets give issuers confidence their needs will be met at a good price level in the markets when issuing bonds, as they receive a liquidity premium at issuance when there is a liquid secondary market. This enables new issuance, while less liquid secondary markets act as essentially a tax on issuance., i.e. problems on one side of the equation could bring negative consequences to the other side.

This report analyzes how the various segments of the fixed income markets have recovered since the financial crisis. We assess the multiple sub categories within each main category across (when available): outstanding, issuance and average daily trading volume. We note growth in dollars outstanding is a factor of net new issuance and market value appreciation. (Please see the Appendix for sources and notes on all data in this report.)

The Electronification of Markets

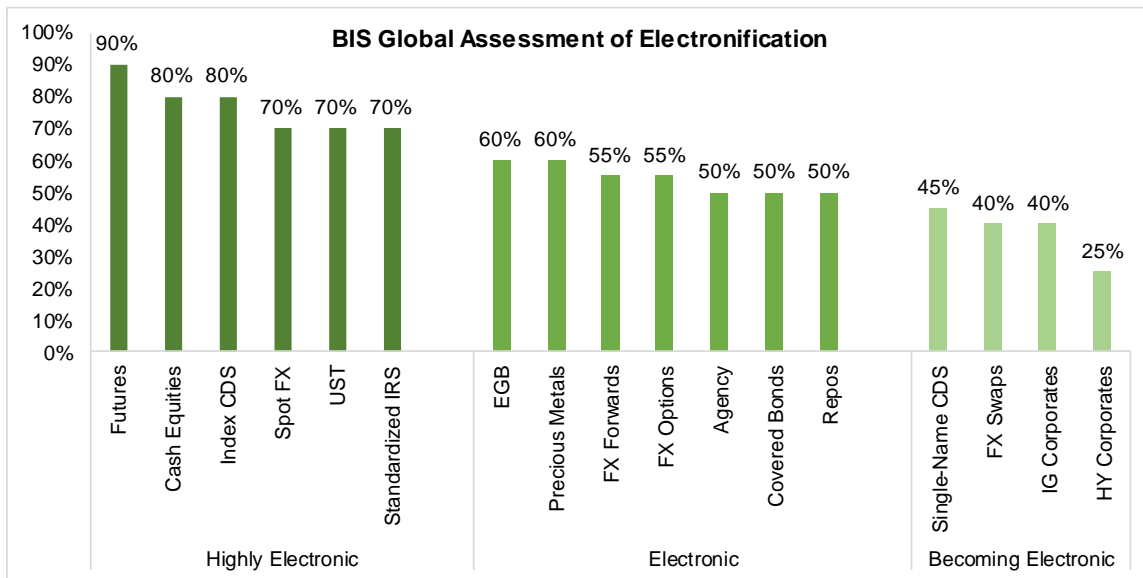
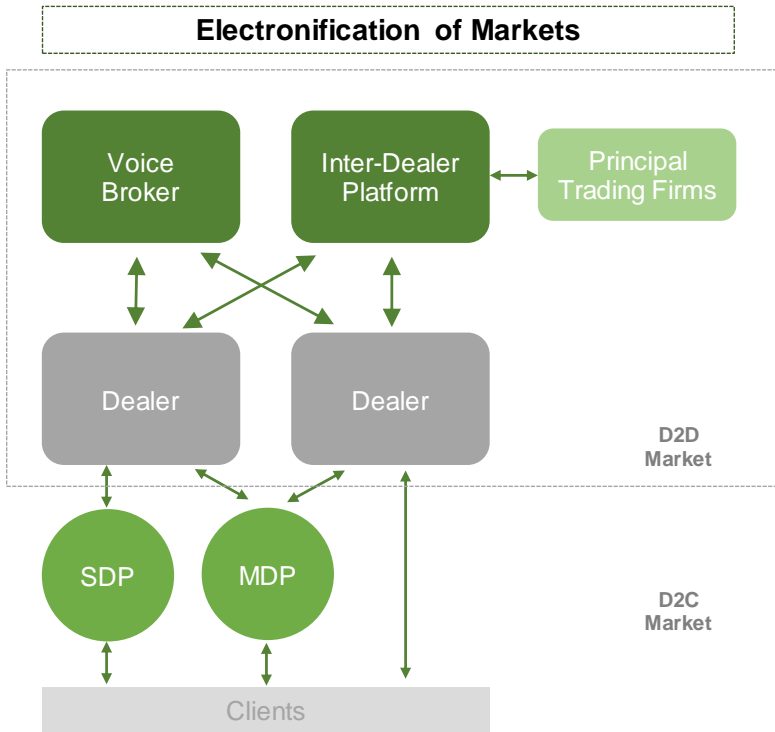
Historically, fixed income instruments traded in over-the-counter (OTC) markets, dominated by dealers interacting with clients by voice (human interaction, not electronic). The markets were segmented by dealer-to-dealer (D2D) and dealer-to-client (D2C) trading. Clients looking to trade would call up dealers and request available prices, i.e. a quote-driven market. Trading did not take place on an organized exchange (albeit the New York Stock Exchange traded government bonds far back in the 1800s). As such, only the counterparties knew deal details (prices, volumes, etc.), causing prices to range widely across dealers.



Source: Bank for International Settlements (BIS), SIFMA estimates

The electronification of markets (diagramed on the next page) indicates the increasing percentage of trading performed on electronic trading platforms (ETPs). Electronic trading – the matching of counterparties in the negotiation or execution stages via an ETP – can take place in various forms, differing by trade protocols and types of end users. Electronic trading started in the late 1990s in the D2D markets, acting as order-driven markets often using central limit order book protocols (CLOB; storing bids and offers in a queue which is executed in a priority sequence). This increased price transparency, while maintaining the anonymity of counterparties. It took two predominant forms: (1) single-dealer platforms (SDP), an electronic version of the bilateral trading relationship, and (2) multi-dealer platforms (MDP), enabling clients to request quotes from multiple dealers instantaneously. D2C trading is generally based on request for quote (RFQ) protocols.

Current growth is in D2C markets, which is enabling the total growth in overall electronification percentages (global totals shown on the following page): UST 70%, Agency 50%, Repos 50%, IG Corporates 40% and HY Corporates 25%.



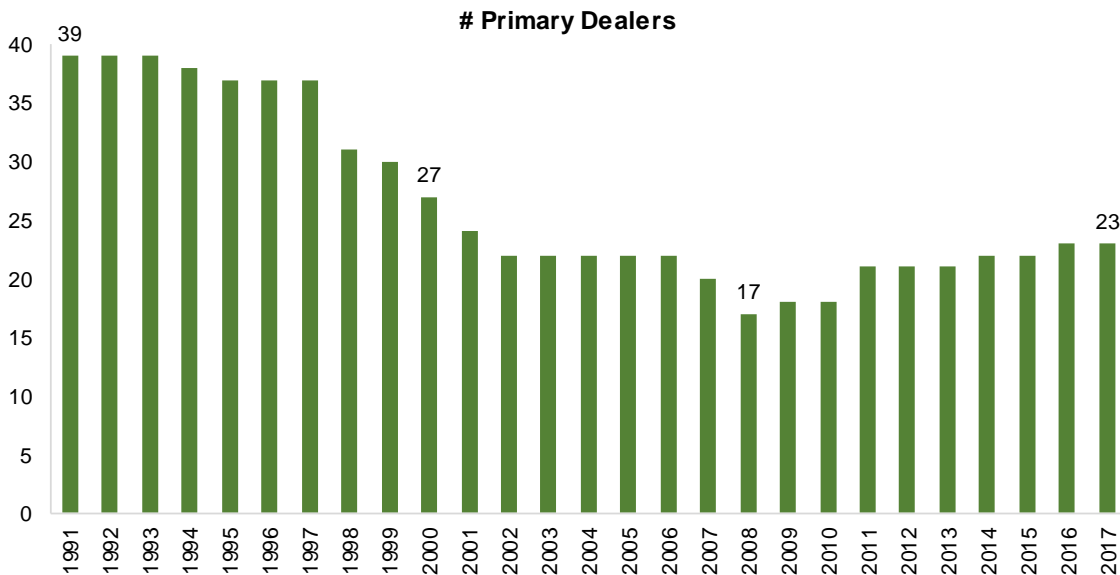
Source: Bank for International Settlements (BIS), SIFMA estimates

Note: As of FY15. CDS = credit default swap; FX = foreign exchange; IRS = interest rate swap; EGB = European government bond; IG = investment grade; HY = high-yield. SDP = single-dealer platform; MDP = multi-dealer platform. Global totals may be greater than US-only figures in certain markets.

The Role of Primary Dealers

Another noteworthy factor in fixed income market structure is the use of primary dealers. As trading counterparties to the Federal Reserve Bank of New York (NY Fed), primary dealers play a crucial role in open market operations, which supports the implementation of U.S. monetary policy. These firms are expected to be active counterparties for the NY Fed’s market operations implementing monetary policy and bid, consistent with their pro rata share of the market, in all Treasury auctions at “reasonably competitive prices.” If a primary dealer is active in agency debt or agency MBS, it is also expected to participate in any NY Fed operations in these instruments at a level proportionate with its share in these markets. Primary dealers are eligible to participate in the NY Fed’s securities lending program, which is designed to help dealers make markets in Treasury securities. Primary dealers play another important role by providing the NY Fed insight into market developments and ongoing market trends, which it uses to support the formulation and implementation of monetary policy.

While the number of primary dealers used to be greater than 40, it has since settled in the low 20s (23 as of July 2018). The number troughed in 2008, at 17, as firms went out of business or failed to meet the NY Fed’s eligibility criteria.



Source: [Federal Reserve Bank of New York](#)

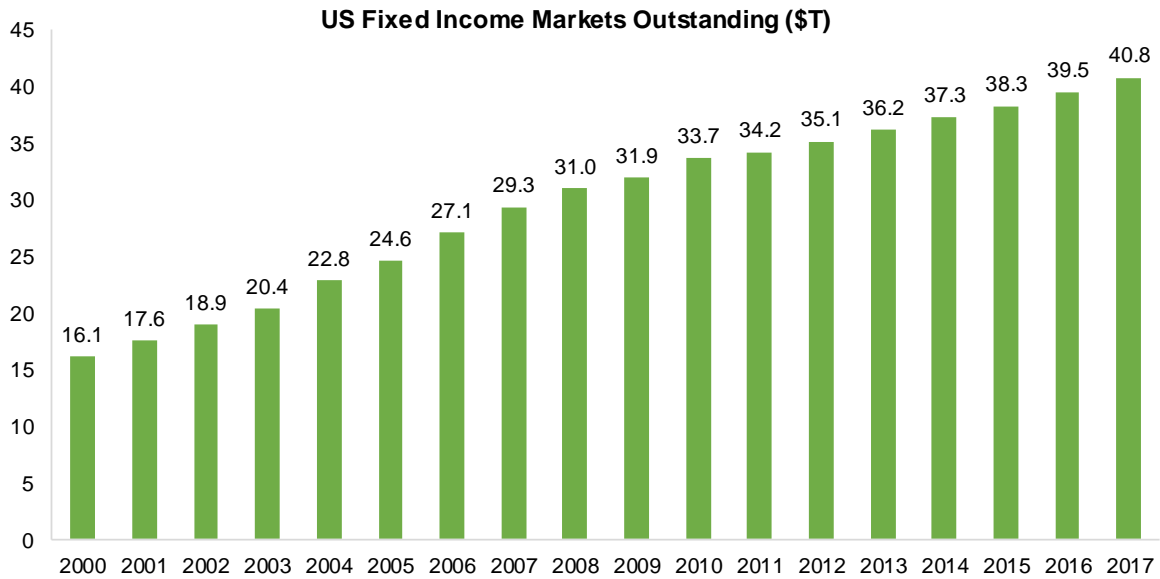
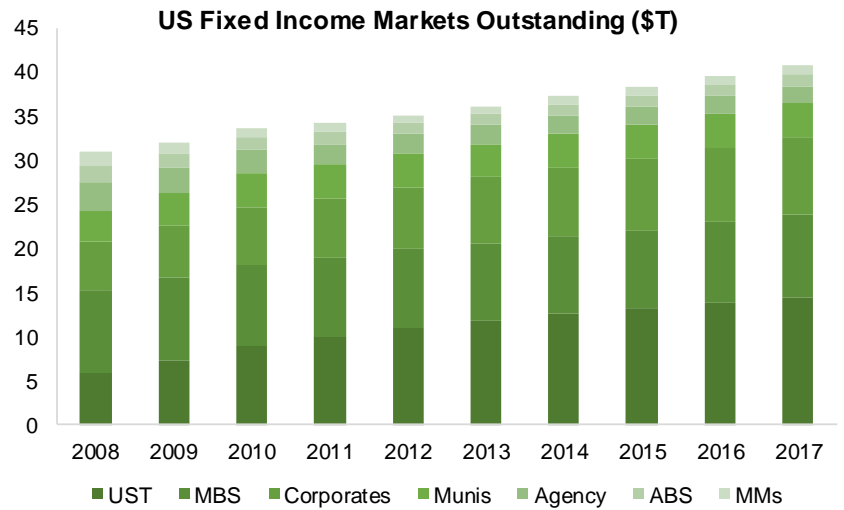
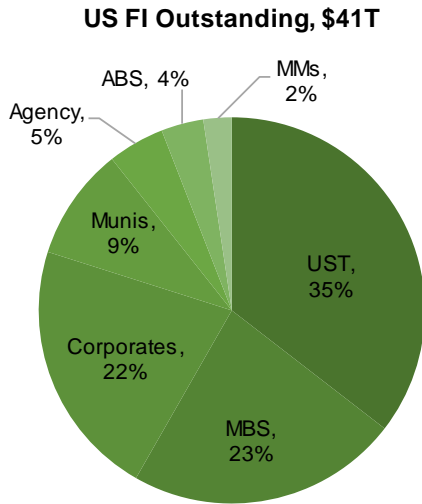
Current Market Landscape

- **Product Breakout** – As a percent of total outstanding, U.S. fixed income markets are dominated by U.S. Treasury securities (UST, 35%), then MBS (23%) and corporate bonds (22%). (Remainder: munis 9%, agency 5%, ABS 4% and MMs 2%.) As a percent of issuance, U.S. fixed income markets are broken out by: UST 30%, MBS 26%, corporates 22%, agency 10%, ABS 7% and munis 6%.
- **Outstanding** – Total fixed income outstanding has grown at a 2.8% CAGR from 2008 to 2017, to \$40.8 trillion. UST grew at a 9.6% CAGR, to \$14.5 trillion, and corporates grew at a 5.0% CAGR, to \$8.8 trillion. MBS have essentially recovered after troughing down 7.7% from the 2008 peak of \$9.5 trillion (\$9.3 trillion as of FY17, -1.8% from the 2008 peak). (Remaining CAGRs: Munis +0.5%, ABS -2.3%, Agency -4.9% and MMs -4.9%.)
- **Issuance** – Total fixed income issuance has grown at a 1.4% CAGR from 2007 to 2017 (we go back to 2007 because total issuance declined significantly in 2008, -24.1% YY), to \$7.5 trillion. As the Fed grew its balance sheet and corporates capitalized on low interest rates to secure low-cost funding for capital investments, UST and corporates led issuance growth, +10.4% and +3.4% CAGRs respectively. (Remaining CAGRs: munis +0.4%, agency -1.2%, MBS -2.1% and ABS -4.5%.)
- **ADV** – Total fixed income ADV has declined at a 3.1% CAGR from 2008 to 2017, to \$764 billion. This was driven by UST and Agency MBS, -0.9% and -4.9% CAGRs respectively. (Remaining CAGRs: from 2008 to 2017 munis -5.7% and agency -27.6%; from 2011 to 2017 non-agency MBS -7.6% and ABS -0.5%¹.)

Note: Data as of FY17.

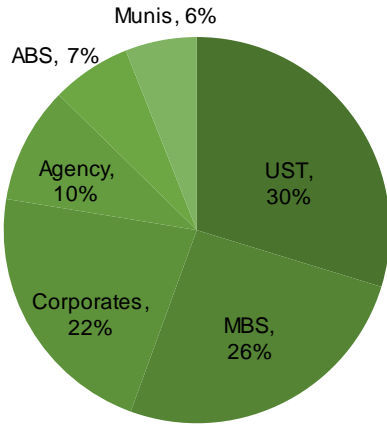
¹ The data set for non-agency MBS and ABS begins in 2011.

Chartbook

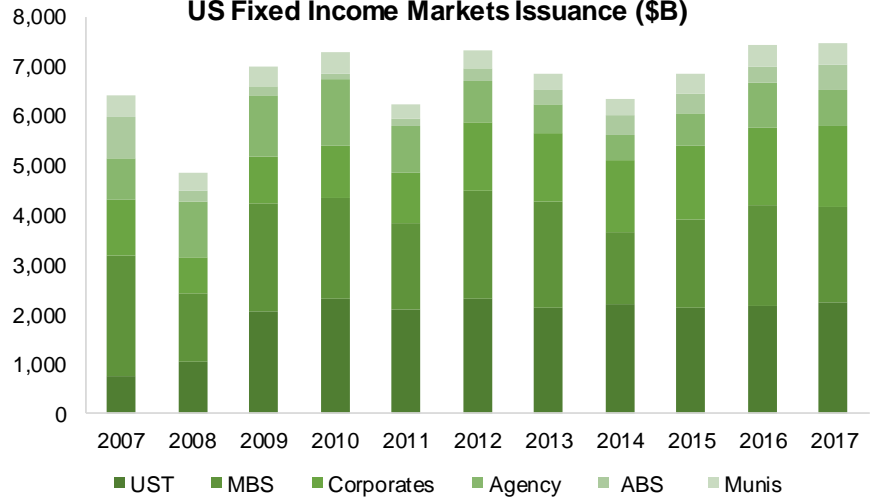


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

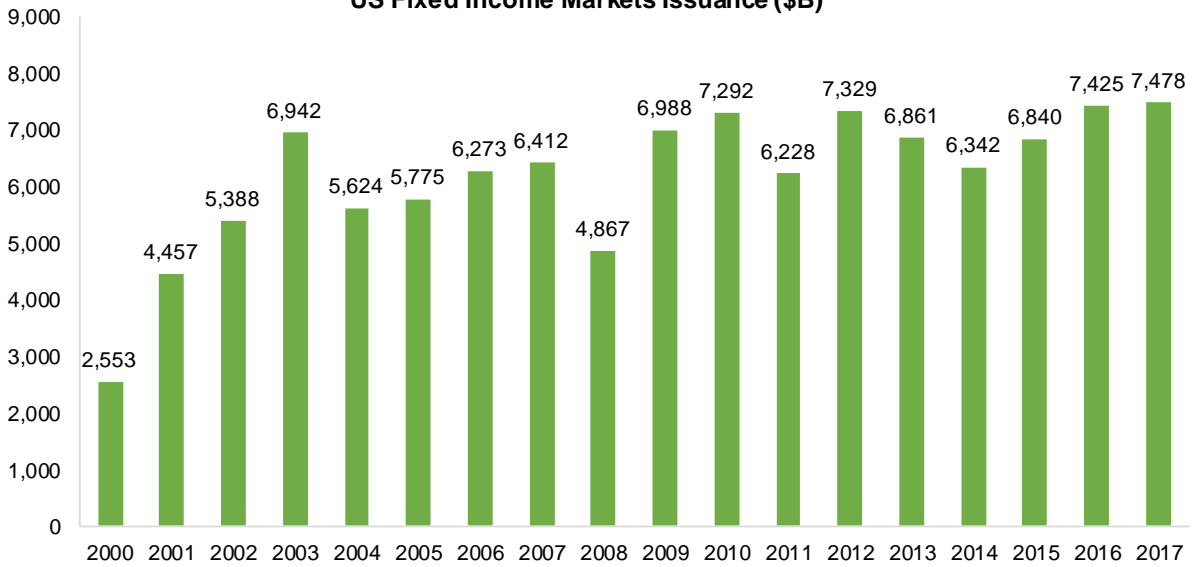
US FI Issuance, \$7.5T



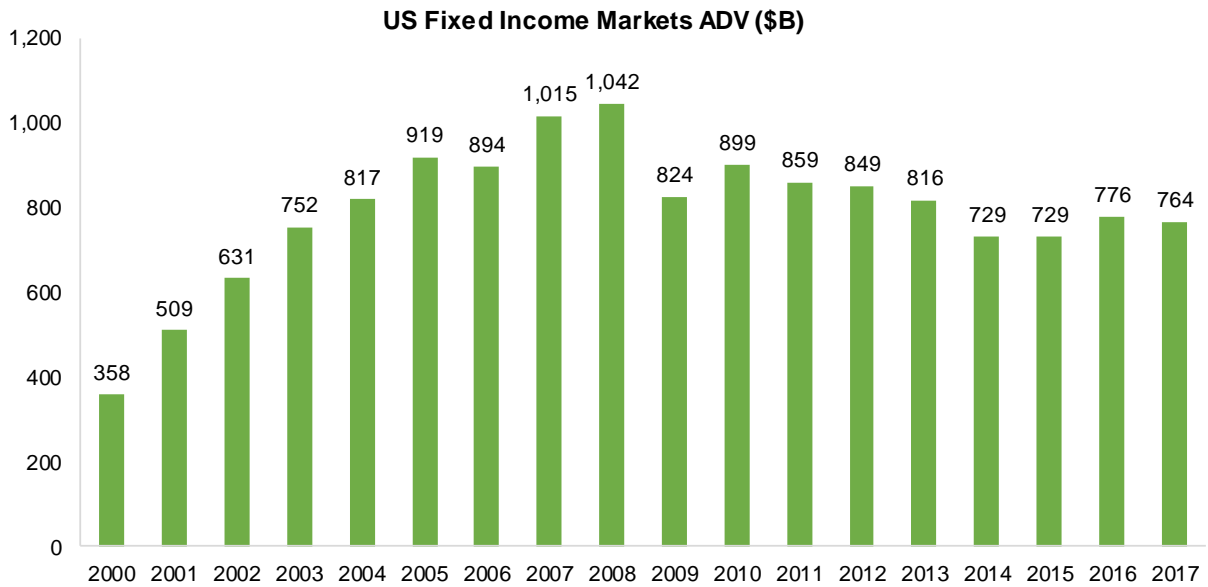
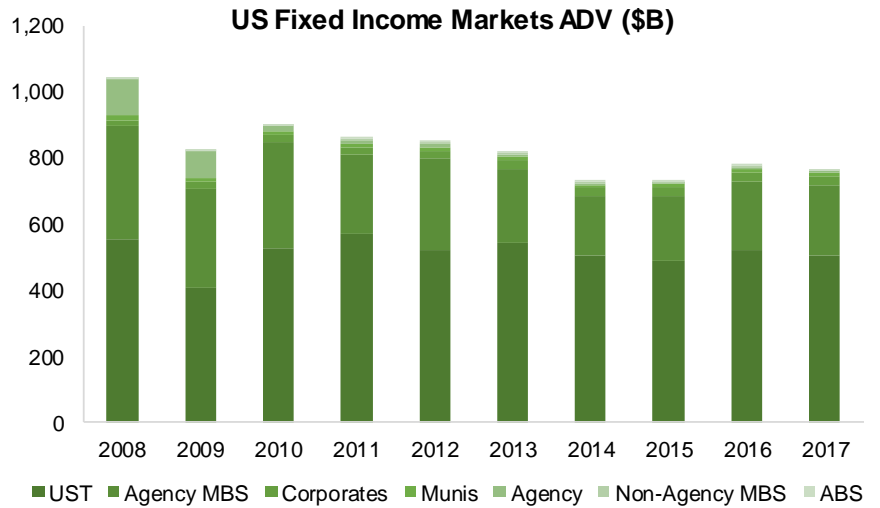
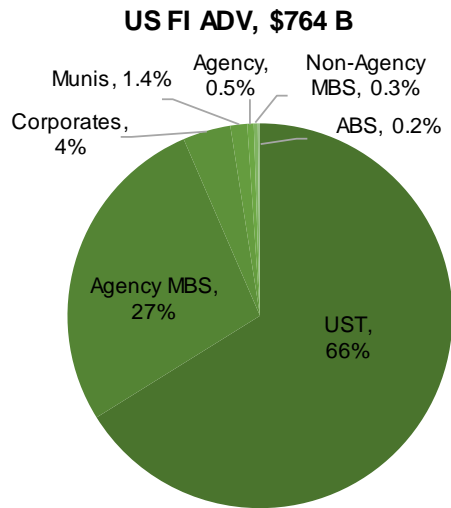
US Fixed Income Markets Issuance (\$B)



US Fixed Income Markets Issuance (\$B)



Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

Market Breakout: US Treasuries

Description and Purpose of Markets

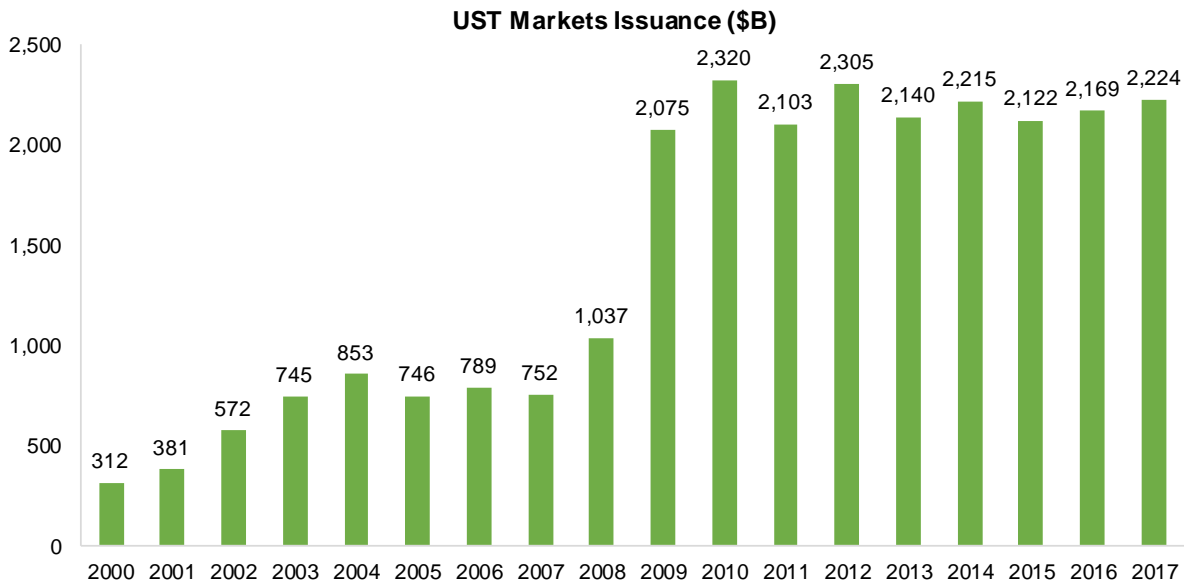
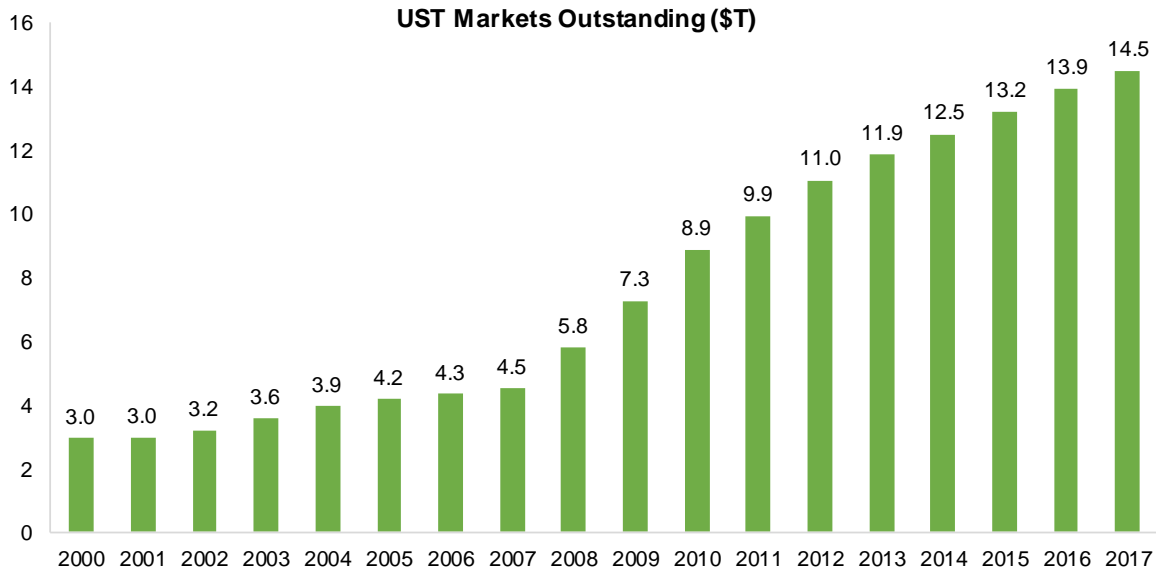
U.S. Treasury securities (UST) are debt obligations of the federal government used to fund operations. Since UST are backed by the full faith and credit of the U.S. government, these securities are considered by market participants as the benchmark credit. The U.S. government has a AAA rating, meaning 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.

Current Market Landscape

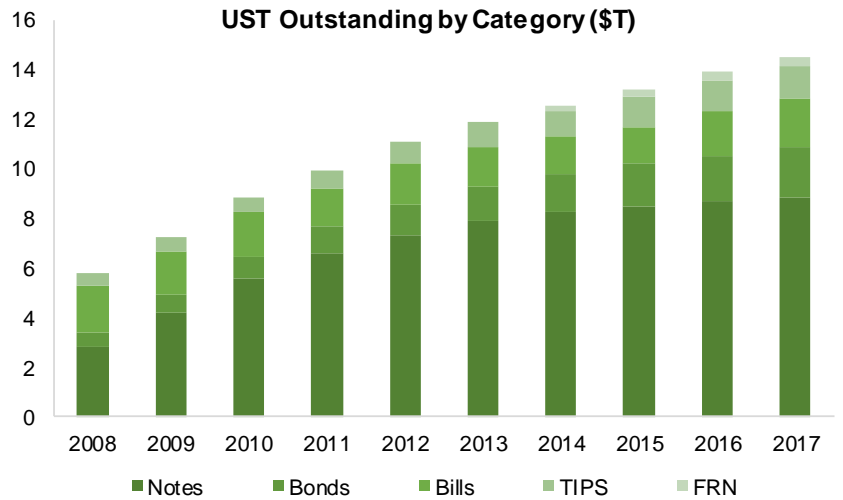
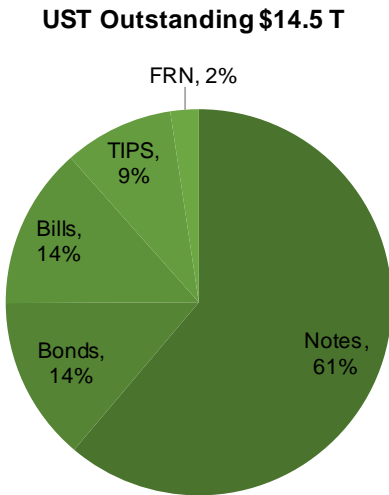
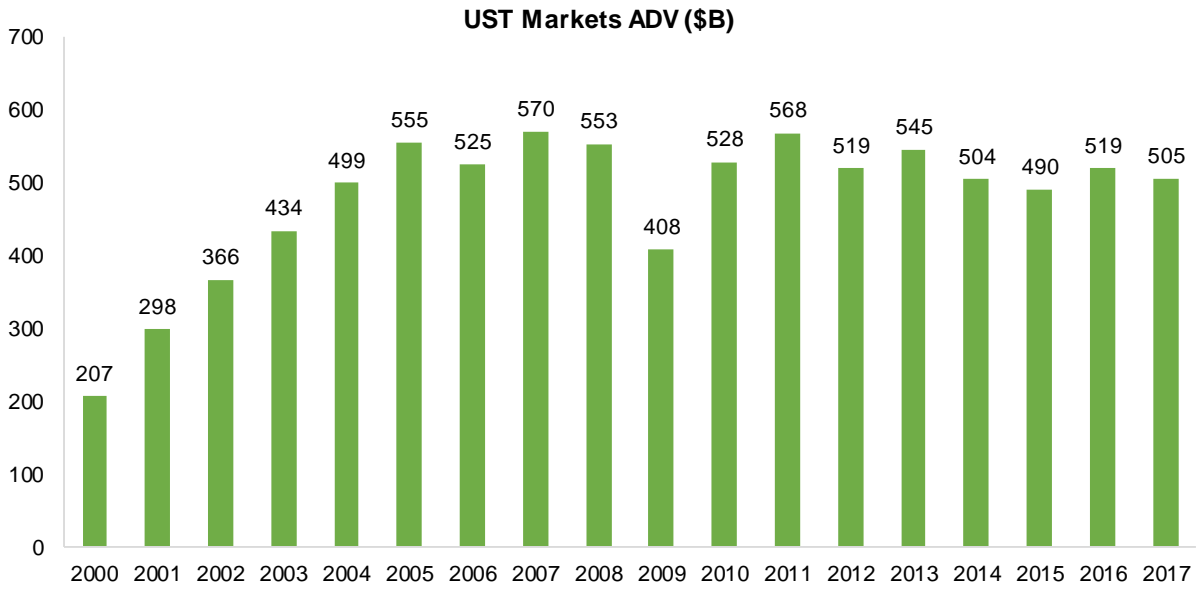
- **Product Breakout** – Common types of UST include:
 - 61% Treasury Notes (T-Notes) – These are fixed-principal securities with maturities of 2, 3, 5, 7 and 10 years. Interest is paid semiannually, with the principal paid at maturity.
 - 14% Treasury Bonds (T-Bonds) – These are fixed-principal, long-term securities issued with a maturity of 30 years. Outstanding T-bonds have remaining maturities of 10 to 30 years. Interest is paid semiannually, with the principal paid at maturity.
 - 14% Treasury Bills (T-Bills) – Non-interest bearing (zero-coupon) short-term securities with maturities of only a few days or 4, 13, 26 or 52 weeks. They are purchased at a discount to par (face) value and paid out at par value at maturity.
 - 9% Treasury Inflation Protected Securities (TIPS) – These are indexed to inflation, as measured by the Consumer Price Index, acting as a hedge against the negative effects of inflation. They come in 5, 10 and 30 year maturities, and interest is paid semiannually. TIPS are considered a low-risk investment since the par value rises with inflation, while the interest rate remains fixed.
 - 2% Floating Rate Notes (FRN) – These are debt instruments with a 2 to 5 year maturity and a variable interest rate. Its interest rate is tied to a benchmark (U.S. T-Bill rate, Fed Funds rate).
- **Outstanding** – Total UST outstanding has grown at a 9.6% CAGR since 2008, to \$14.5 trillion. T-Bonds grew at a 12.9% CAGR, to 2.0 trillion, and T-Notes grew at a 12.2% CAGR, to 8.8 trillion. (Remaining CAGRs: TIPS 9.6%, T-Bills 0.5% and FRNs 20.3%, but the data set only began in 2014.)
- **Issuance** – Per annum net new issuance declined at an 8.0% CAGR since 2008, to \$537 billion. T-Bonds increased at a 12.1% CAGR, while T-Bills and T-Notes declined at 16.7% and 3.2% CAGRs respectively.
- **ADV** – UST ADV declined at a 1% CAGR since 2008, to \$505 billion. TIPS trading grew at a 7.8% CAGR, and UST greater than 11 years maturity grew at a 2.7% CAGR. (Remaining CAGRs: T-Bills 2.0%, UST 6 to 11 years maturity 0.1%, UST 3 to 6 years maturity -2.4%, UST less than 3 years maturity -3.7% and FRN 9.7%, with the data set only beginning in 2015.)

Note: Data as of FY17.

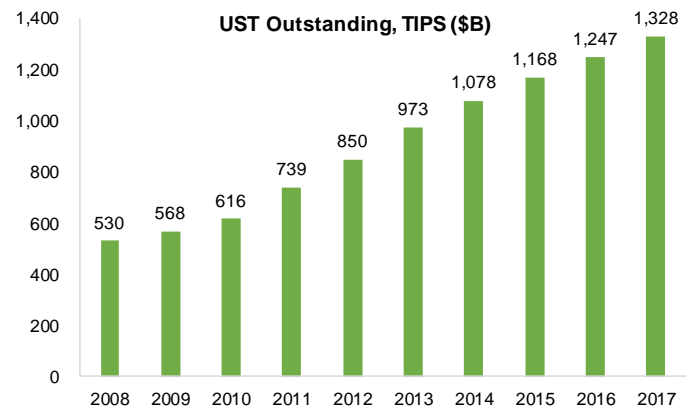
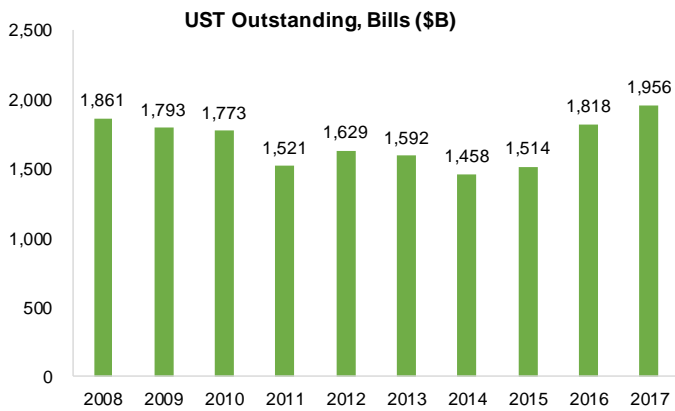
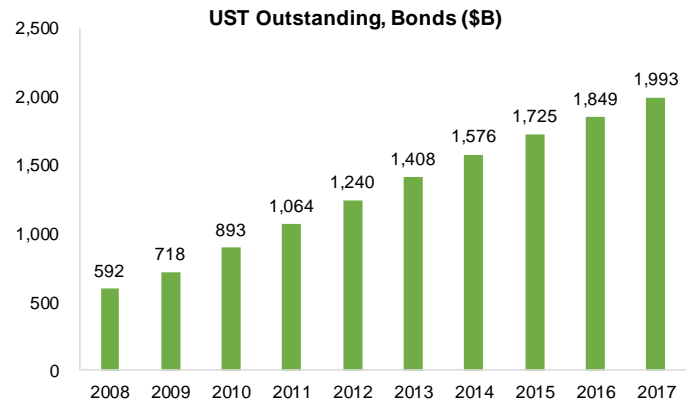
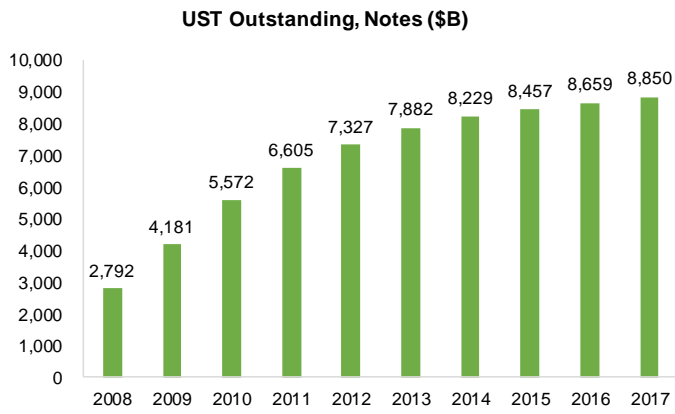
Chartbook



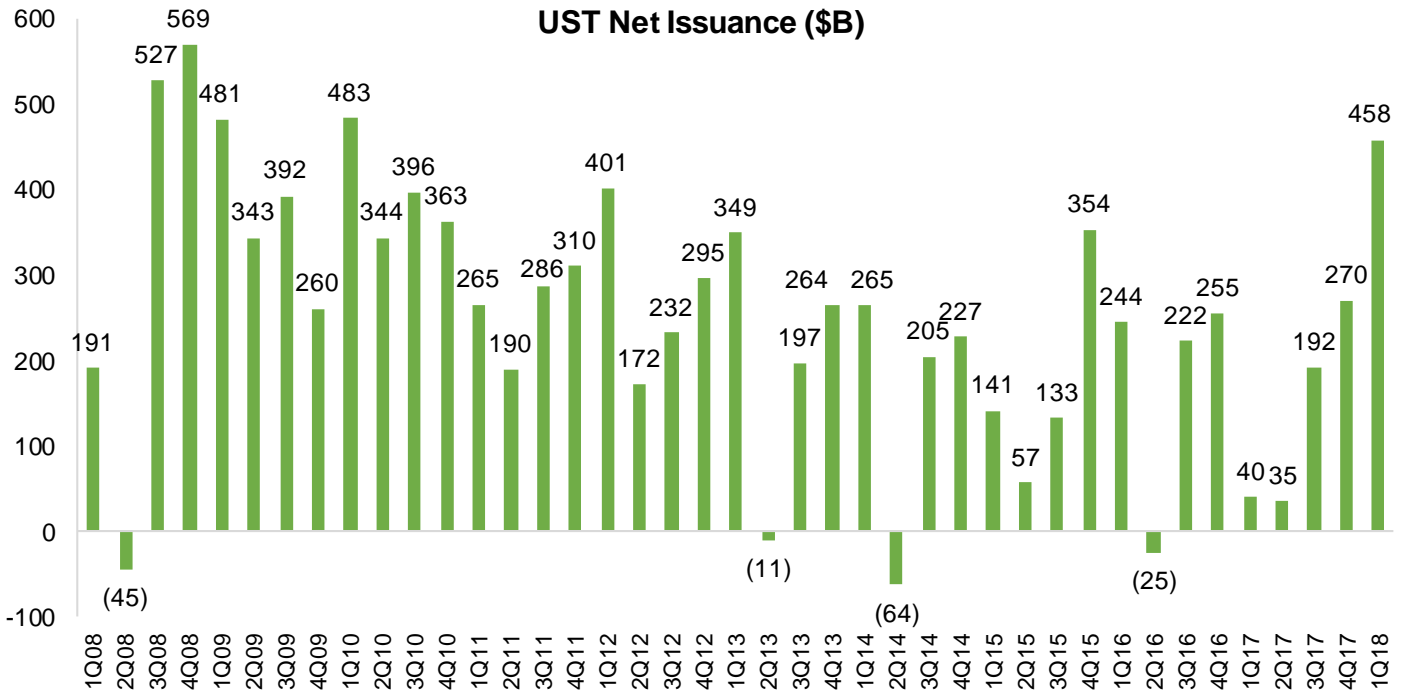
Source: [SIFMA](#). Please see the Appendix for details.



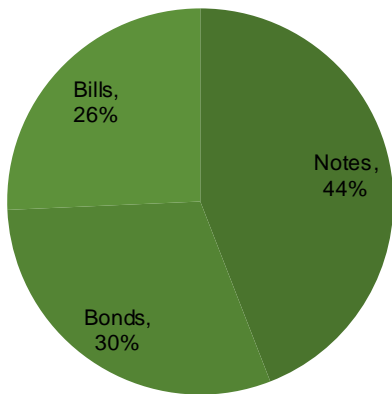
Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



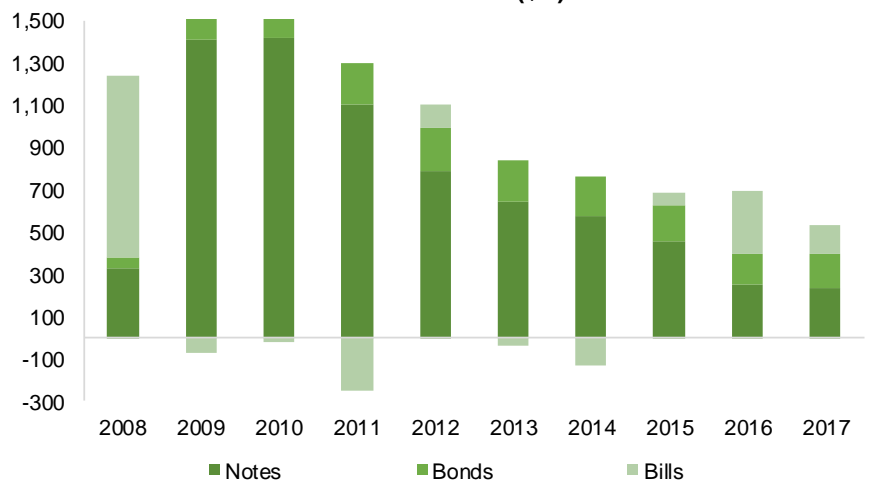
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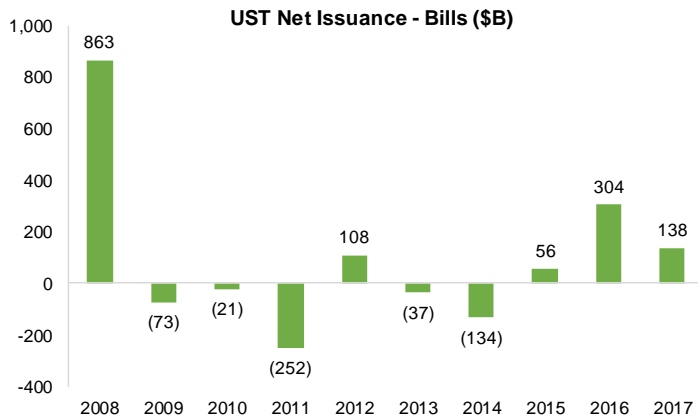
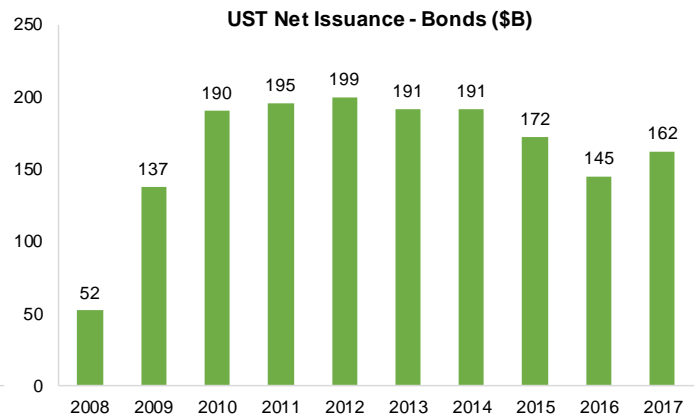
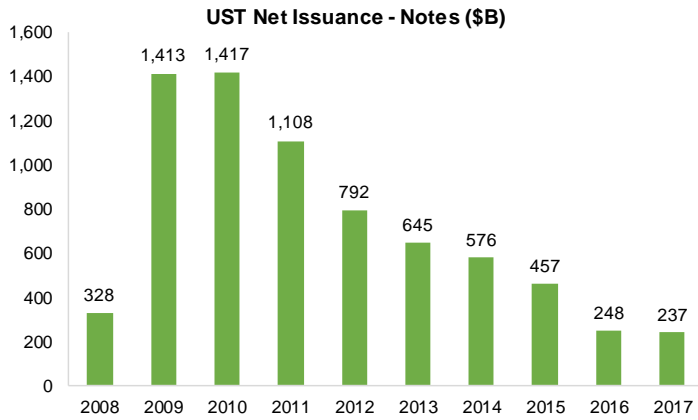
UST Net Issuance \$2.2 B



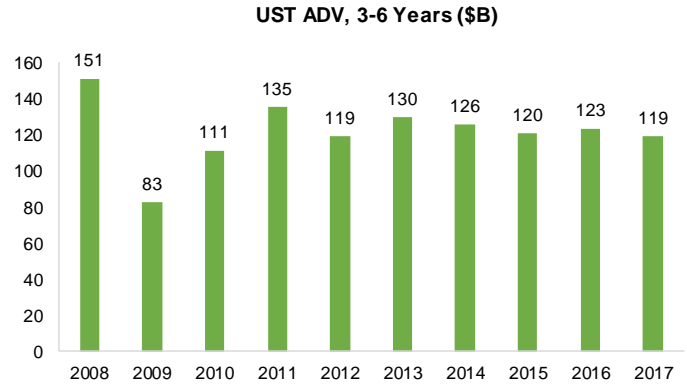
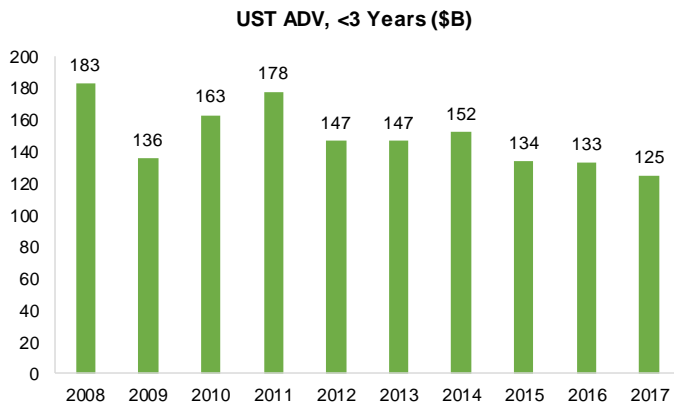
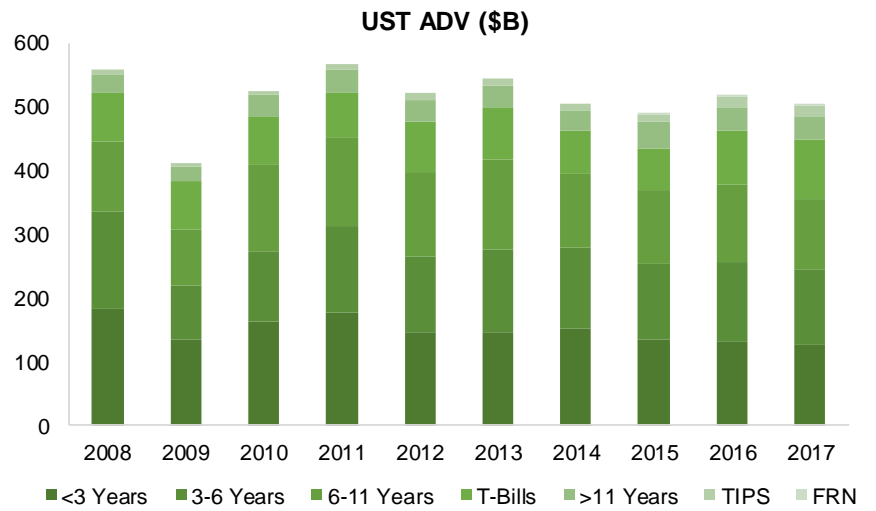
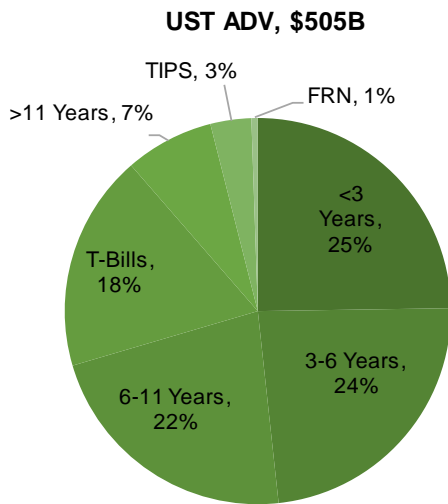
UST Net Issuance (\$B)



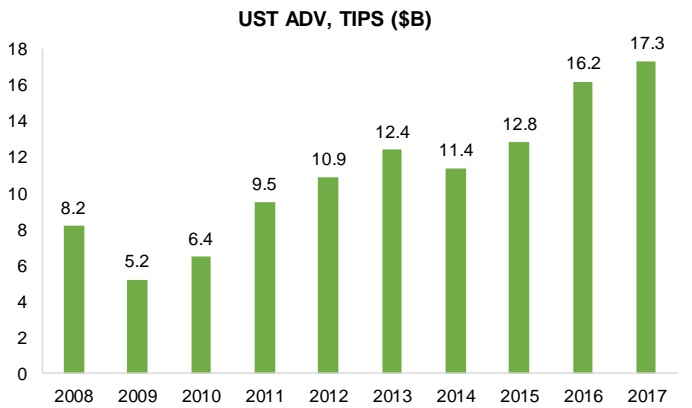
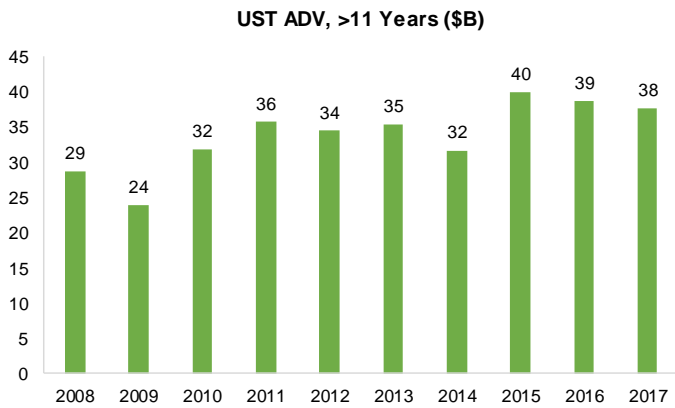
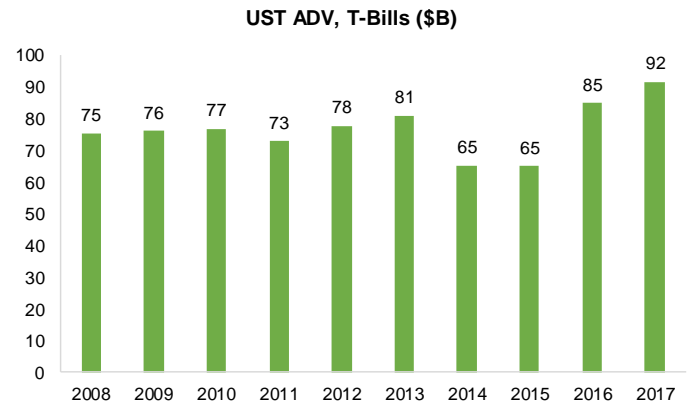
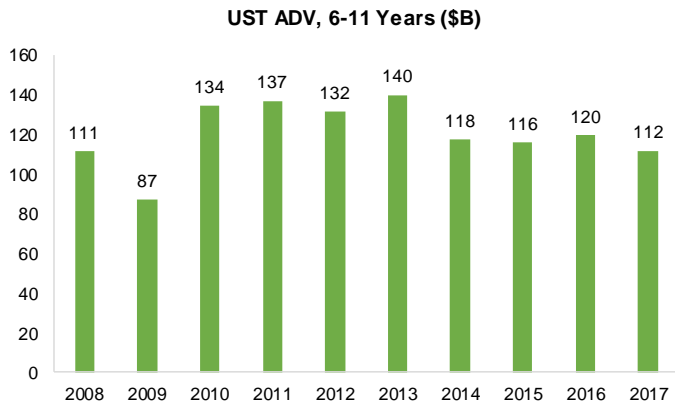
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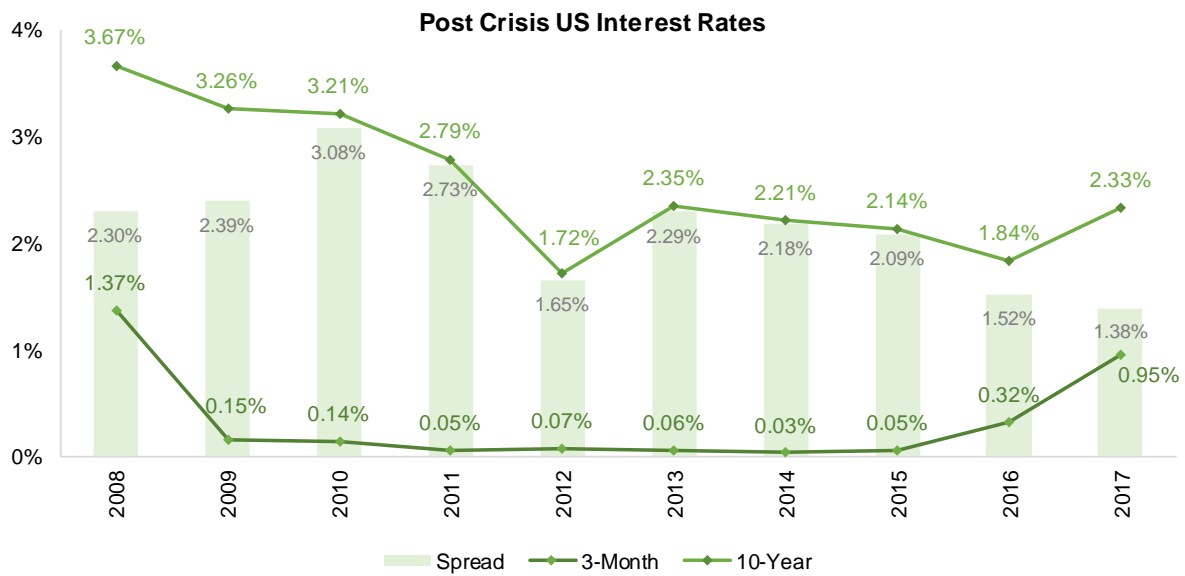
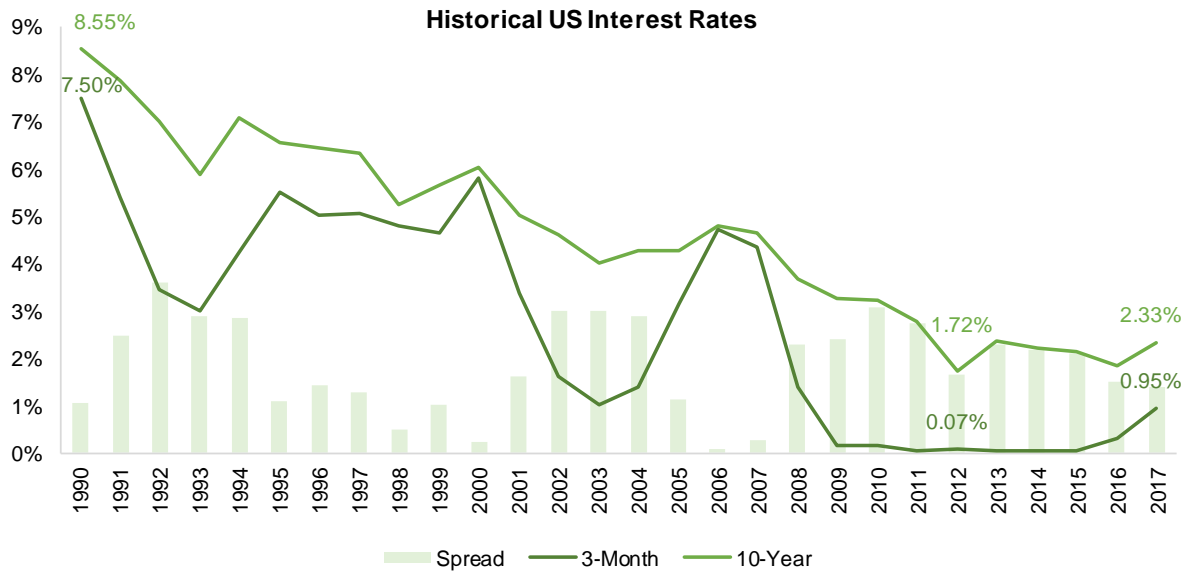
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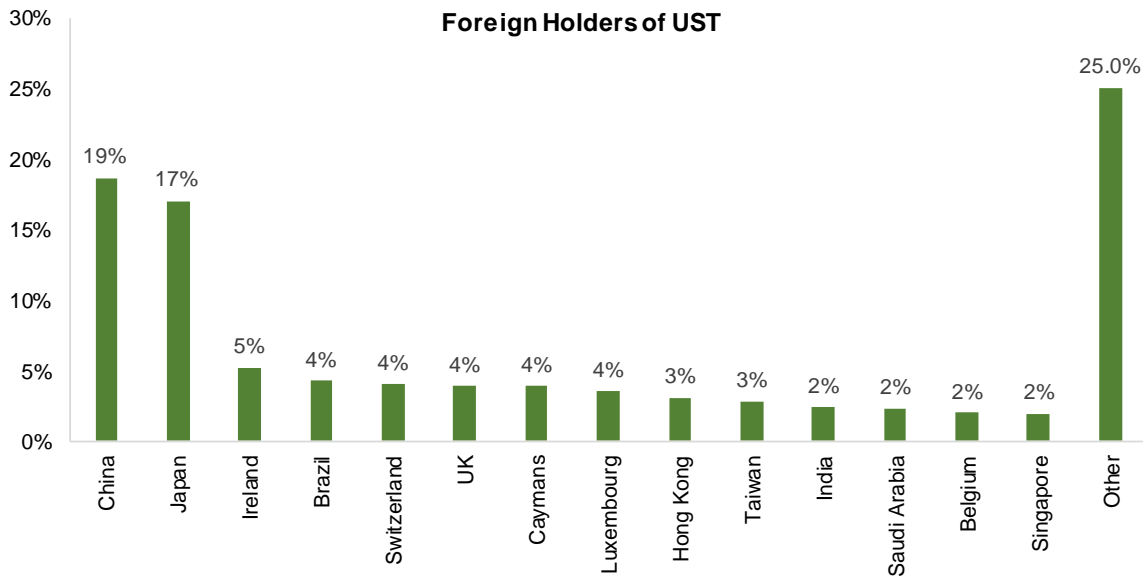
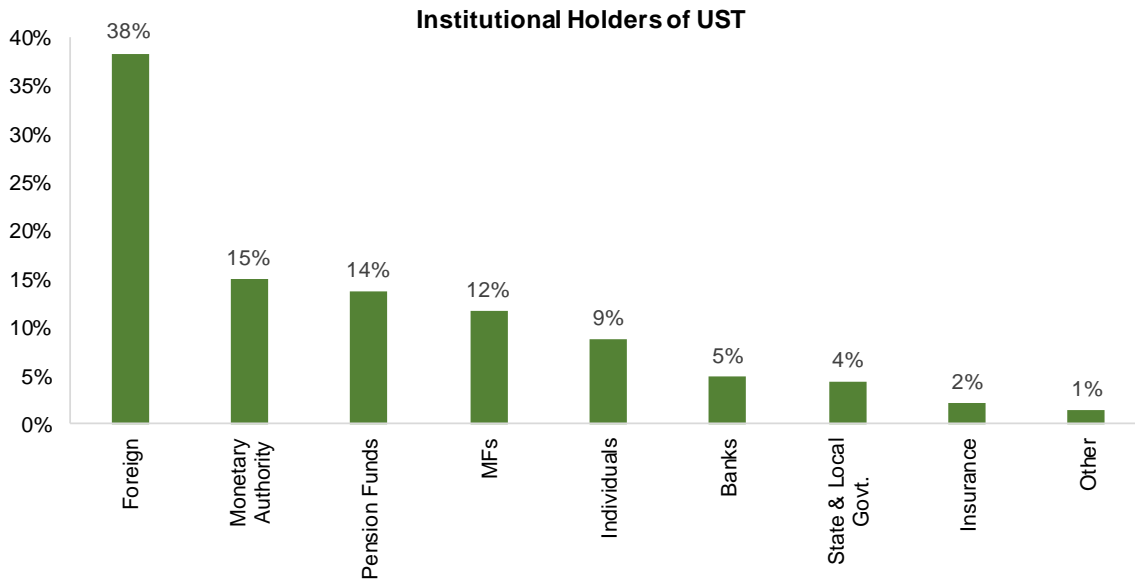
Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.



Source: [SIFMA](#), [U.S. Department of the Treasury](#). As of FY17. Please see the Appendix for details.

Market Breakout: MBS

Description and Purpose of Markets

A mortgage is a debt instrument collateralized by a specified real estate property(ies). They are used by individuals and businesses to make large real estate purchases without paying the entire value of the purchase up front. The borrower repays the loan plus interest either over or at the end of a specified time period.

Since mortgages are less liquid than other investment vehicles, they can be securitized into mortgage-backed securities (MBS). Securitization is the process of designing a new a financial instrument by packaging several underlying assets with the same characteristics. A MBS is a security secured by a mortgage or collection of mortgages, whether in pass-throughs or collateralized mortgage obligations (CMOs). Pass-throughs are structured as a trust in which mortgage payments are collected and passed through to investors. CMOs consist of multiple pools of securities, or tranches, which may be given ratings by credit rating agencies

Current Market Landscape

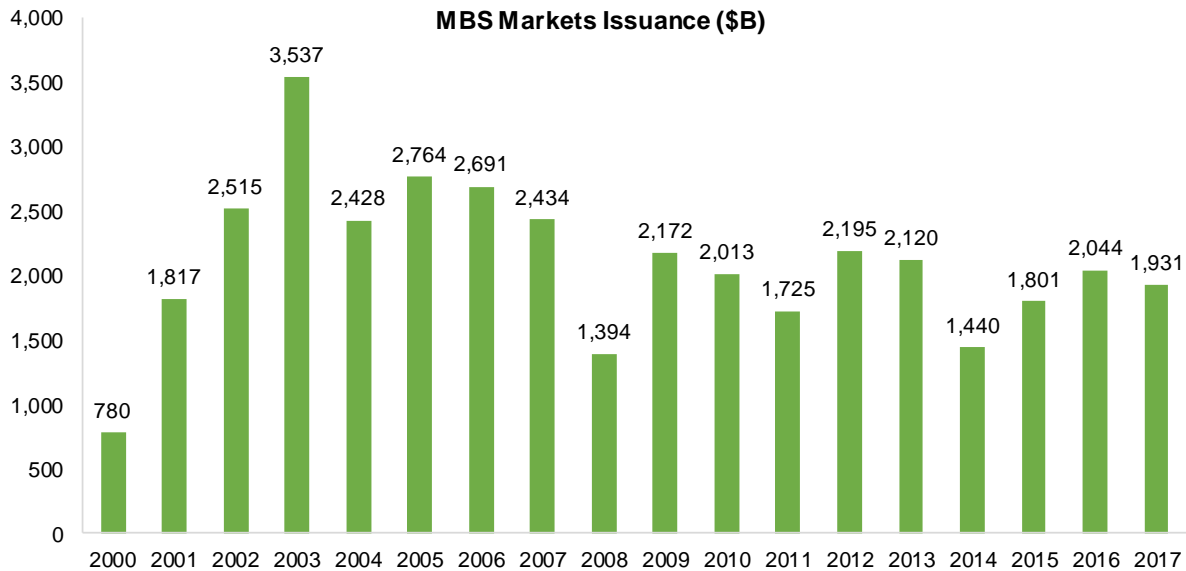
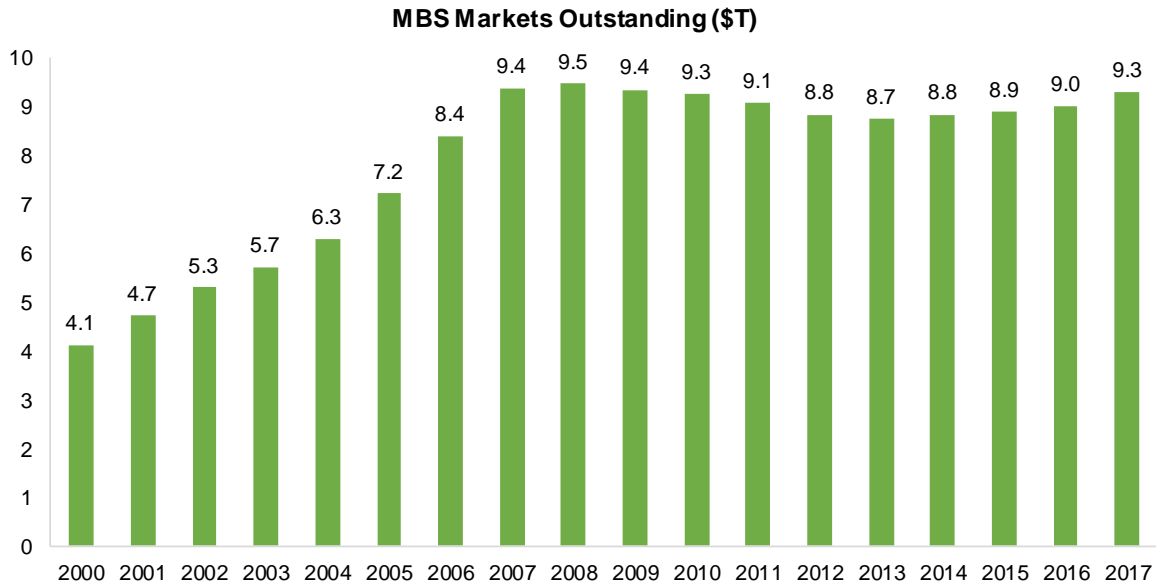
- **Product Breakout** – Common terms used for MBS include:
 - Residential Mortgage (the R in RMBS) – The collateral is the borrower’s house, with the bank getting the claim on the house should the borrower default.
 - Commercial Mortgage (the C in CMBS) – The collateral is the borrower’s commercial property used for business purposes (office building, shopping centers, apartment complexes, etc.).
 - Fixed-Rate Mortgage – The borrower pays the same interest rate for the life of the loan, i.e. monthly principal and interest payment never change.
 - Adjustable-Rate Mortgage (ARM) – The interest rate is fixed for an initial term, but then it fluctuates with market rates. Monthly payments may change.
 - Agency – A MBS issued by Fannie Mae, Freddie Mac, Ginnie Mae.
 - Non-Agency – MBS issued by private entities, such as financial institutions.

- **Outstanding** – Total MBS outstanding is now essentially flat to 2008, with a -0.2% CAGR, to 9.3 trillion outstanding. There is a definite split between growing total agency issues (2.5% CAGR) versus declines in total non-agency (-8.6% CAGR) as the private label markets dried up post crisis. (Remaining CAGRs include: agency MBS 3.4%, agency CMO -2.0%; non-agency CMBS -4.8%, non-agency RMBS -10.4%.)

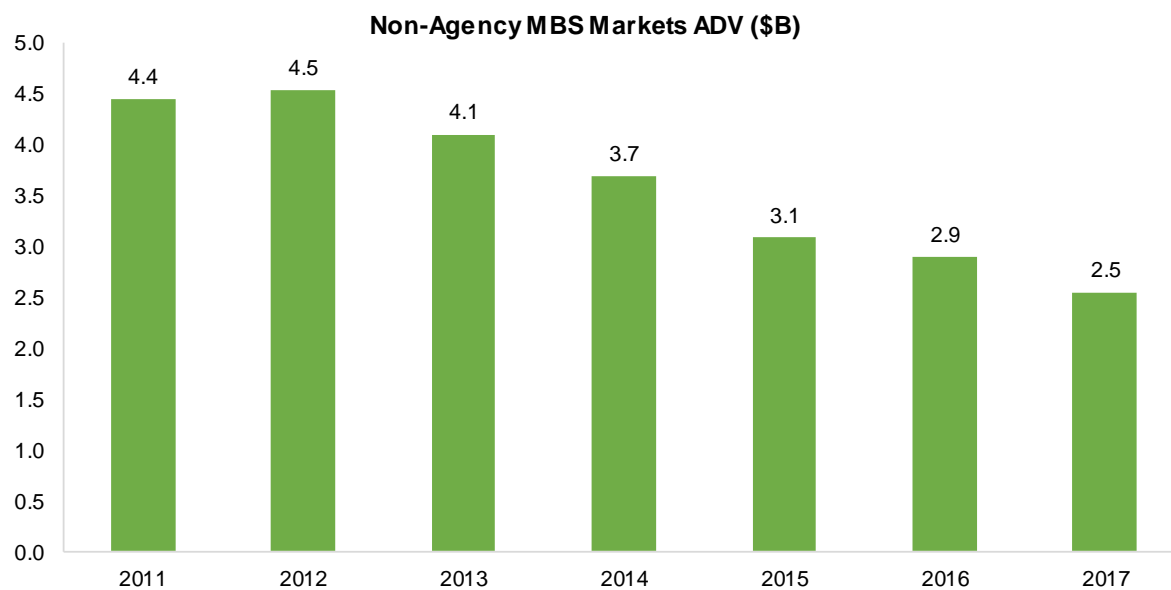
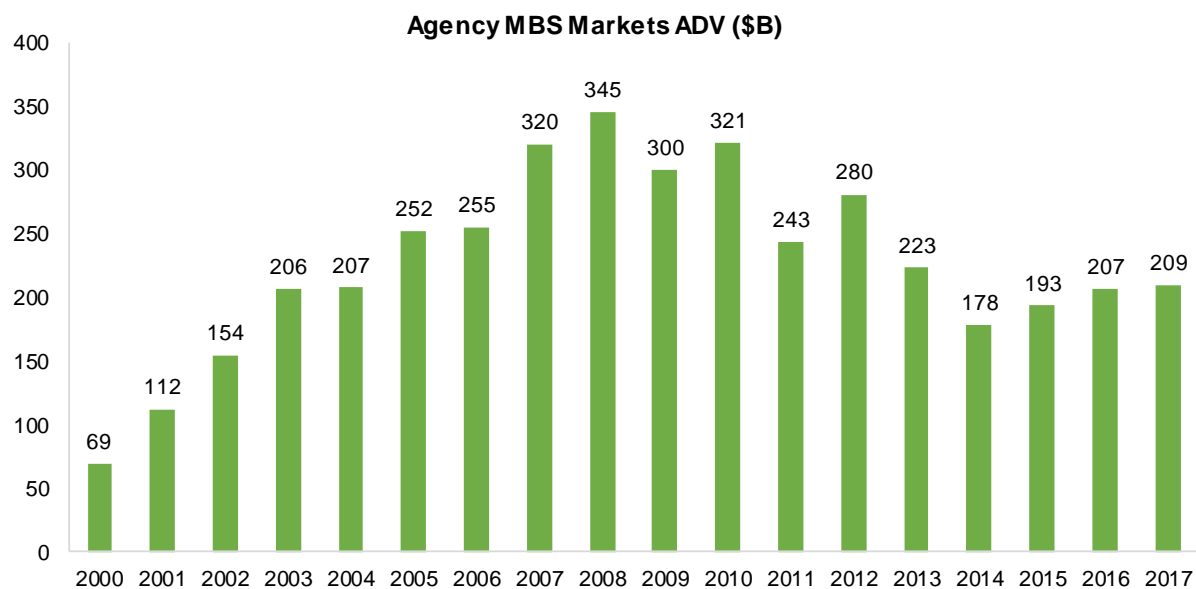
- **Issuance** – Total MBS issuance grew at a 3.3% CAGR since 2008, to \$1.9 trillion. CAGRs include: agency 2.6%, non-agency 12.1%; agency MBS 1.8%, agency CMO 7.5%; non-agency CMBS 18.8%, non-agency RMBS 8.8%.

Note: Data as of FY17.

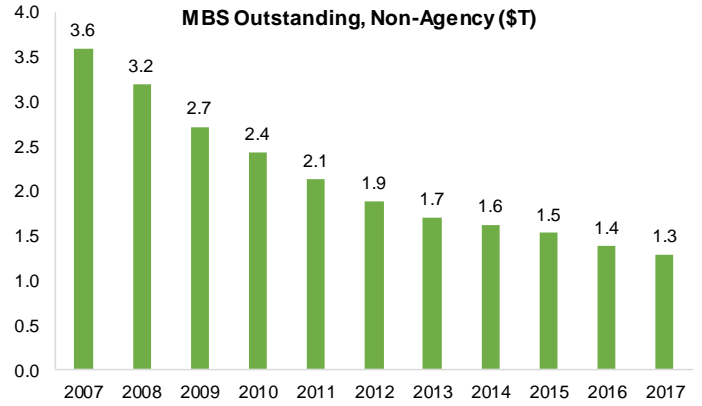
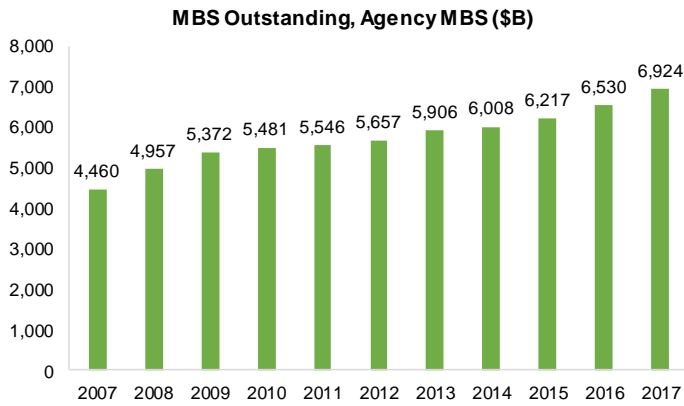
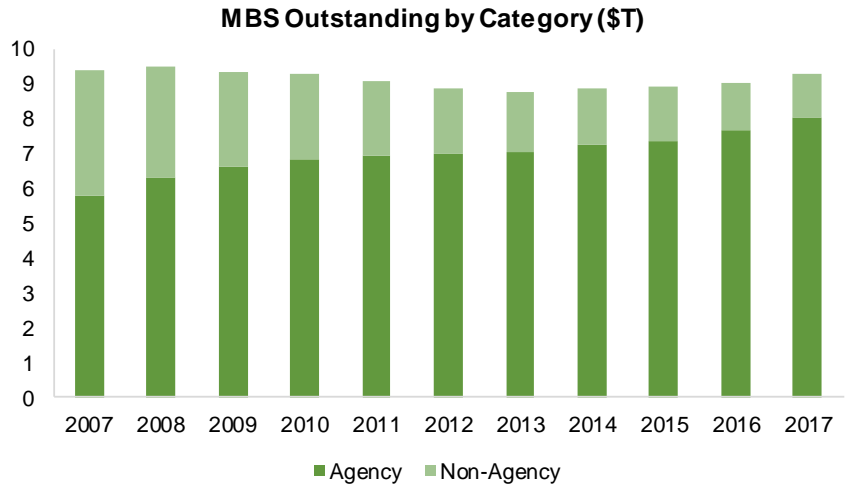
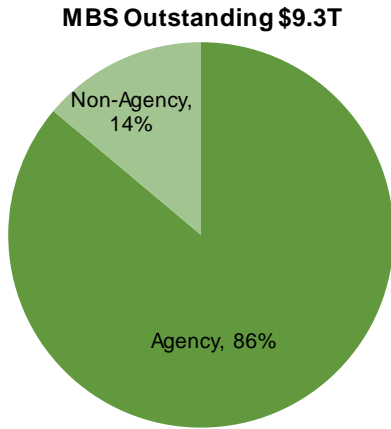
Chartbook



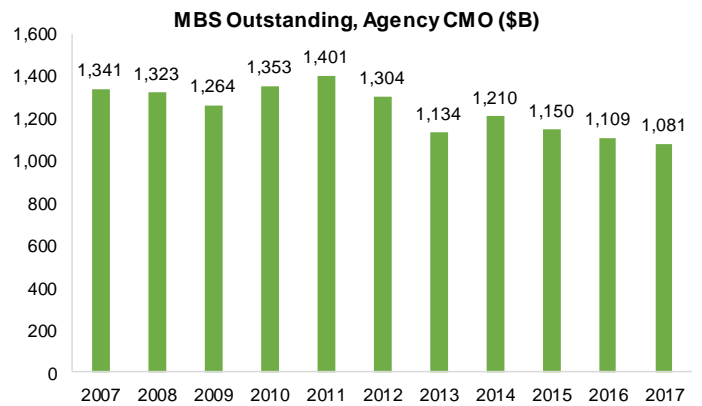
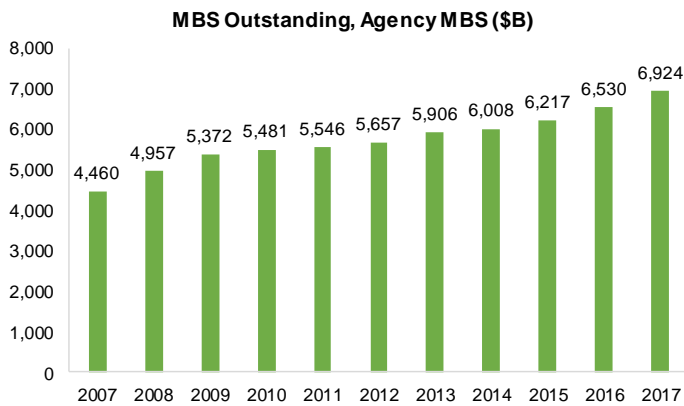
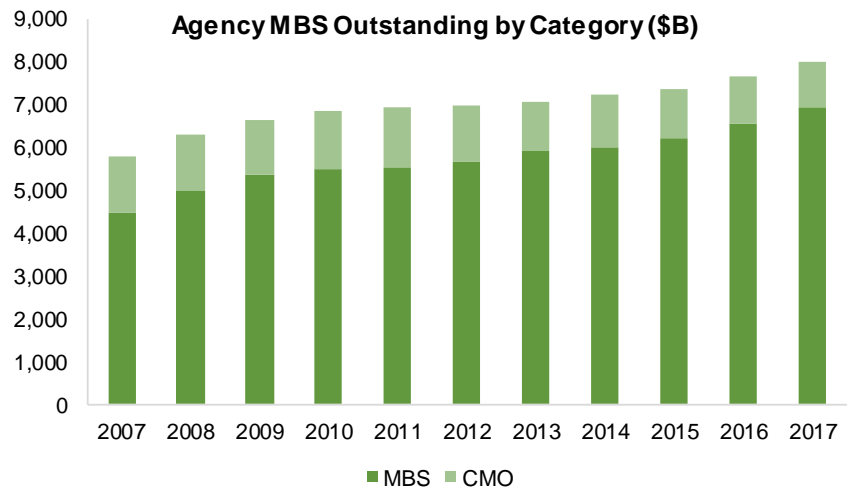
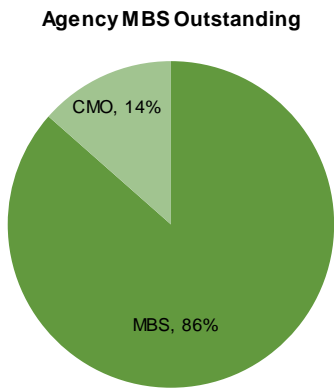
Source: [SIFMA](#). Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.

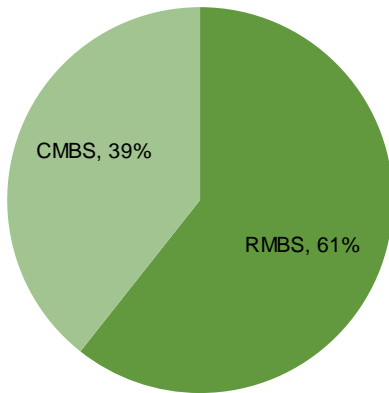


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

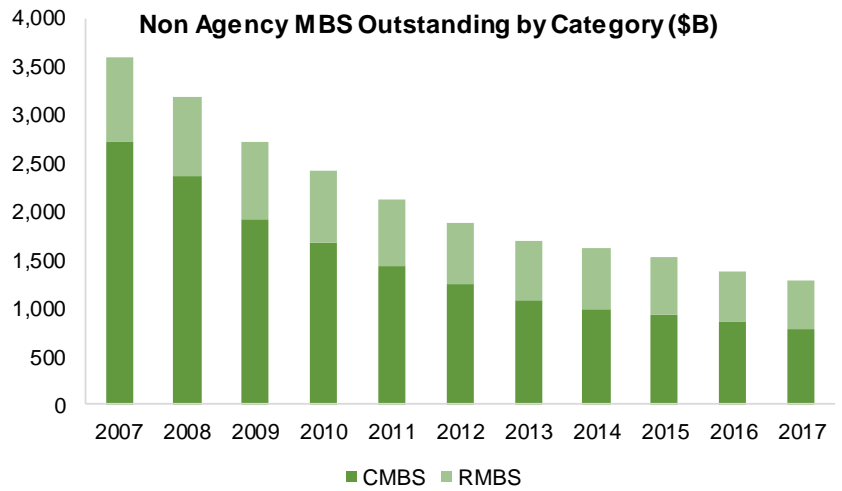


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

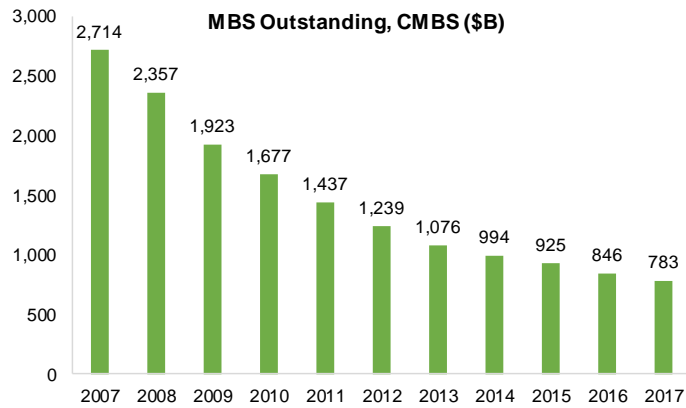
Agency MBS Outstanding



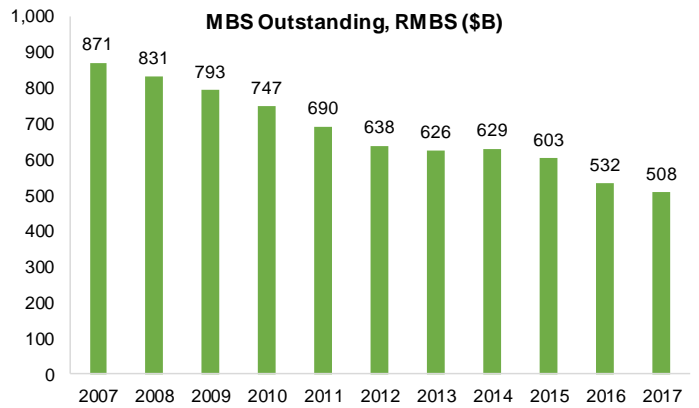
Non Agency MBS Outstanding by Category (\$B)



MBS Outstanding, CMBS (\$B)

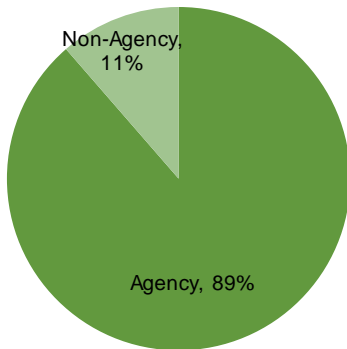


MBS Outstanding, RMBS (\$B)

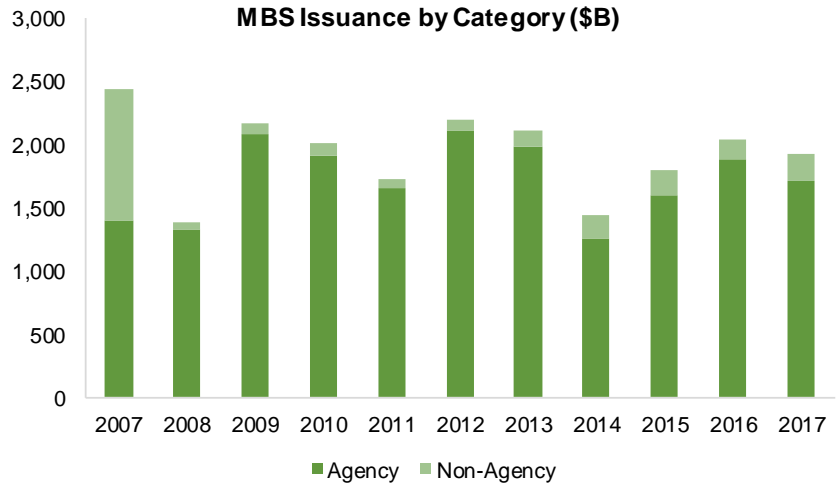


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

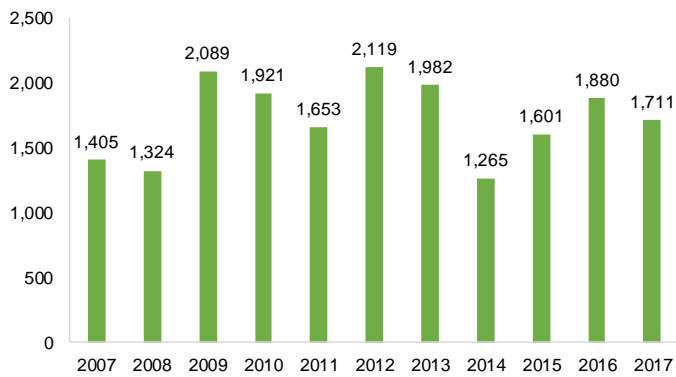
MBS Issuance by Category



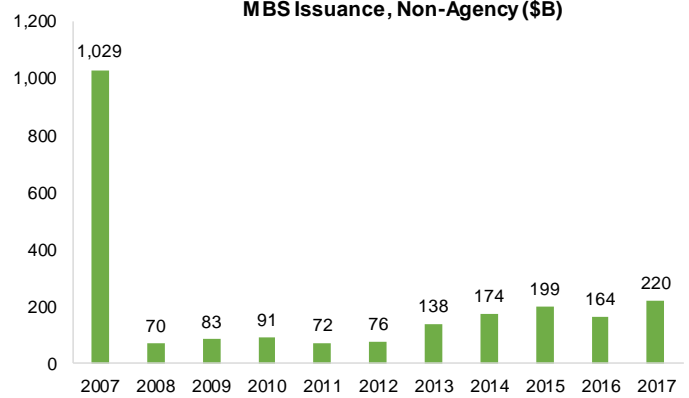
MBS Issuance by Category (\$B)



MBS Issuance, Agency (\$B)

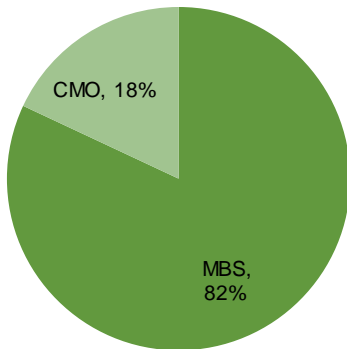


MBS Issuance, Non-Agency (\$B)

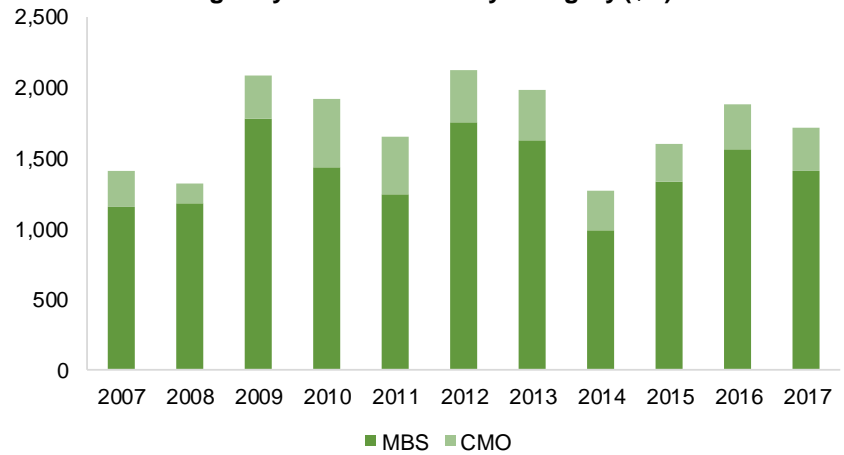


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

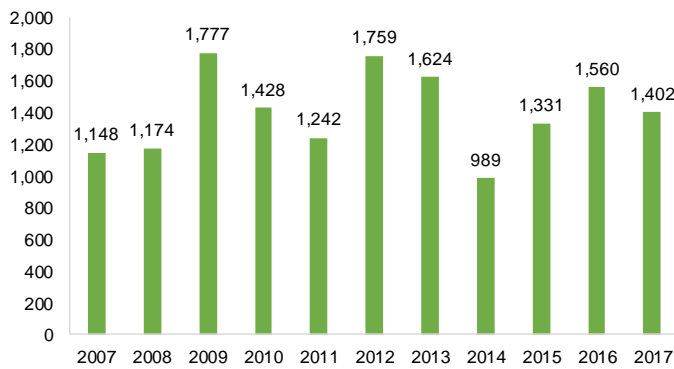
Agency MBS Issuance



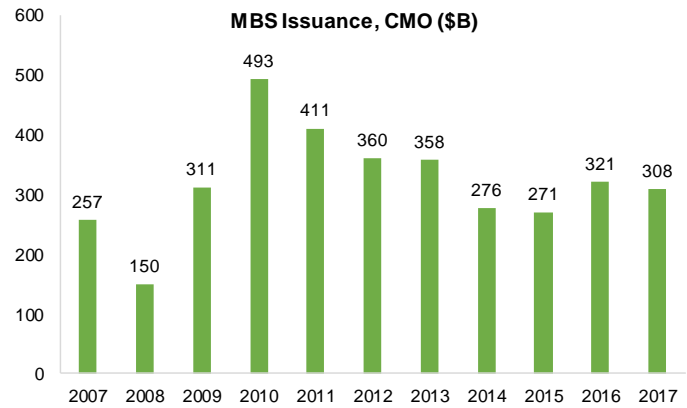
Agency MBS Issuance by Category (\$B)



MBS Issuance, MBS (\$B)

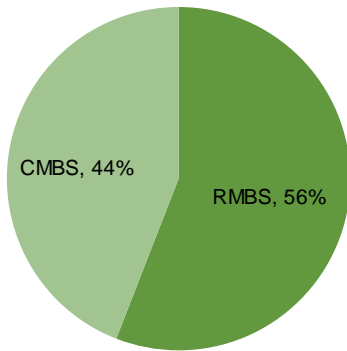


MBS Issuance, CMO (\$B)

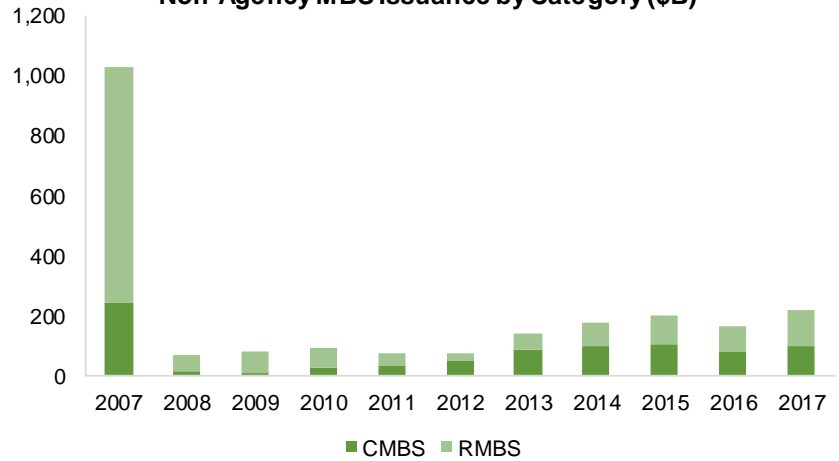


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

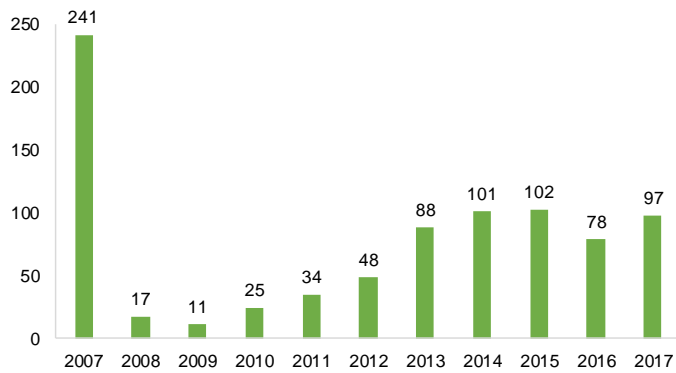
Non-Agency MBS Issuance



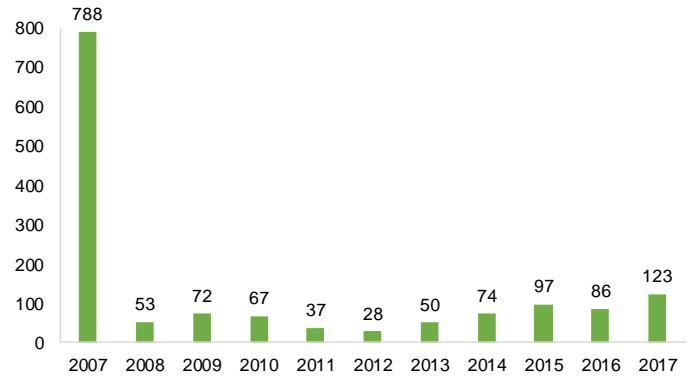
Non-Agency MBS Issuance by Category (\$B)



MBS Issuance, CMBS (\$B)



MBS Issuance, RMBS (\$B)



Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

Market Breakout: Corporates

Description and Purpose of Markets

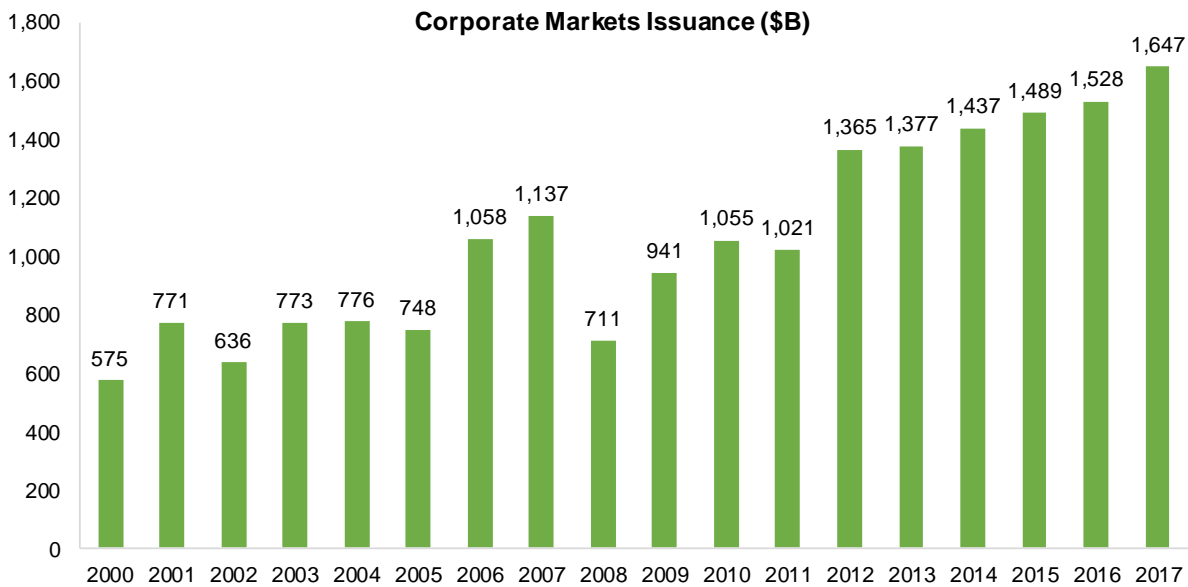
Corporate bonds (corporates) are debt securities issued by public and private (you do not have to “go public” to issue debt, unlike in equities) corporations. They are issued to raise money to fund investments or expansion plans. Corporates are considered riskier than UST, and receive ratings by credit ratings agencies to determine creditworthiness, i.e. probability of repayment of debt in a timely manner. This is a function of future earnings, or company assets may be used as collateral for the bonds.

Current Market Landscape

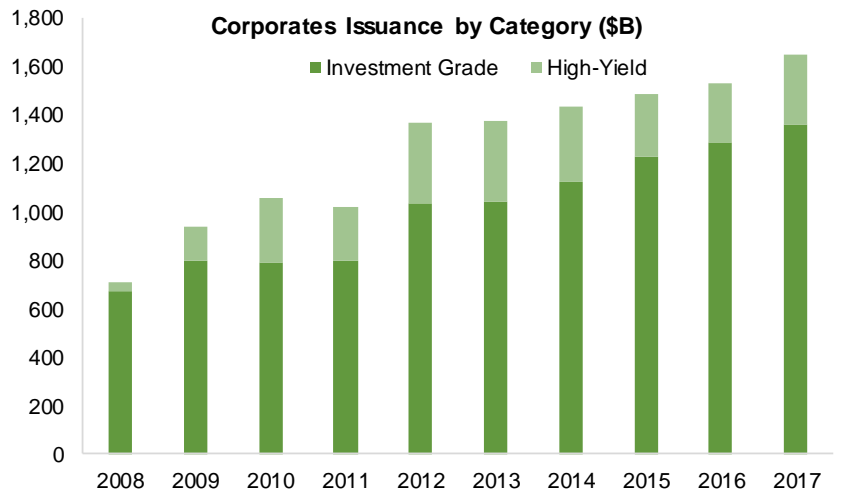
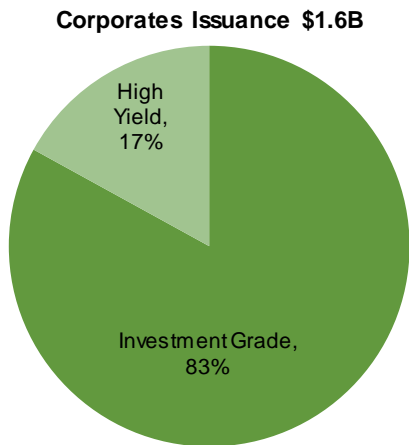
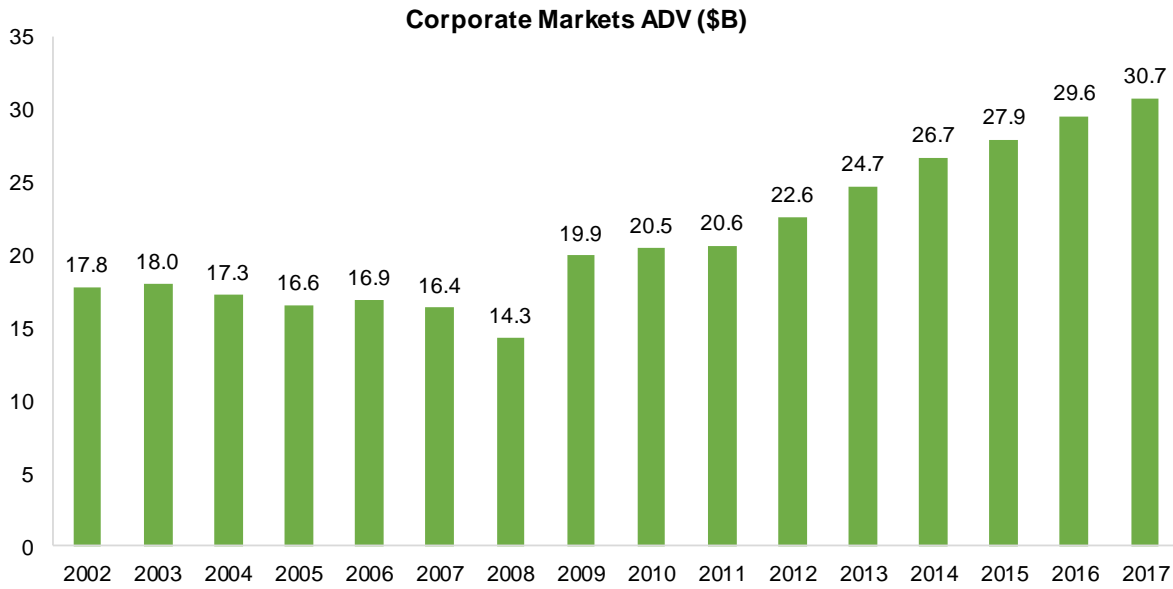
- **Product Breakout** – Common types of corporates include, some of which may be subsectors of others:
 - Publicly Traded - Registered bonds traded in the markets.
 - 144A Traded - A mechanism for the sale of privately placed bonds, forgoing SEC registration if certain conditions are met (two-year holding period, minimum level of public-accessible information).
 - High-Yield - Bonds rated by the credit rating agencies below BBB, indicating a higher risk of default.
 - Investment Grade - Bonds rated by the credit rating agencies as BBB or higher, indicating a relatively low risk of default.
 - Fixed-Rate – These pay the same amount of interest for its entire term, i.e. a guaranteed interest rate throughout maturity.
 - Floating Rate – These pay a variable interest rate, tied to a benchmark rate, such as the U.S. Treasury bill rate, Fed Funds rate, London Interbank Offered Rate (LIBOR) or the prime rate.
 - Callable – These resemble standard bonds, but with an embedded call option sold to the issuer, which introduces uncertainty into the security. On the call date, the issuer may decide to recall (retire) the bonds. Otherwise, the bond retires at the originally specified maturity date.
 - Non-Callable – These cannot be redeemed early by the issuer except with the payment of a penalty.
 - Convertible – These can be converted into a predetermined amount of the underlying company's equity at certain times during the bond's life, usually at the bondholder's discretion.
- **Outstanding** – Corporates grew at a 5.0% CAGR since 2008, to \$8.8 trillion. As companies rushed to secure low interest rates before the Fed began raising rates, corporates outstanding is up 18.5% over the last five years.
- **Issuance** – Corporates issuance grew at an 8.8% CAGR since 2008, to \$1.7 trillion. Investment grade corporates grew at a 7.4% CAGR versus 21.1% for high yield, as investors searched for yield. (Remaining CAGRs include: callable fixed rate 10.8%, callable floating rate 9.8%; non-callable fixed rate 7.5%, non-callable floating rate 1.3%; convertibles -4.6%.)
- **ADV** – Corporates ADV grew at an 8.0% CAGR since 2008, to \$30.9 billion. CAGRs include: investment grade 7.6%, high yield 8.6%; publicly traded 6.9%, 144A 13.9%.

Note: Data as of FY17.

Chartbook

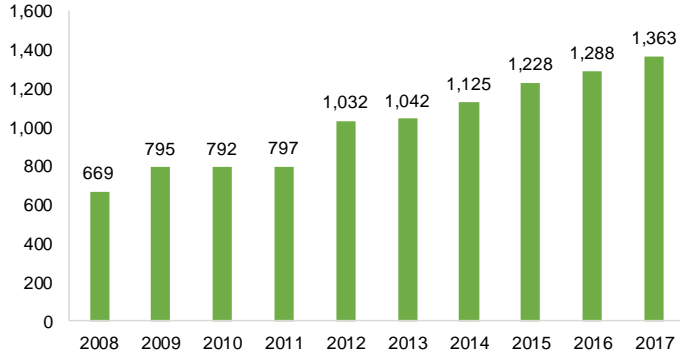


Source: [SIFMA](#). Please see the Appendix for details.

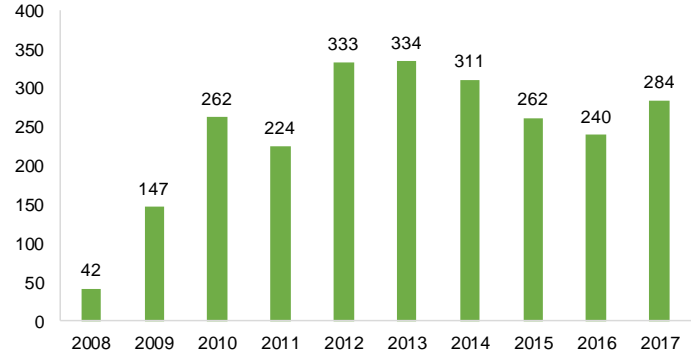


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

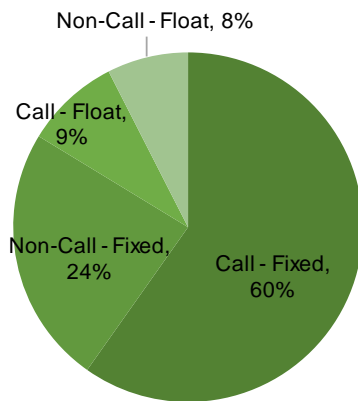
Corporates Issuance, Investment Grade (\$B)



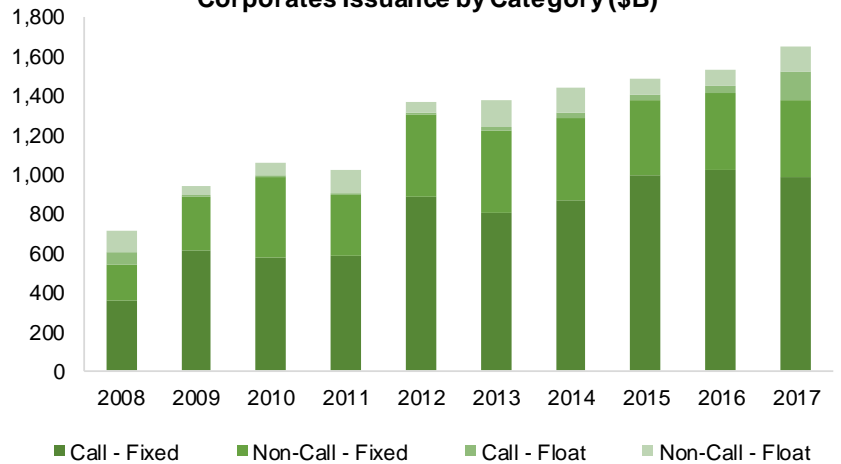
Corporates Issuance, High-Yield (\$B)



Corporates Issuance

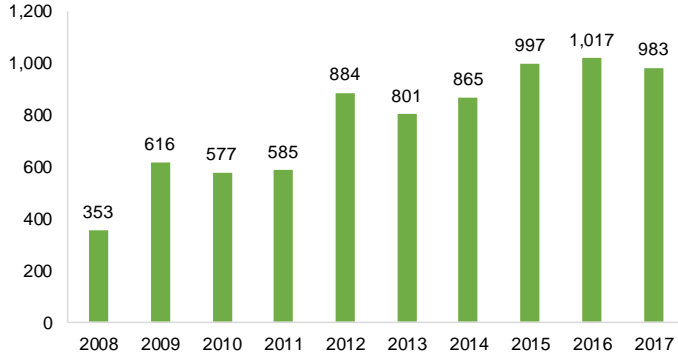


Corporates Issuance by Category (\$B)

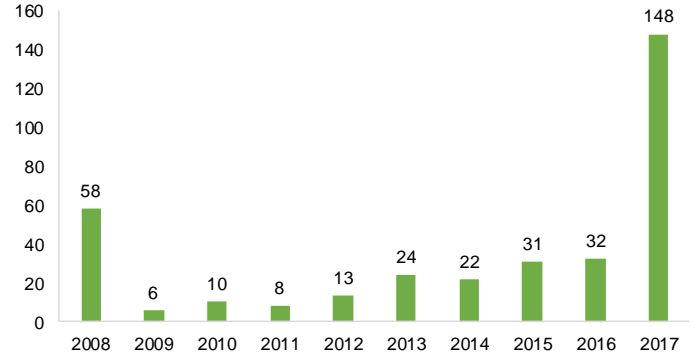


Source: SIFMA. As of FY17. Please see the Appendix for details.
 Note: Call = Callable; Float = Floating

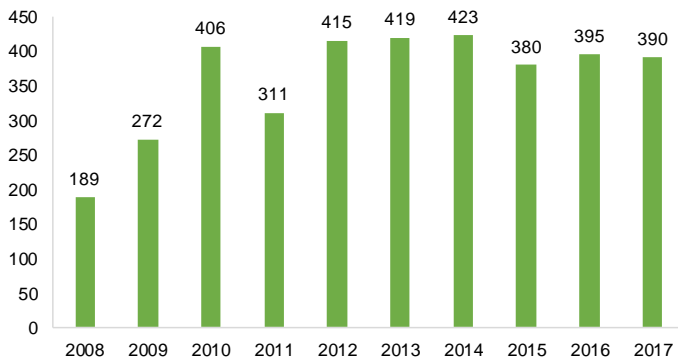
Corporates Issuance, Callable - Fixed (\$B)



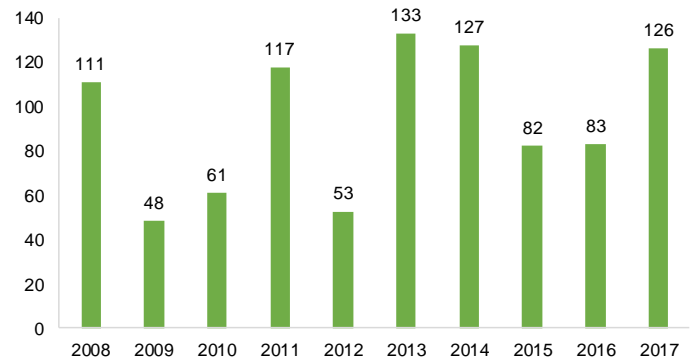
Corporates Issuance, Callable - Floating (\$B)



Corporates Issuance, Non-Callable - Fixed (\$B)

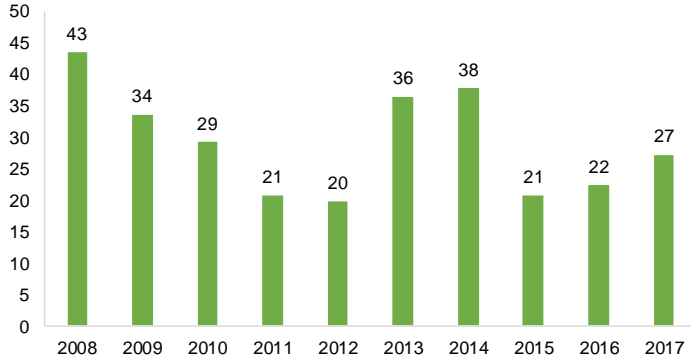


Corporates Issuance, Non-Callable - Floating (\$B)

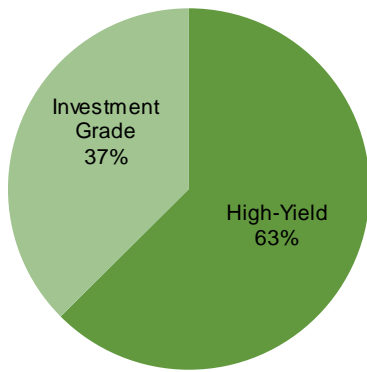


Source: [SIFMA](#). Please see the Appendix for details.

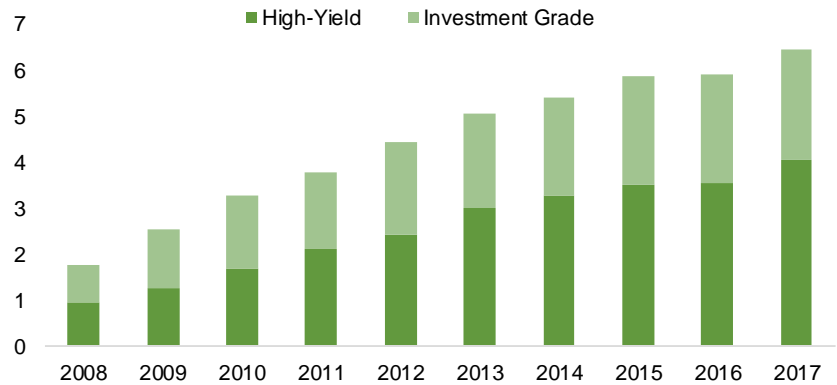
Corporates Issuance, Convertible (\$B)



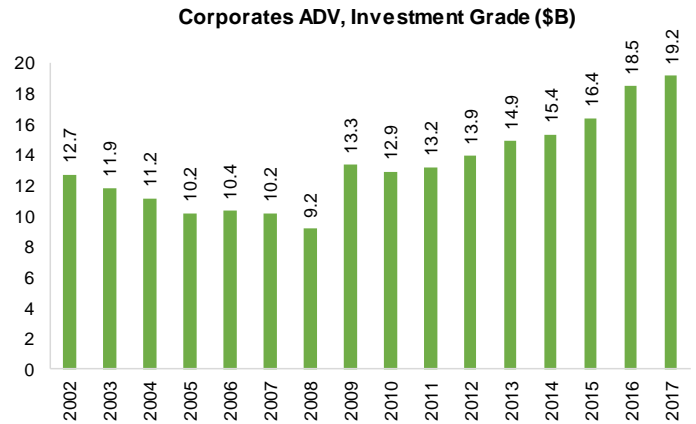
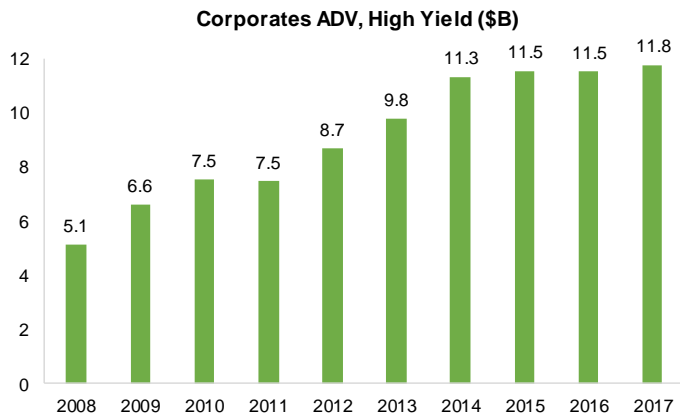
Corporates ADV by Category



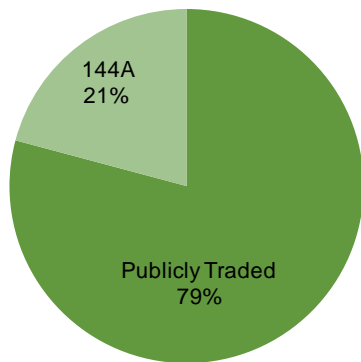
Corporates ADV by Category (\$B)



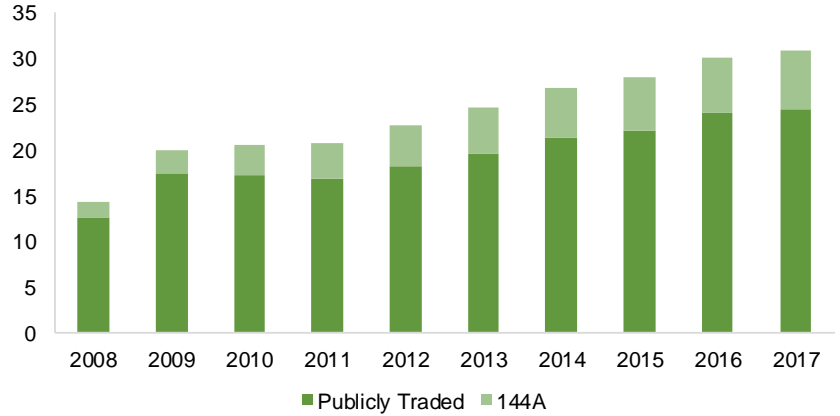
Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



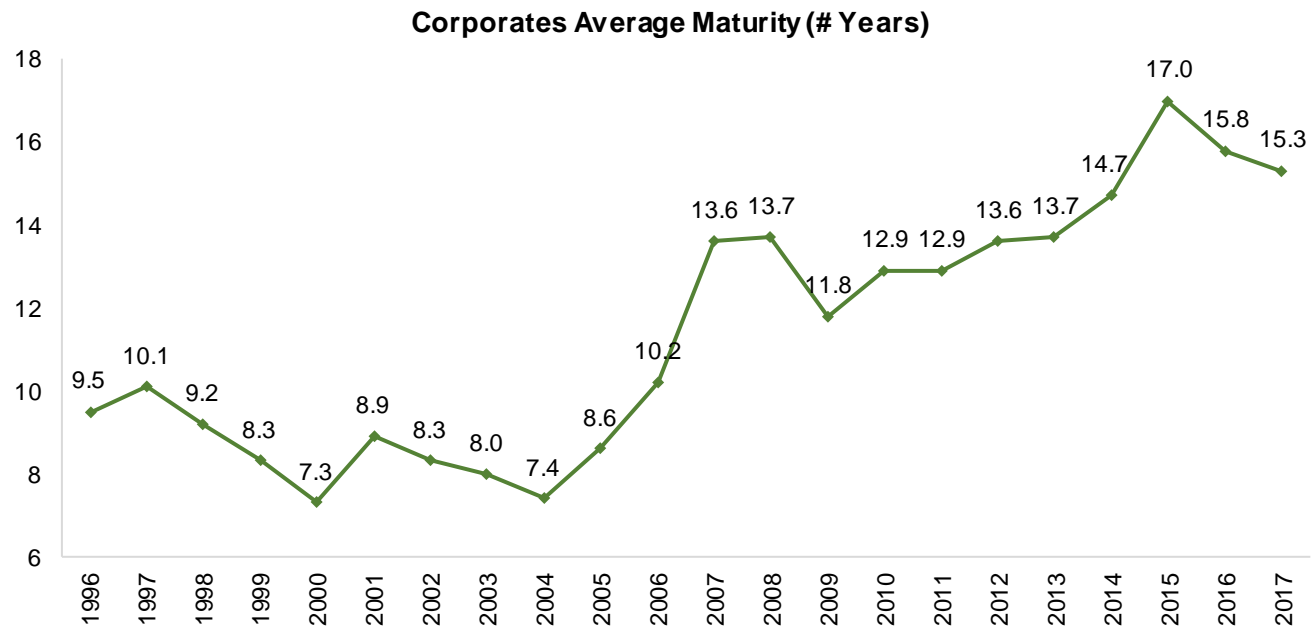
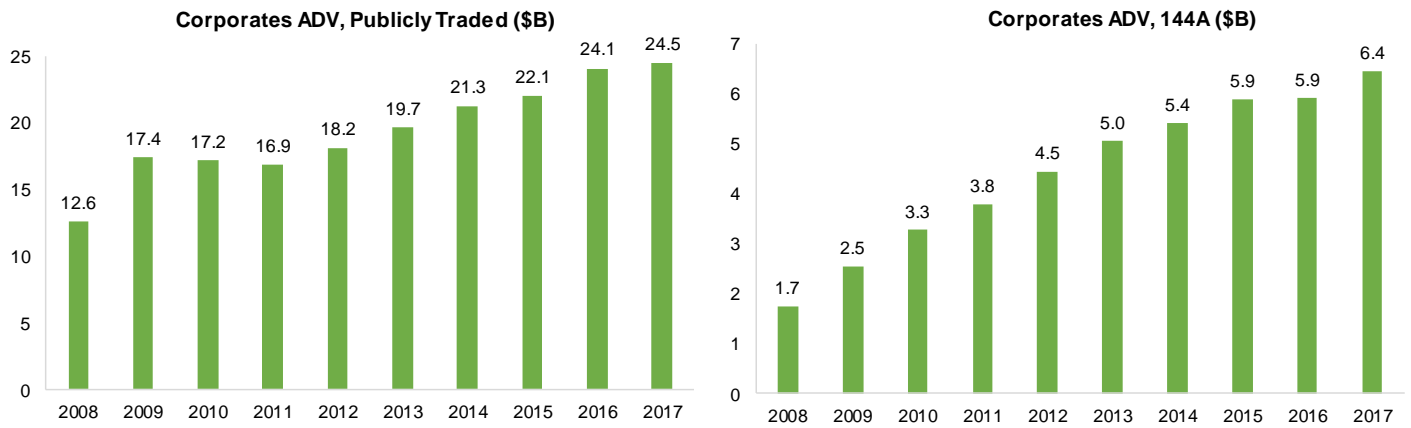
Corporates ADV by Category



Corporates ADV by Category (\$B)



Source: SIFMA. As of FY17. Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.

Market Breakout: Munis

Description and Purpose of Markets

Municipal bonds (munis) are debt securities issued by state or local governments or other government agencies and public entities, like public utilities or school districts. The money raised funds public projects, predominantly infrastructure projects such as: roads, bridges, transit systems, water treatment centers, schools, airports or hospitals. Efficient muni markets enable states and municipalities to borrow at low rates and finance capital expenditures over a longer period commensurate with useful life.

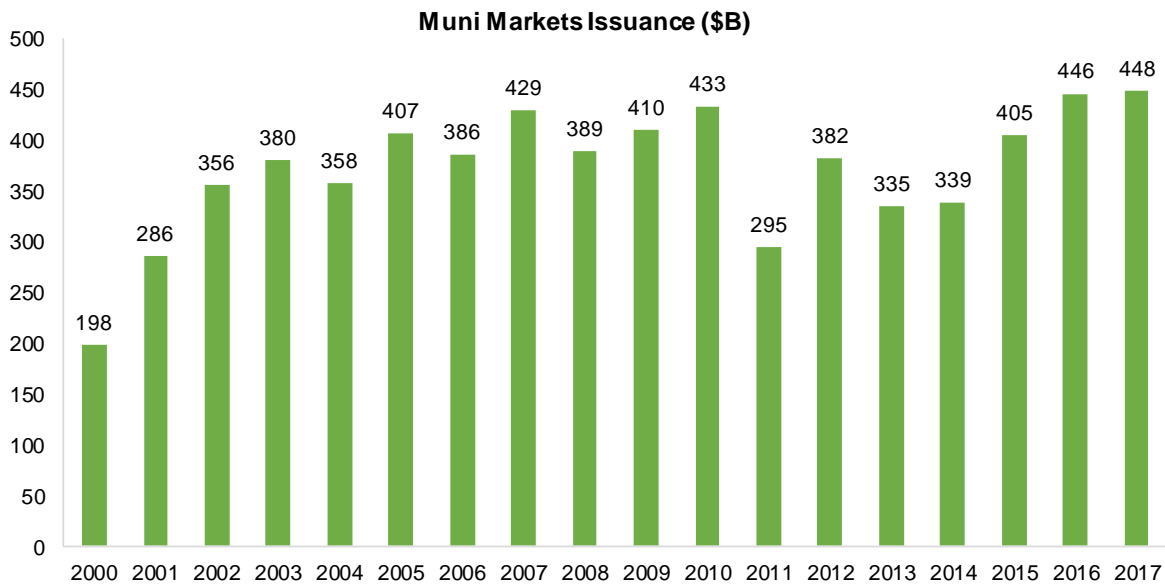
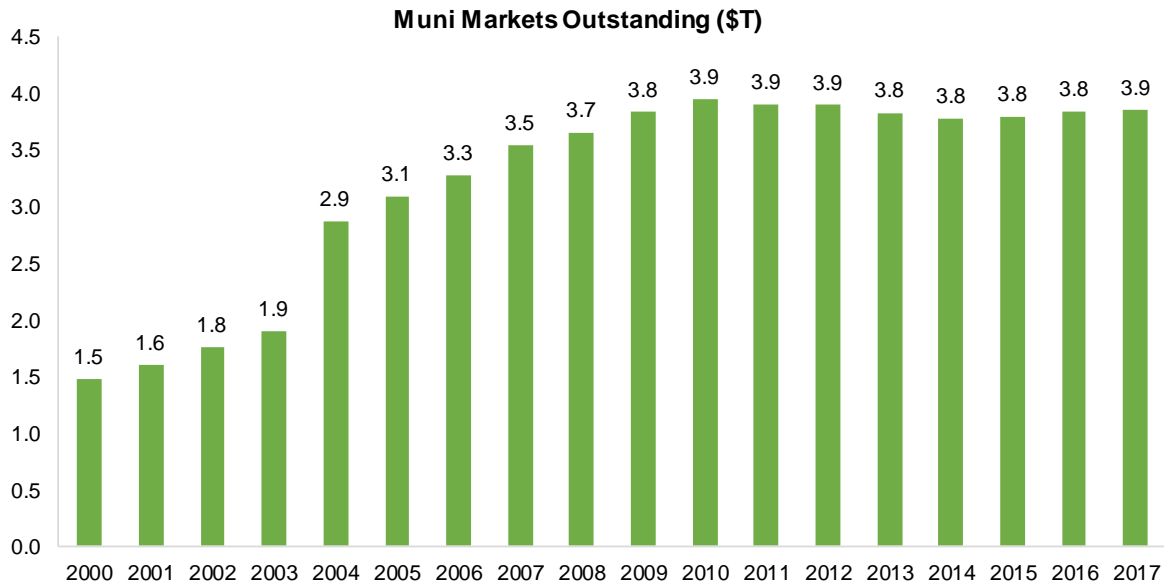
Munis are categorized based on the source of repayment, interest and principal.

Current Market Landscape

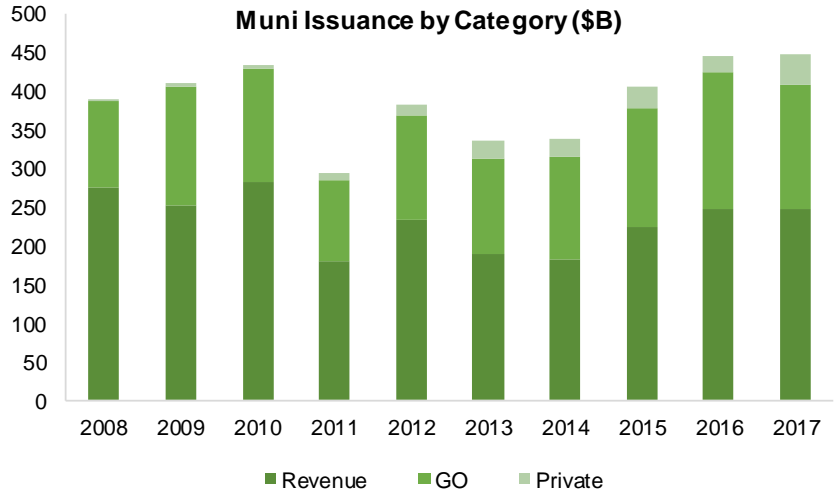
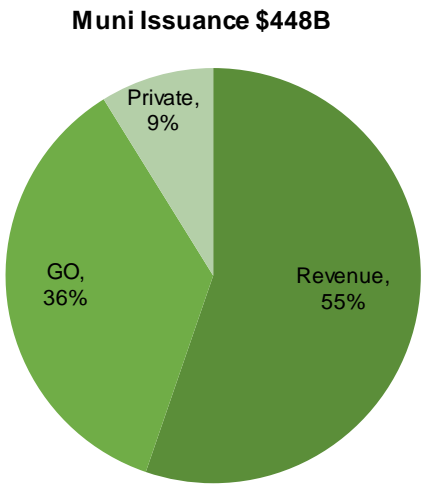
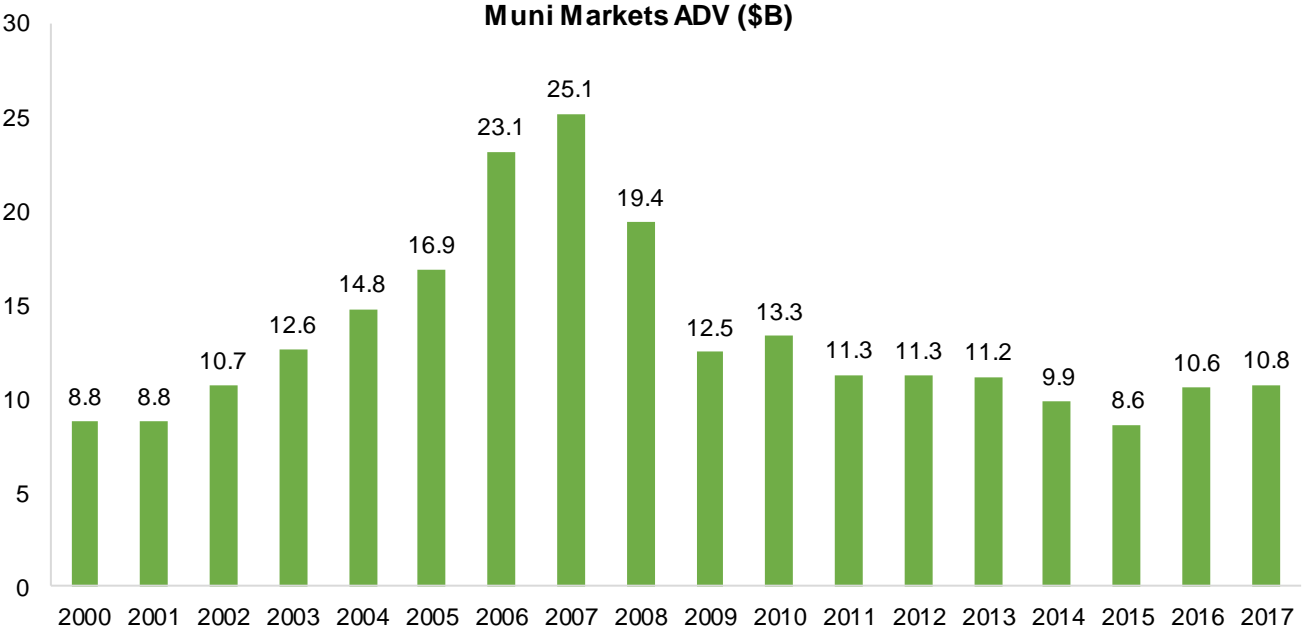
- **Product Breakout** – Common types of munis include:
 - General Obligation Bond (GO) – These are backed by dedicated property taxes or general funds of the municipality, not by revenue from a specific project.
 - Revenue Bond – These are backed by revenue from a specific project.
 - Negotiated - An underwriter sells the bonds to its clients, after determining the bond price by gathering indications of interest during a presale.
 - Competitive - Bonds are advertised for sale, and any market participant may bid, with the bonds going to the bidder offering the lowest interest cost.
 - Private - A broker-dealer sells the entire muni bond placement to one of its clients.
 - Refunding - Retiring or redeeming an outstanding bond issue at maturity by using the proceeds from a new debt issue, typically at a lower interest rate.
 - New Capital - First issue of a bond, not a refunding.
 - Tax-Exempt Bond – The interest earned by investors is generally free from federal income tax and often state and local income tax.
 - Taxable Bond – The interest earned by investors is subject to taxation.
- **Outstanding** – Munis outstanding is essentially flat since 2008 (0.5% CAGR), at \$3.9 trillion.
- **Issuance** – Munis issuance grew at a 1.4% CAGR since 2008, to \$448 billion. CAGRs include: GO 3.9%, revenue -1.1%; competitive 6.3%, negotiated -0.7%; private placement 28.8%; new capital -0.2%, refunding 3.0%; callable 0.8%, non-callable 5.5%.

Note: Data as of FY17.

Chartbook

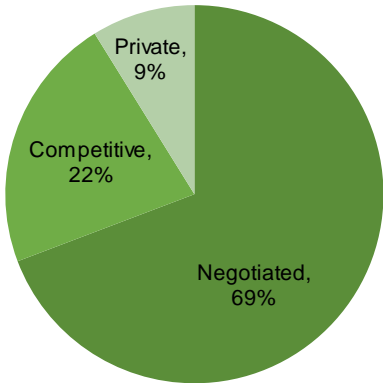


Source: [SIFMA](#). Please see the Appendix for details.

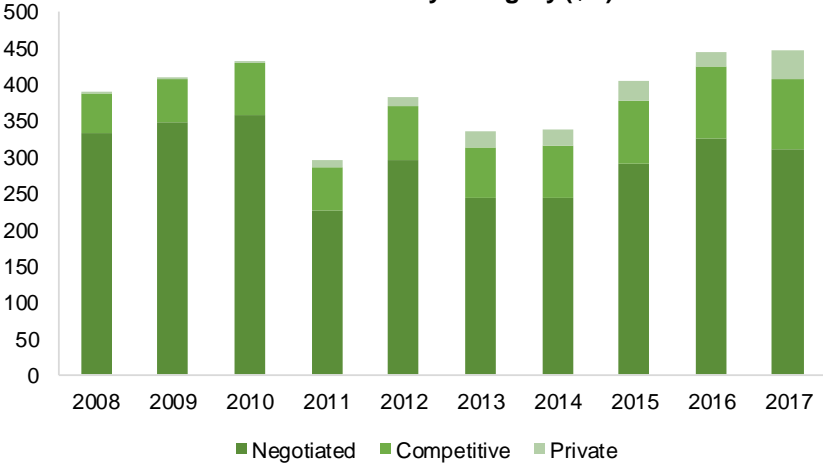


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

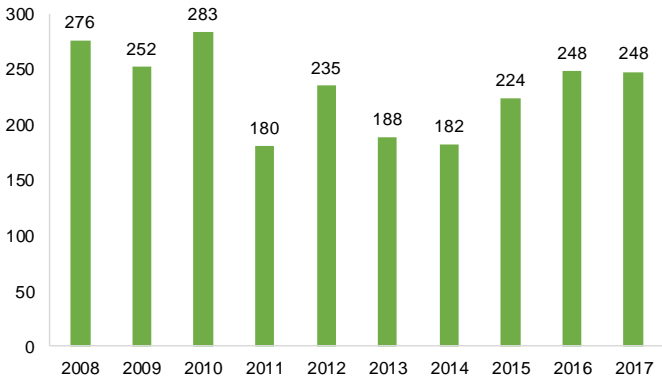
Muni Issuance by Category



Muni Issuance by Category (\$B)



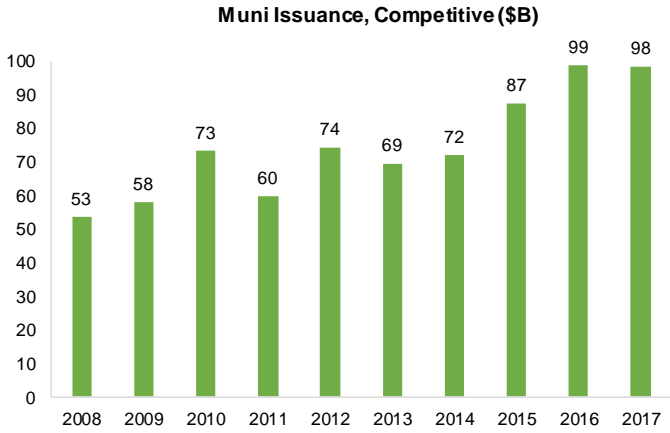
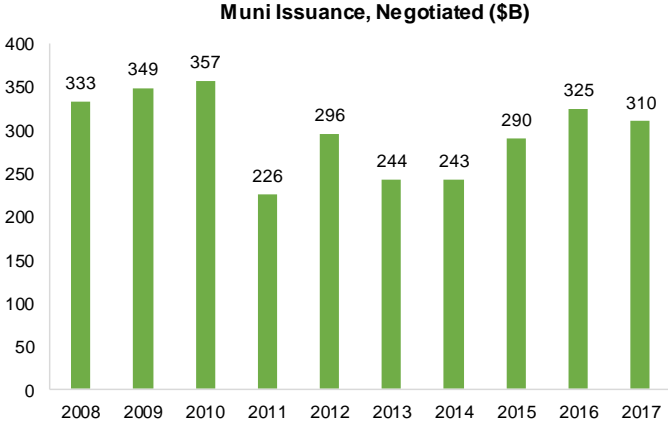
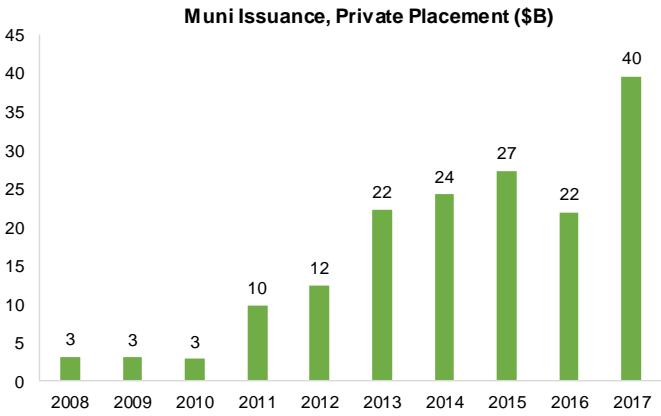
Muni Issuance, Revenue (\$B)



Muni Issuance, GO (\$B)

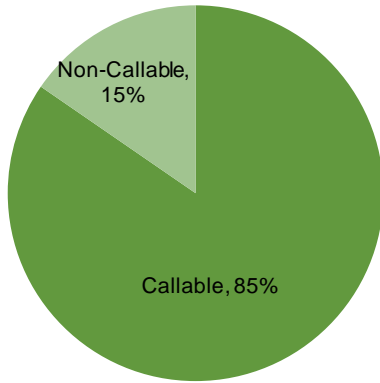


Source: SIFMA. As of FY17. Please see the Appendix for details.

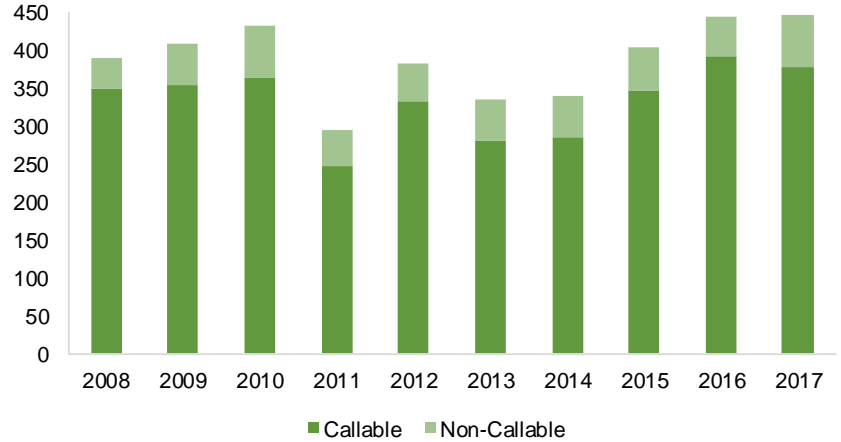


Source: [SIFMA](#). Please see the Appendix for details.

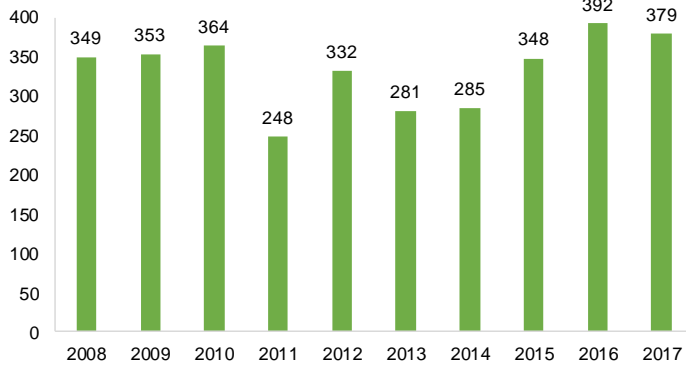
Muni Issuance by Category



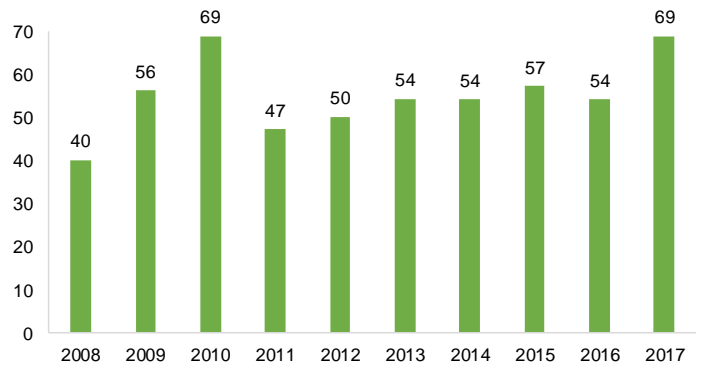
Muni Issuance by Category (\$B)



Muni Issuance, Callable (\$B)

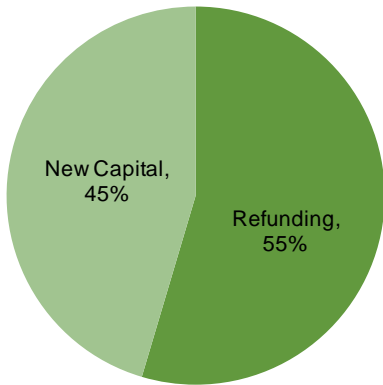


Muni Issuance, Non-Callable (\$B)

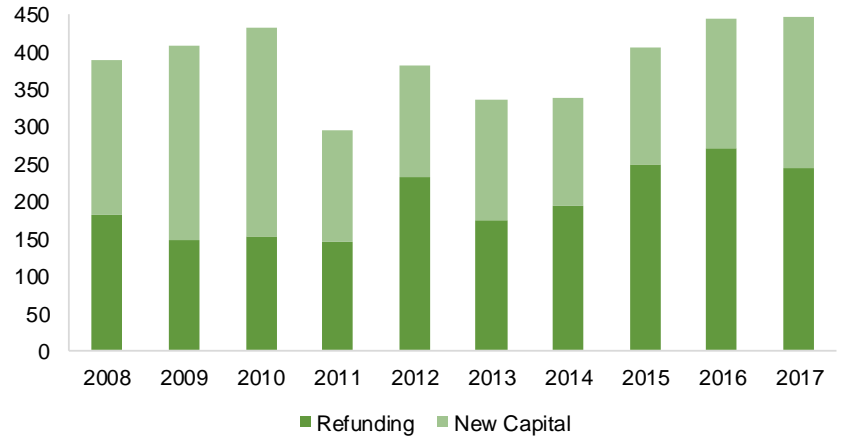


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

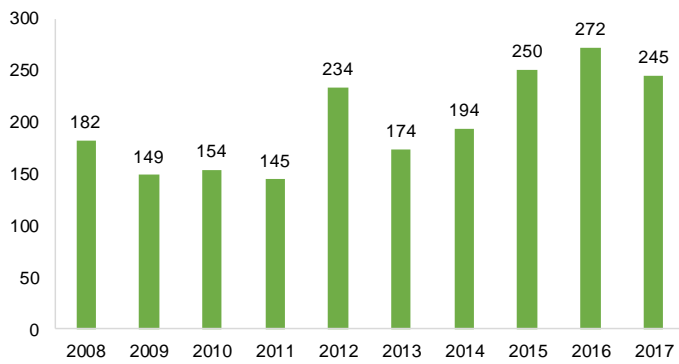
Muni Issuance by Category



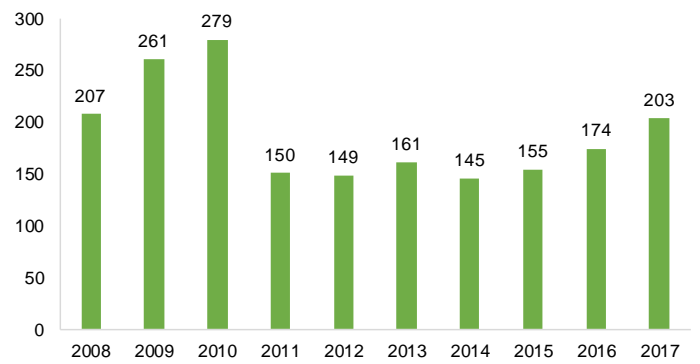
Muni Issuance by Category (\$B)



Muni Issuance, Refunding (\$B)

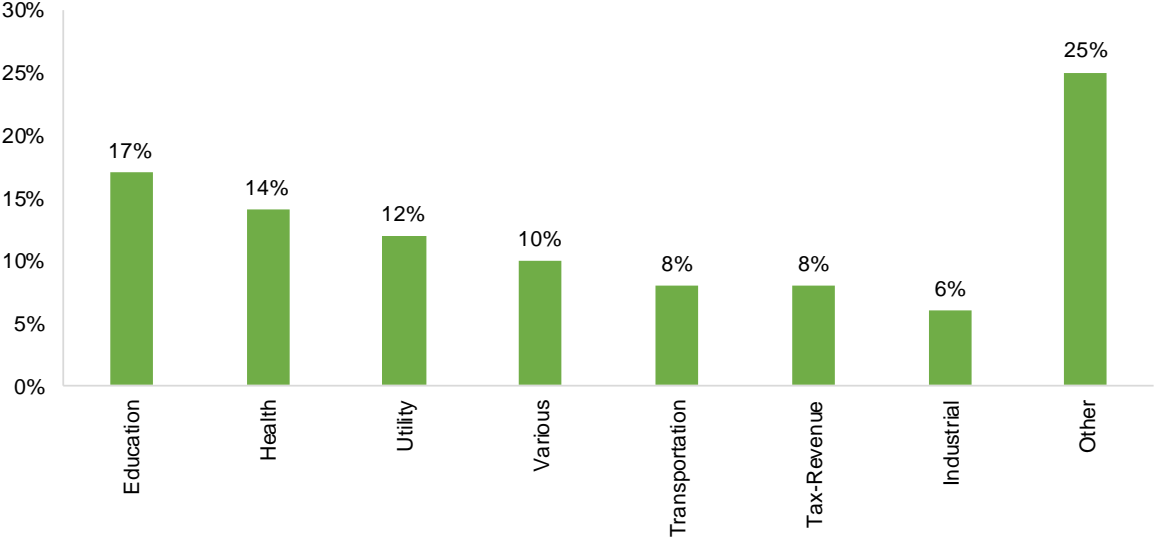


Muni Issuance, New Capital (\$B)

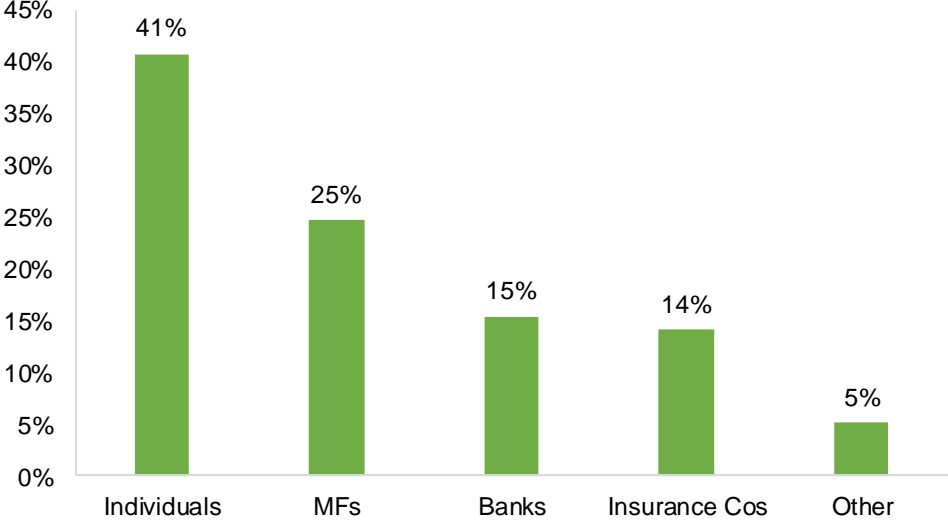


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

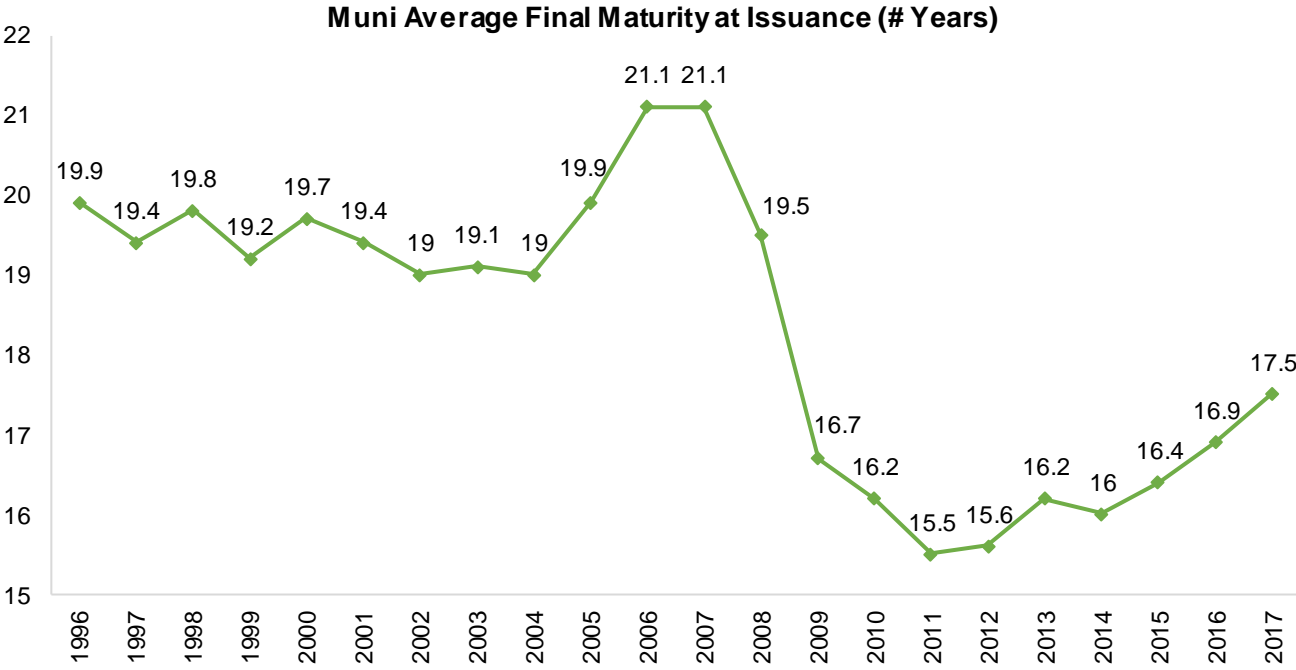
Muni Par Amount ADV by Category



Institutional Holders of Munis



Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



Source: SIFMA. Please see the Appendix for details.

Market Breakout: Agency

Description and Purpose of Markets

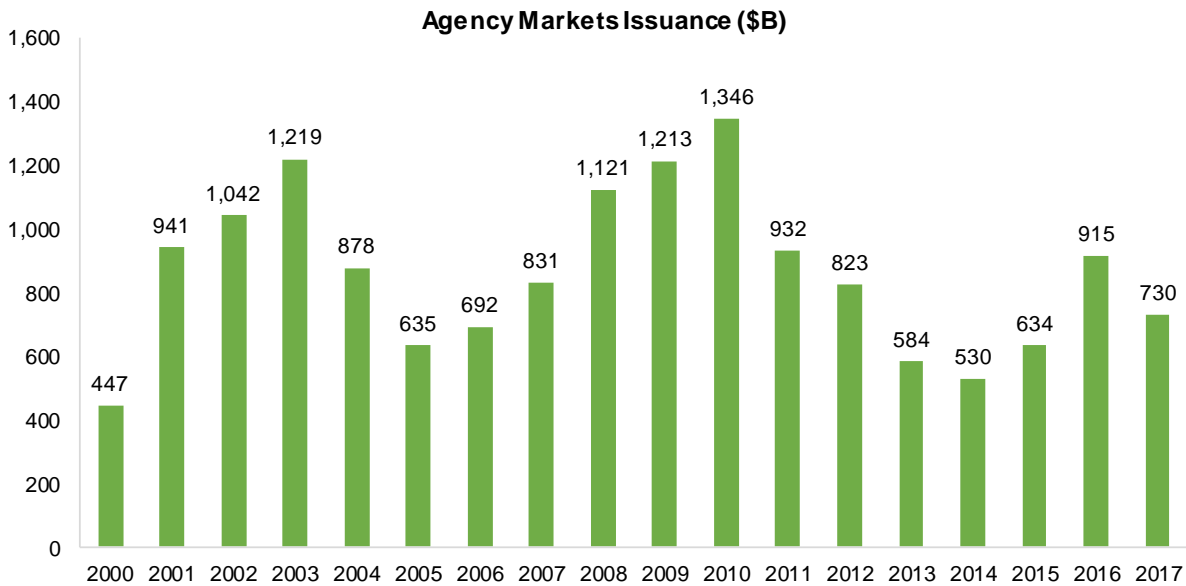
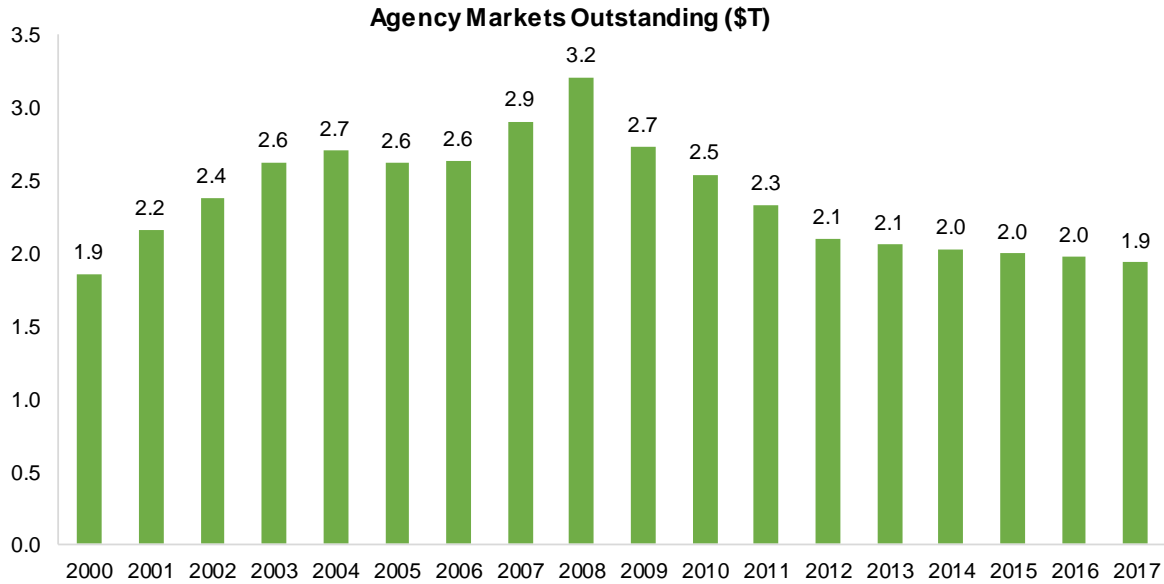
Agency securities are issued by quasi-governmental agencies to fund operations. Unlike UST or munis, these securities are not always fully guaranteed by the U.S. or a municipal government. As such, they can hold credit and default risk.

Current Market Landscape

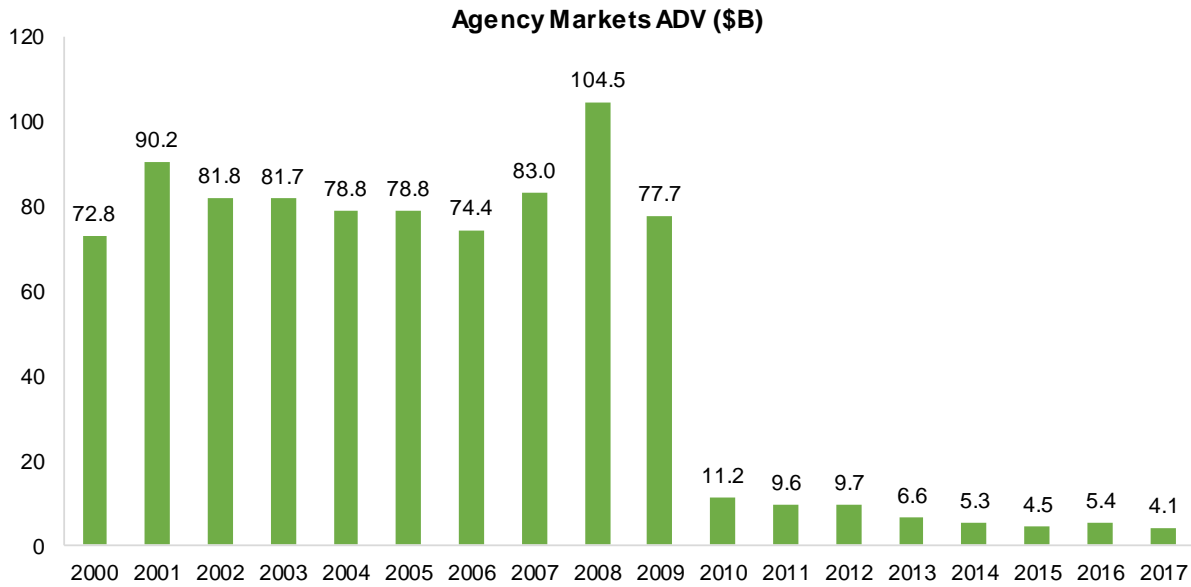
- **Product Breakout** – Common types of agency debt include:
 - Federal Government Agency Bonds – These are backed by the full faith and credit of the U.S. government and include bonds issued by the Small Business Administration (SBA), etc.
 - Government-Sponsored Enterprise Bonds (GSE) – These are not backed by the same guarantee as federal government agencies and are issued by the Federal National Mortgage Association (Fannie Mae or Fannie), Federal Home Loan Mortgage (Freddie Mac or Freddie), Federal Farm Credit Banks Funding Corporation (Farm Credit) or the Federal Home Loan Bank (FHLB), Federal Agricultural Mortgage Corporation (Farmer Mac). Tennessee Valley Authority (TVA) is unique. A wholly-owned agency of the U.S. government, the TVA is a self-supporting entity whose debt is not guaranteed by the government, but supported strictly by TVA revenues.
- **Outstanding** – Agency outstanding declined at a 4.9% CAGR since 2008, to \$1.9 trillion. CAGRs include: Fannie Mae -10.9%, Freddie Mac -9.6%, FHLB -1.9%, Farmer Mac +12.8%, Farm Credit 4.2% and TVA 1.1%.

Note: Data as of FY17.

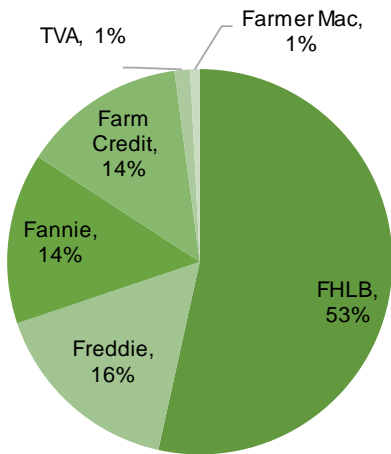
Chartbook



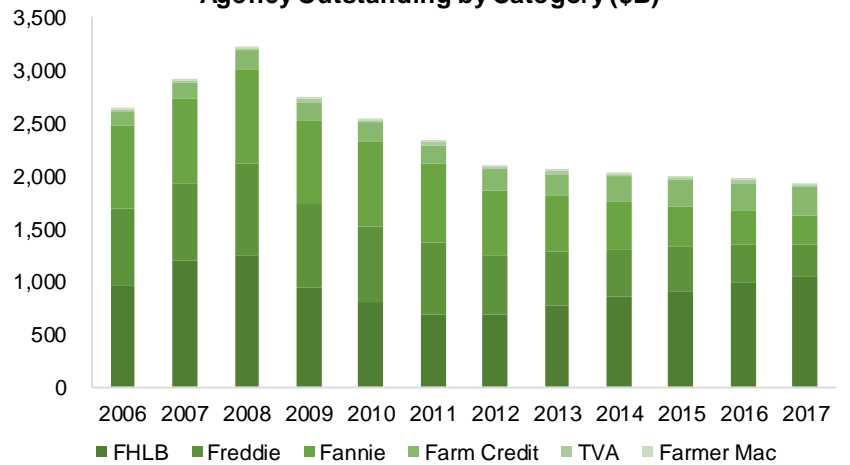
Source: [SIFMA](#). Please see the Appendix for details.



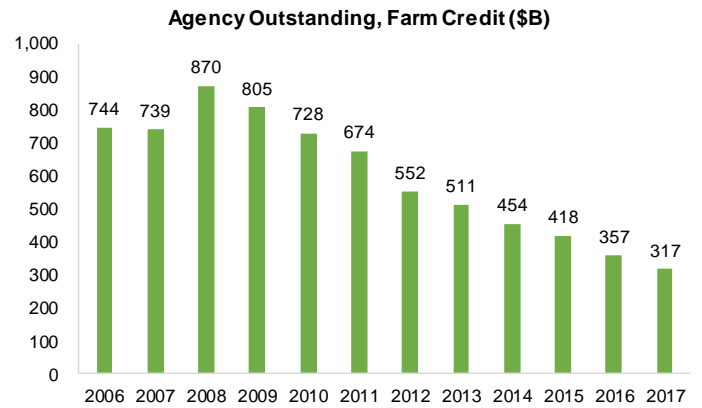
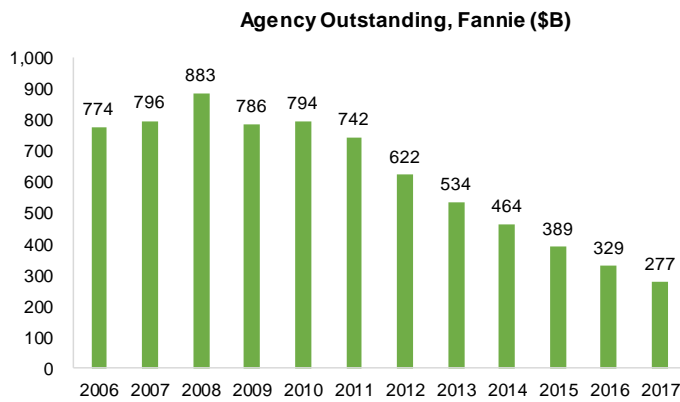
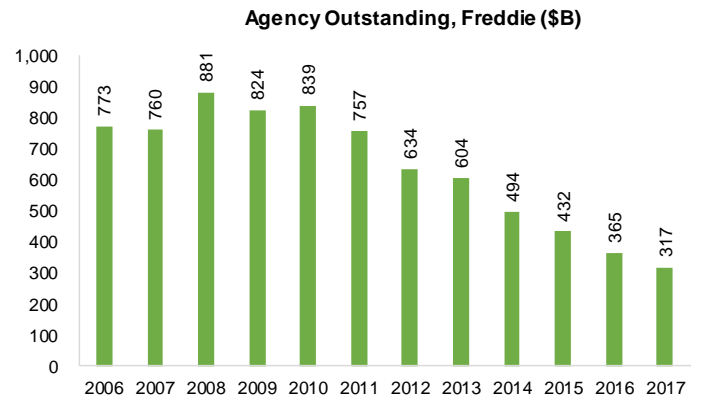
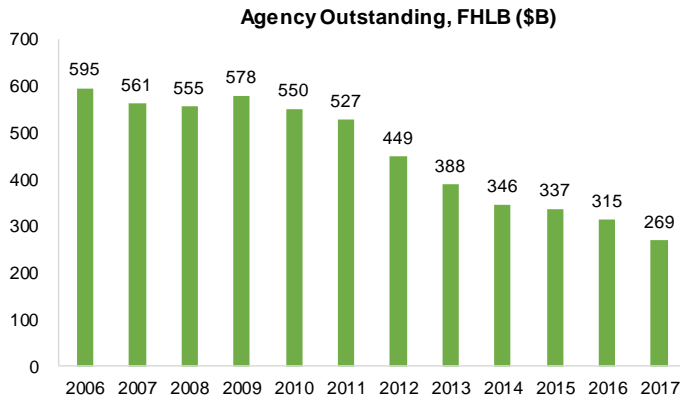
Agency Outstanding by Category



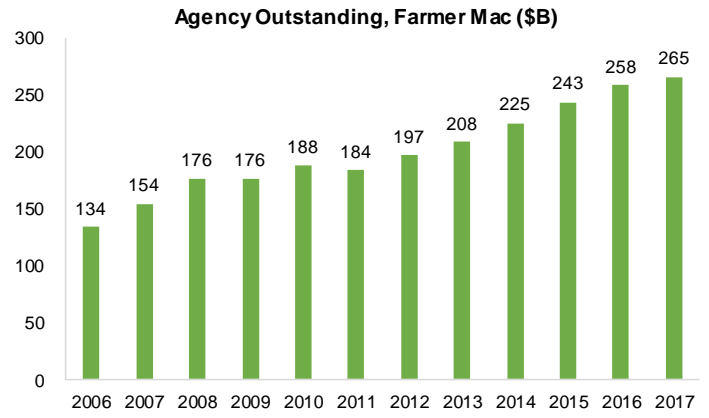
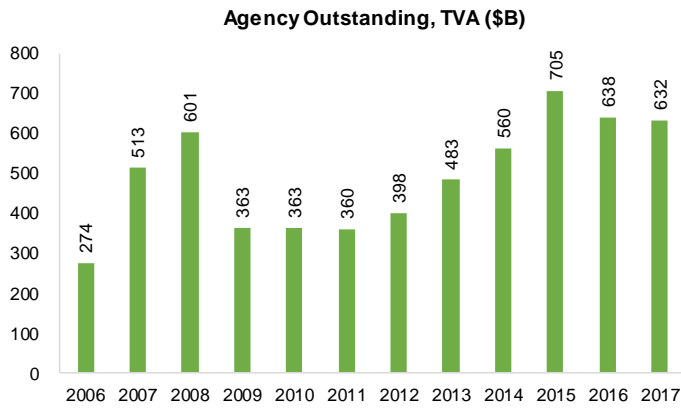
Agency Outstanding by Category (\$B)



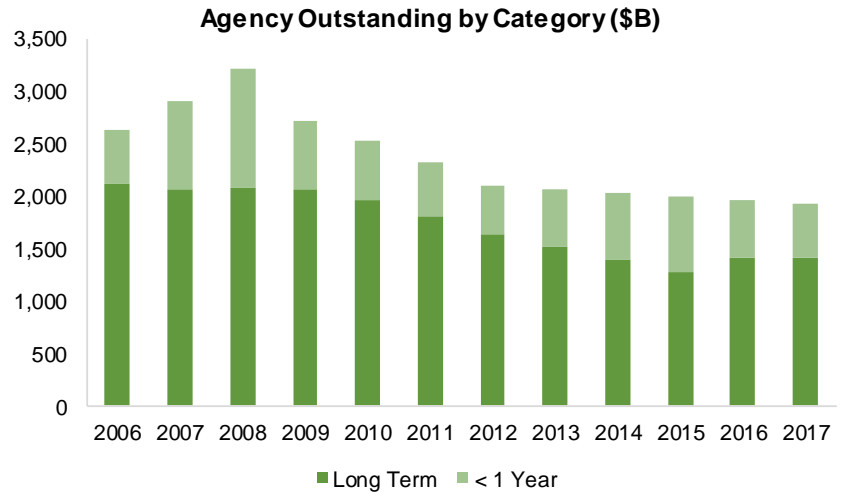
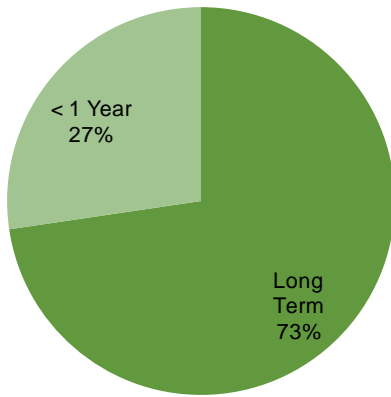
Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



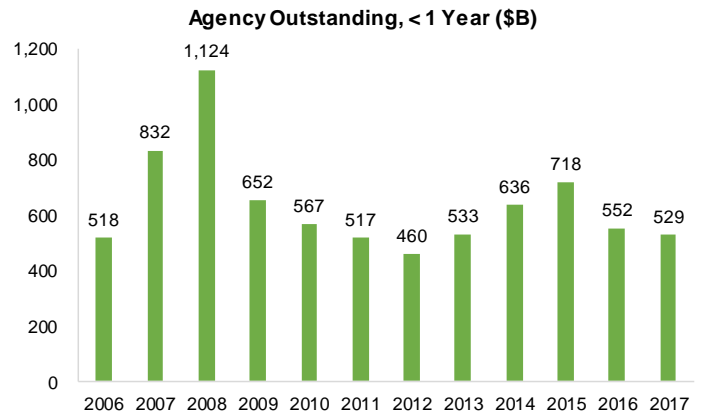
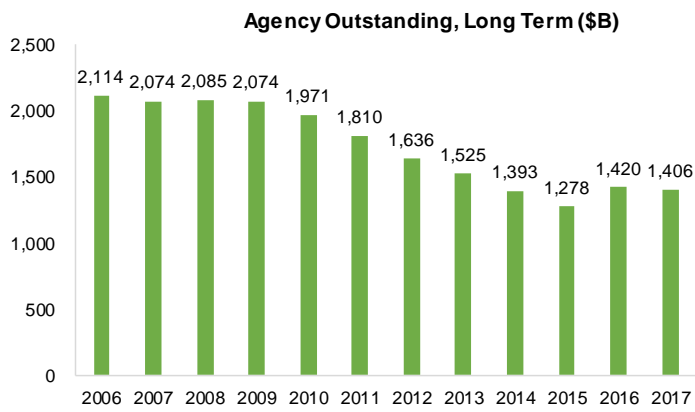
Source: [SIFMA](#). Please see the Appendix for details.



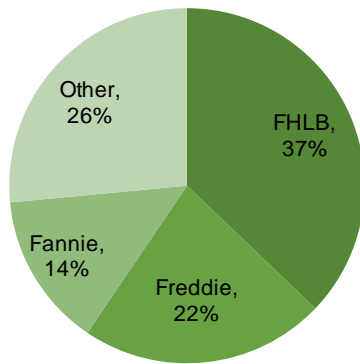
Agency Outstanding by Category



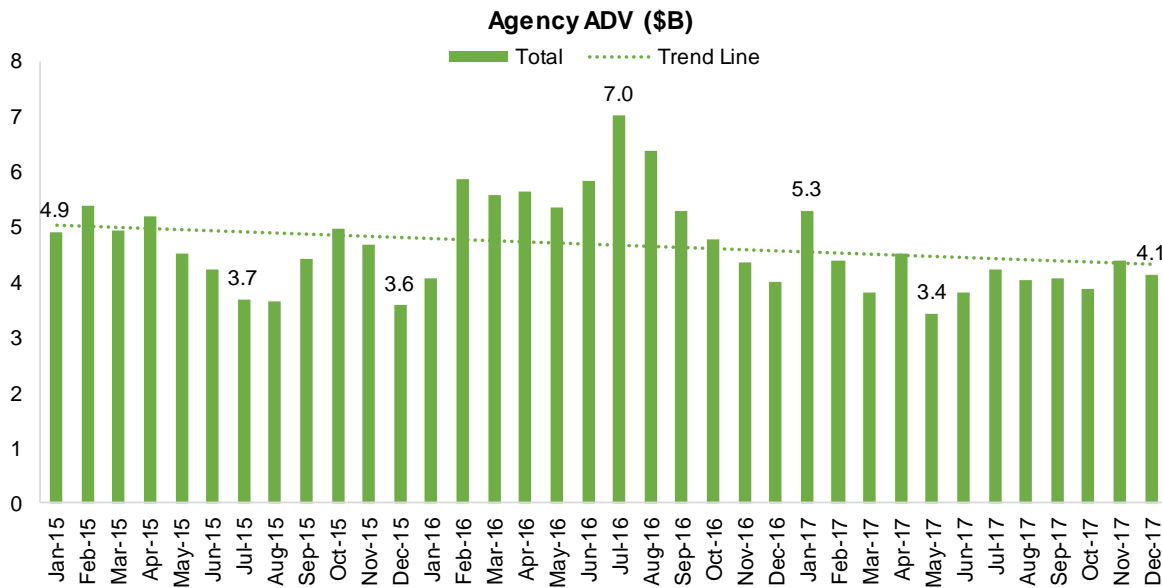
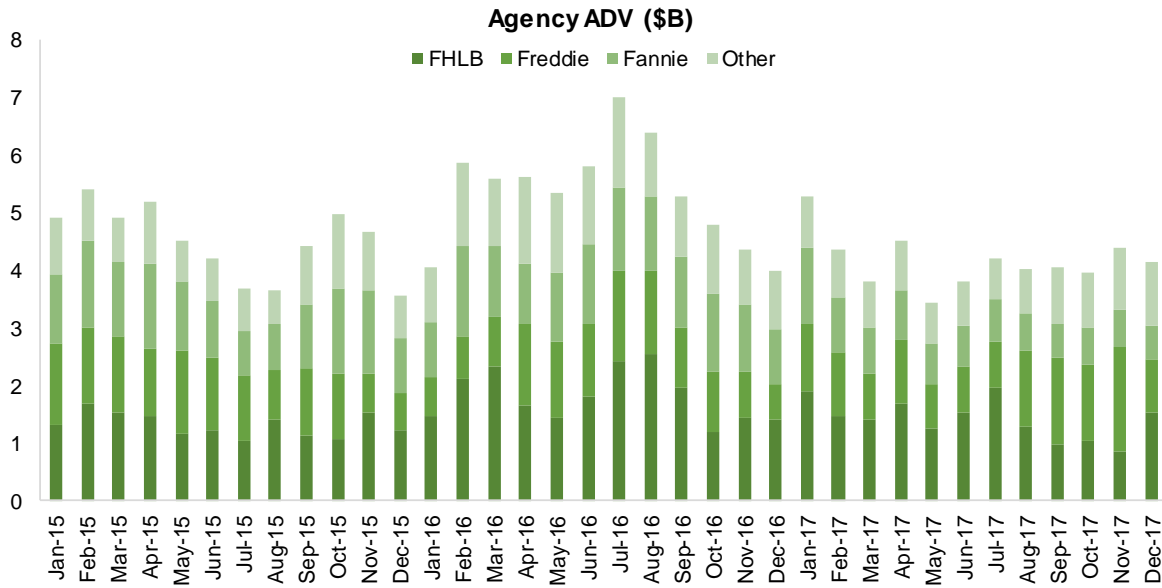
Source: [SIFMA](#). Please see the Appendix for details.



Agency ADV



Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



Source: SIFMA. Please see the Appendix for details.

Market Breakout: ABS

Description and Purpose of Markets

Securitization is a financing technique of pooling similar types of debt obligations and then selling the related cash flows of the underlying assets to investors. Similar to MBS, an asset-backed security (ABS) is a financial security collateralized by a pool of assets such as auto loans, student loans, home equity loans, aircraft leases, other loans and leases, credit card debt (cards), royalties or account receivables.

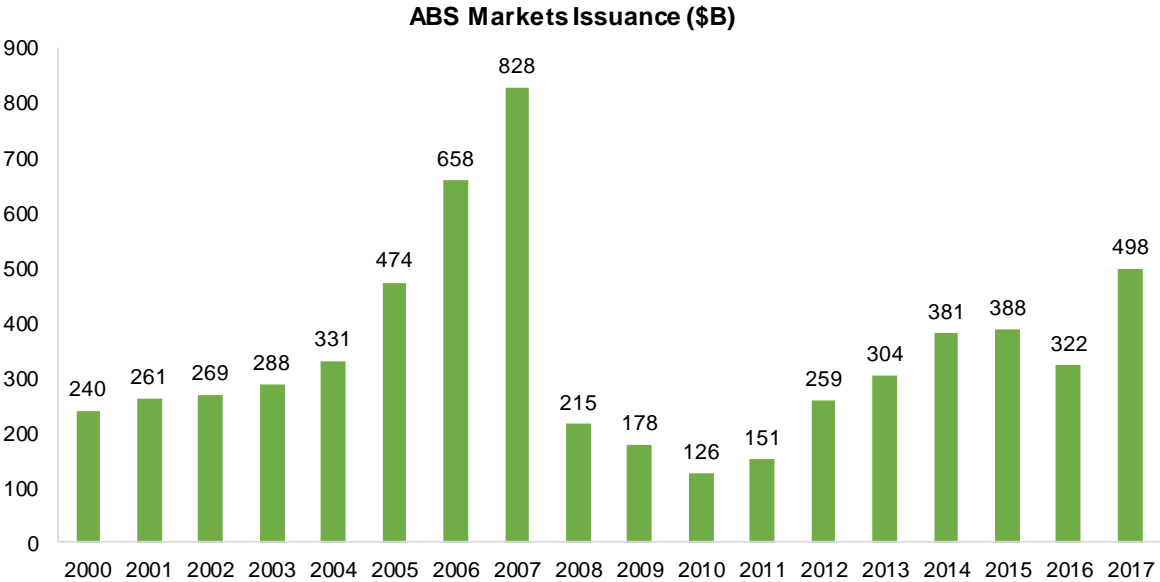
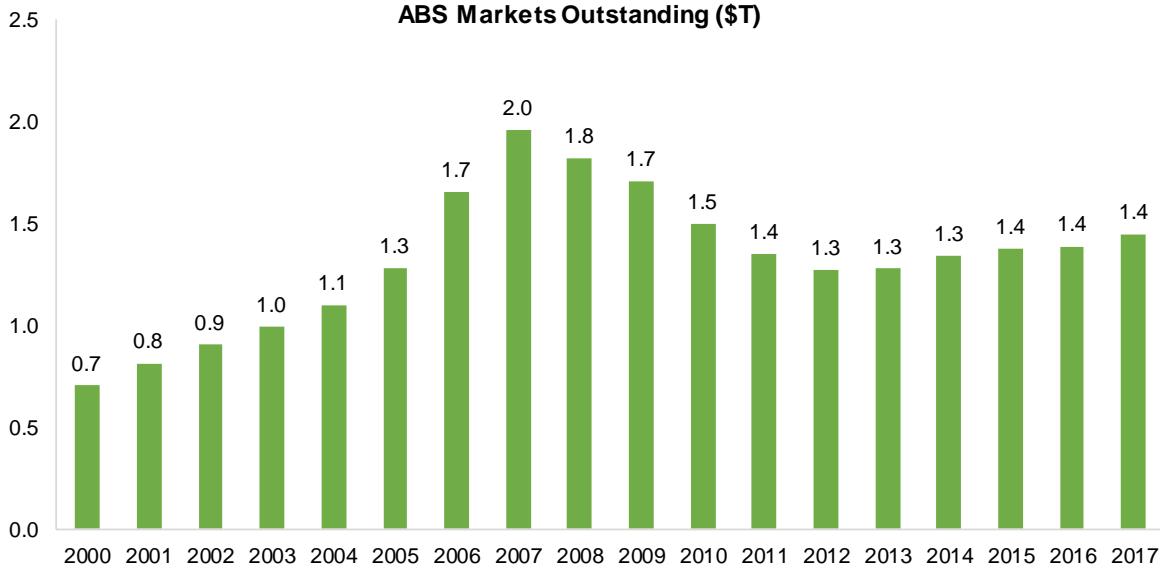
Typically, the underlying assets of an ABS are illiquid. Pooling these assets creates a more liquid investment vehicle, with a valuation based on the cash flows of the underlying and the structure of the transaction.

Current Market Landscape

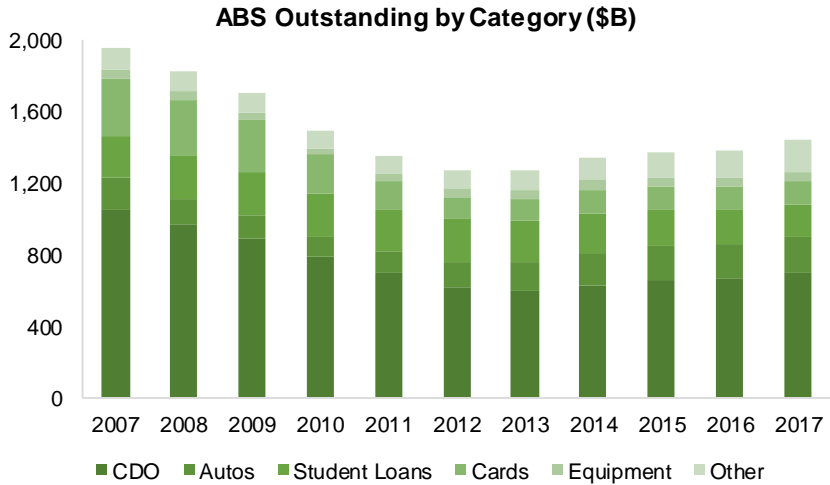
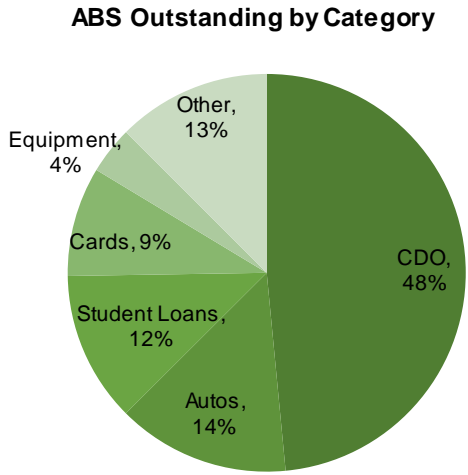
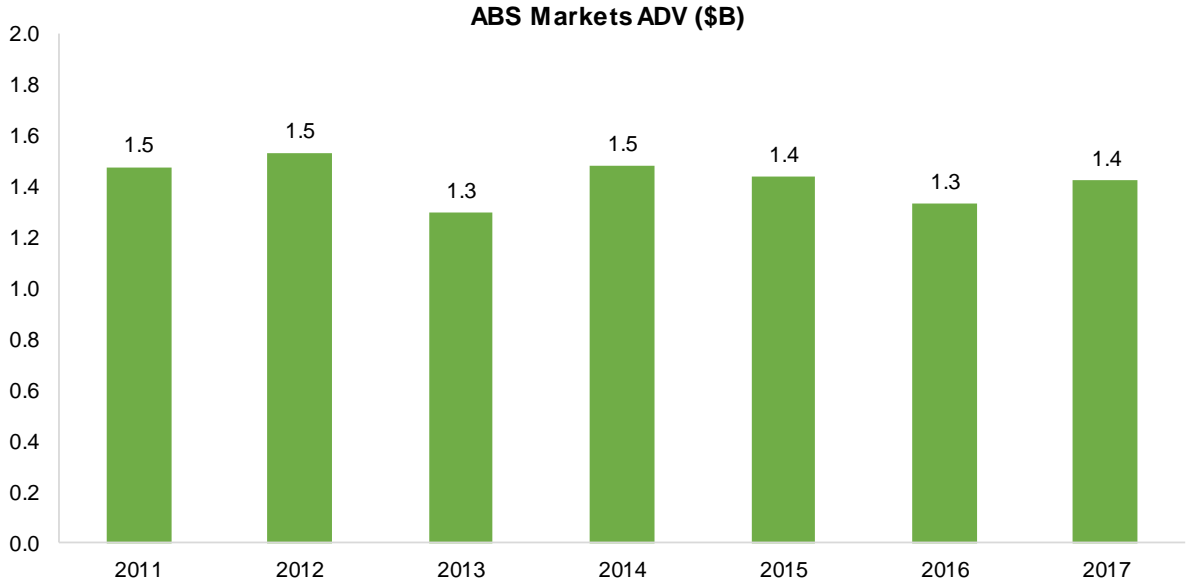
- **Product Breakout** – ABS markets are concentrated in collateralized debt obligations (CDOs), 48% of total outstanding, followed by: autos 14%, student loans 12%, cards 9%, equipment 4% and other 13%.
- **Outstanding** – ABS outstanding has declined at a 2.3% CAGR since 2008, to \$1.4 trillion. CAGRs include: CDOs -3.2%, autos 3.8%, student loans -2.9%, cards -8.6%, equipment 2.4% and other 5.2%.
- **Issuance** – ABS issuance has increased at an 8.8% CAGR since 2008, to \$498 billion. CAGRs include: CDOs 11.5%, autos 11.0%, student loans -5.5%, cards -2.5%, equipment 24.6% and other 19.8%.

Note: Data as of FY17.

Chartbook

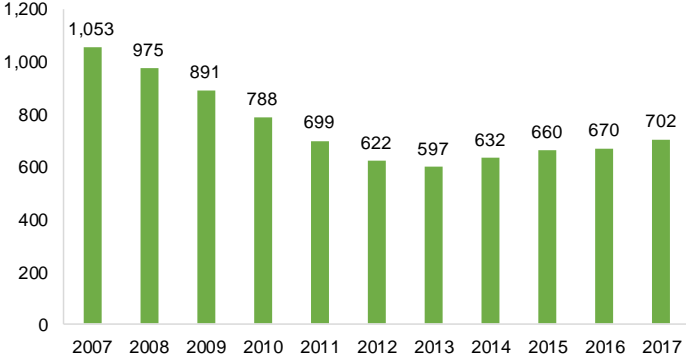


Source: [SIFMA](#). Please see the Appendix for details.

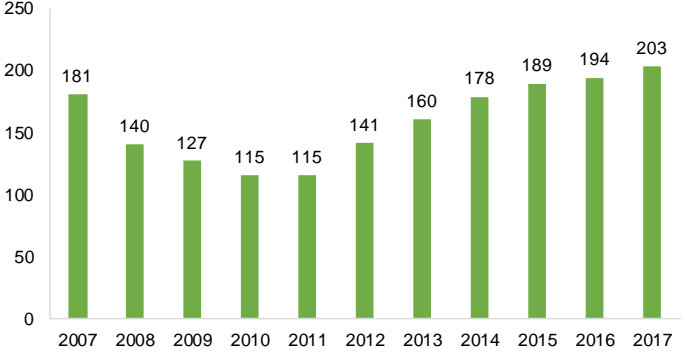


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

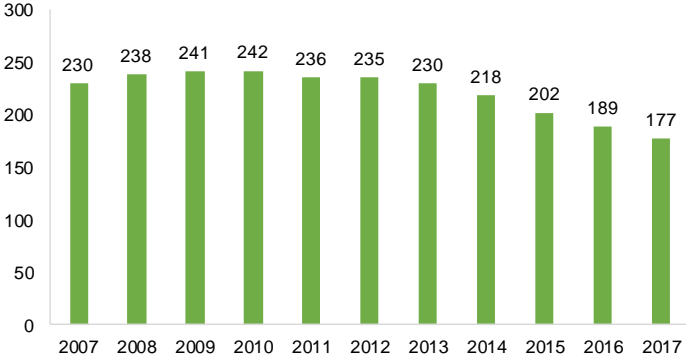
ABS Outstanding, CDO (\$B)



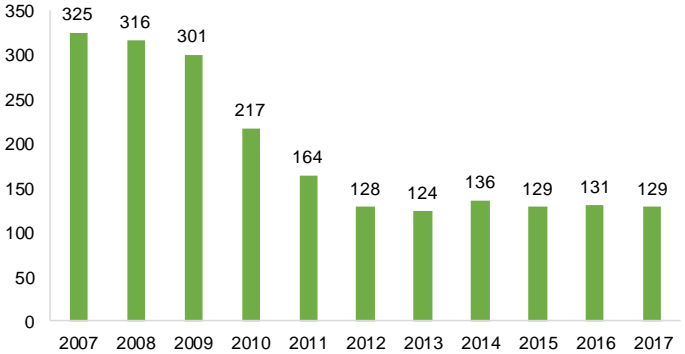
ABS Outstanding, Autos (\$B)



ABS Outstanding, Student Loans (\$B)

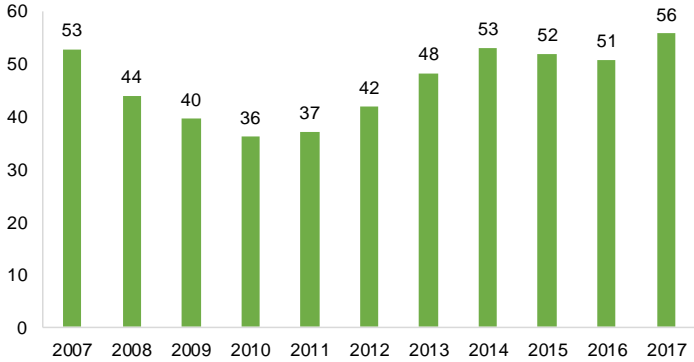


ABS Outstanding, Cards (\$B)

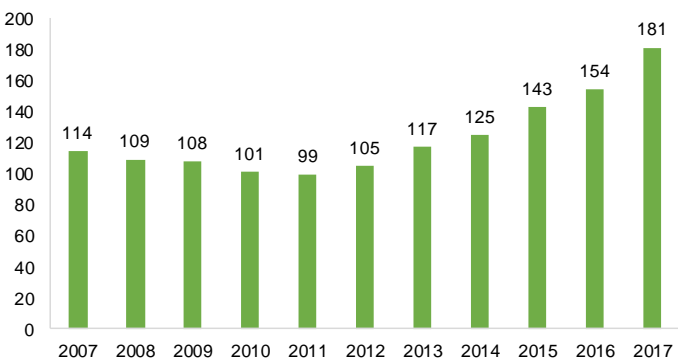


Source: [SIFMA](#). Please see the Appendix for details.

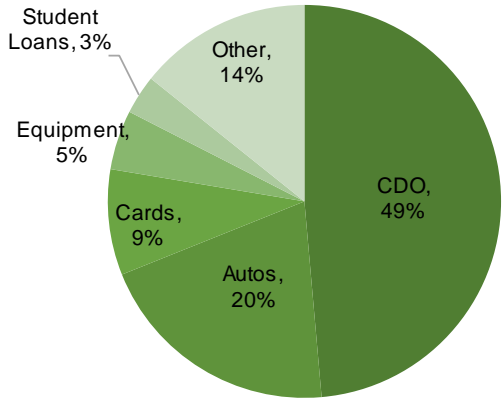
ABS Outstanding, Equipment (\$B)



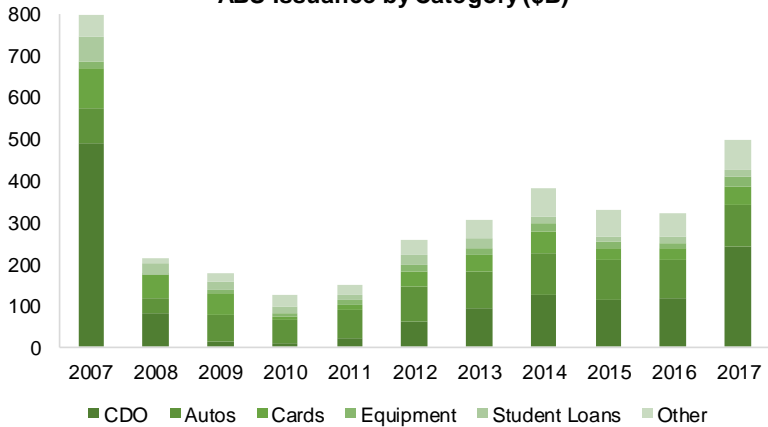
ABS Outstanding, Other (\$B)



ABS Issuance by Category

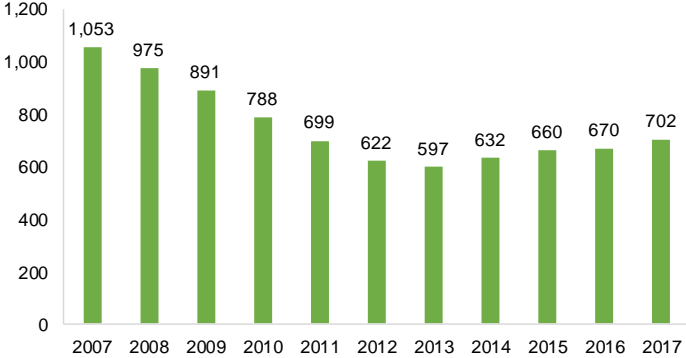


ABS Issuance by Category (\$B)



Source: SIFMA. Please see the Appendix for details.

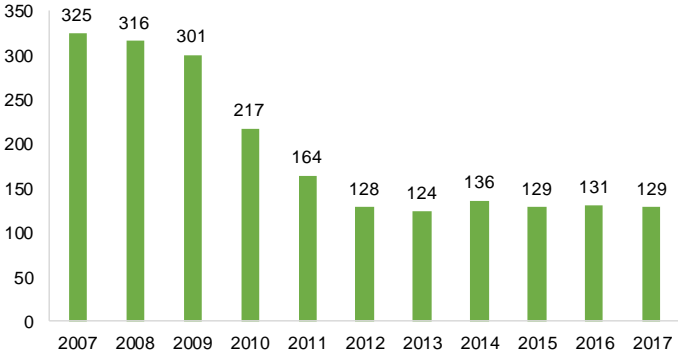
ABS Outstanding, CDO (\$B)



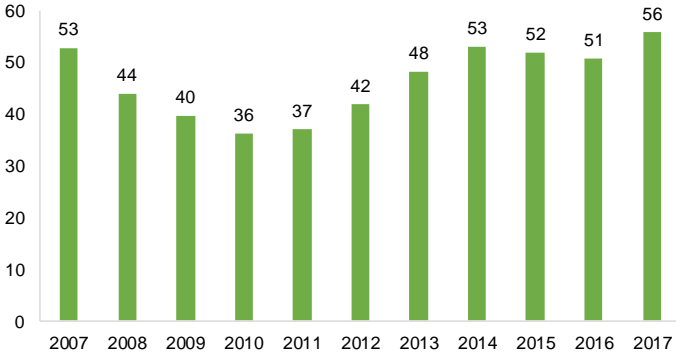
ABS Outstanding, Autos (\$B)



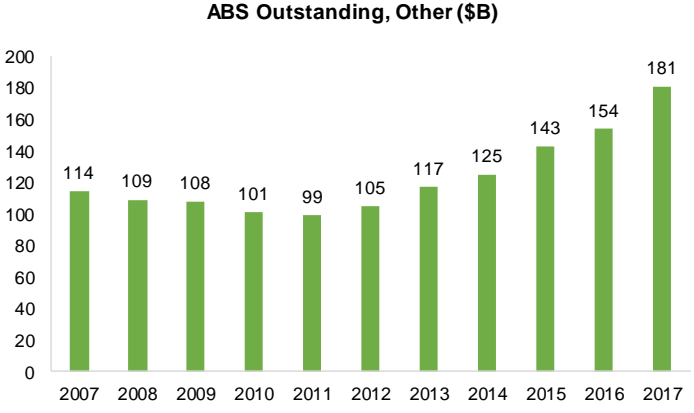
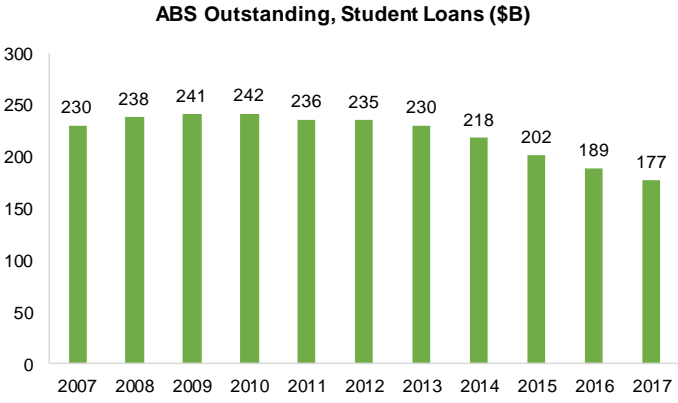
ABS Outstanding, Cards (\$B)



ABS Outstanding, Equipment (\$B)



Source: SIFMA. Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.

Market Breakout: Money Markets

Description and Purpose of Markets

The money markets involve highly liquid, short maturity (typically overnight to less than one year) financial instruments, used by investors to borrow and lend in the short term. Common money market instruments include: negotiable certificates of deposit (CDs), bankers acceptances and commercial paper (CP), among others. Transactions in the money market are wholesale, taking place only between institutional investors (no individual, or retail, investors) and for large denominations.

Retail investors access money markets through smaller investment amounts in money market funds (MMF), a type of mutual fund required by the SEC to invest in low-risk securities. There are several types of MMFs, including ones investing primarily in government securities, tax-exempt municipal securities or corporate debt (called prime funds). MMFs are not insured, yet are considered relatively safe and stable investment vehicles, given the low-risk nature of the underlying financial assets. MMFs seek to maintain a stable net asset value (NAV), the price at which investors can redeem their shares, at \$1.00 per share. While rare, NAV may fall below \$1.00 per share causing investor losses.

During times of market stress, the underlying financial assets may decline in price or become difficult to price. Investors, then, may seek to redeem their shares at the first sign of risk to their investments. This transforms a typically stable investment into one subject to shareholder runs, as seen during the financial crisis.

In response to this, in 2014 the SEC adopted structural changes to the regulations of MMFs. The new rules require institutional prime MMFs to float NAV², allowing the daily share price to fluctuate along with changes in the market value of fund assets, while government and retail MMFs continue to seek to maintain a stable NAV³. A muni MMF would be required to transact at a floating NAV, unless meeting the definition of a retail MMF, in which case it must seek to maintain a stable NAV.

The rules also provided MMF boards (not applicable to government MMFs, unless they choose to opt in) new tools to address runs during times of market stress, including:

² Stable NAV MMFs “penny round” share prices to the nearest 1% (or nearest penny for a fund with a \$1.00 share price). To float NAV, MMFs must “basis point round” share prices to the nearest 1/100th of 1% (four decimal places for funds with a \$1.0000 share price).

³ Government MMF = 99.5% (formerly 80%) or more of total assets in cash, government securities or repos collateralized solely by government securities or cash. Retail MMF = limit beneficial ownership to “natural persons” (individual investors).

- **Liquidity Fees** – If weekly liquid assets⁴ drop below 30% of total assets, the MMF **can** impose a liquidity fee of up to 2% on redemptions. If weekly liquid assets drop below 10% of total assets, the MMF **is required** to impose a liquidity fee of 1% on all redemptions (unless the MMF determines the fee is not in the best interest of the fund or that a lower or higher, up to 2%, fee is a better option).
- **Redemption Gates** – If weekly liquid assets drop below 30% of total assets, the MMF can temporarily suspend redemptions (gate) for up to 10 business days (can only be performed one time in a 90-day period).
- **Prompt Public Disclosure** – MMFs must “promptly and publicly” disclose (a) when weekly liquid assets drop below 10% of total assets or (b) the implementation and removal of liquidity fees or gates.

With these rule changes, the SEC also imposed stronger diversification requirements – aggregation of affiliates for the 5% of total assets per issuer test; change the 25% diversification limit to 10% for guarantees or demand features from a single institution; and treat ABS sponsors as guarantors under the 10% limit test (unless not relying on the sponsor’s financial strength). The rules also sought to improve transparency of MMF risks and operations by enhancing disclosure and reporting requirements, as well as improving stress testing requirements.

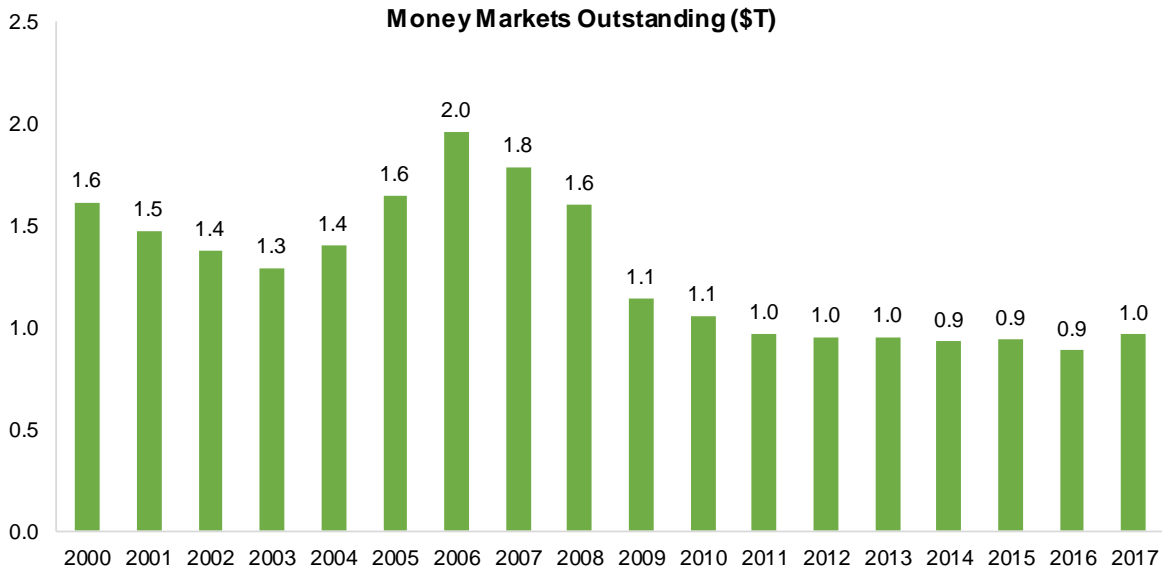
Current Market Landscape

- **Product Breakout** – Common money markets include:
 - **Commercial Paper (CP)** – A short-term, unsecured debt instrument issued by a corporation, typically to finance short-term liabilities (accounts receivables, inventories, etc.). Maturities are usually under 270 days. CP is most often issued at a discount from face value and reflects prevailing market interest rates.
 - **Certificate of Deposit (CD)** – A savings certificate with a fixed maturity date and interest rate, which restricts access to the funds until the maturity date. CDs are generally issued by commercial banks, in essentially any denomination, and are insured by the FDIC up to \$250,000 per individual.
 - **Bankers Acceptances** – A promised future payment, or time draft, guaranteed by and drawn on a deposit at the bank. The amount, date and holder of the draft are specified at issuance, at which time the draft becomes a liability of the bank. The holder of the draft can sell the bankers acceptance for cash to a buyer who is willing to wait until the maturity date for the funds in the deposit.
- **Outstanding** – Money markets outstanding declined at a 4.9% CAGR since 2008, to \$966 billion.

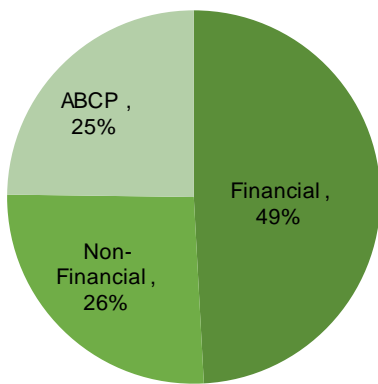
Note: Data as of FY17.

⁴ Weekly liquid assets = cash, UST, other government securities with maturities of 60 days or less and securities converting to cash within one week.

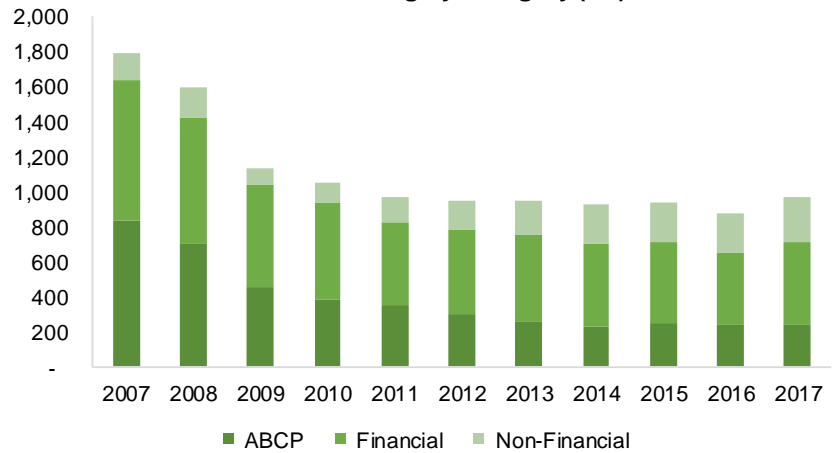
Chartbook



CP Outstanding by Category

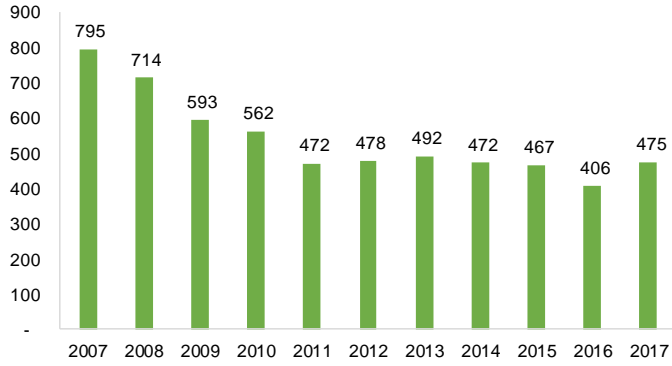


CP Outstanding by Category (\$B)

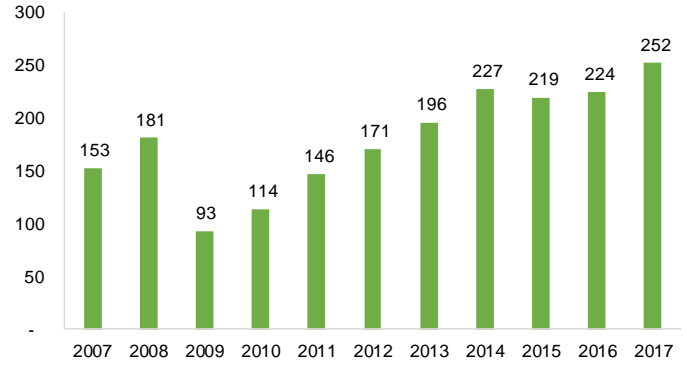


Source: [SIFMA](#). As of FY17. Please see the Appendix for details.

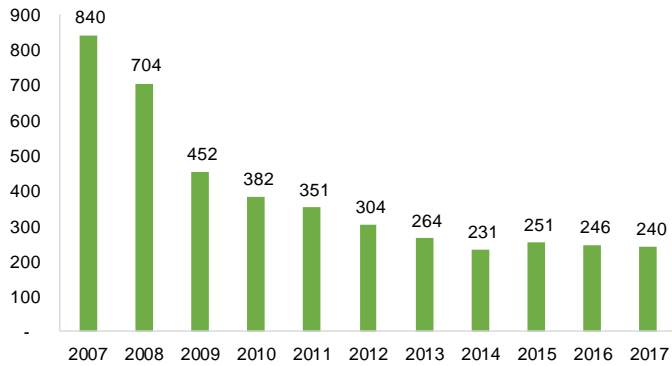
CP Outstanding, Financial (\$B)



CP Outstanding, Non-Financial (\$B)



CP Outstanding, ABCP (\$B)



Source: [SIFMA](#). Please see the Appendix for details.

Market Breakout: Repo

Description and Purpose of Markets

A repurchase agreement (repo) is a financial transaction 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.

In general, repos aid secondary market liquidity for the cash markets (for example, UST), allowing dealers to act as market makers in a very efficient manner. Market makers stand ready to buy and sell securities, providing liquidity to markets. These firms must take the other side of trades when there are short-term buy and sell imbalances in customer orders. Healthy repo markets provide them the necessary cash and access to securities to perform these actions and keep secondary cash markets running effectively.

Prior to the financial crisis, some financial institutions used repos to fund leveraged position-taking in securities. As asset prices declined during the crisis, repo lenders increased the amount of collateral required, limiting the level of repo activity for some investors holding leveraged portfolios. This created a funding shortfall and forced investors to decrease leverage by selling assets, leading to even lower asset valuations. This fed back into additional asset sales, and the circle went round and round. Repos backed by government securities also faced stress. Flight to safety tendencies drove increased demand for these standalone assets, leading to shortages as available collateral in the repo market.

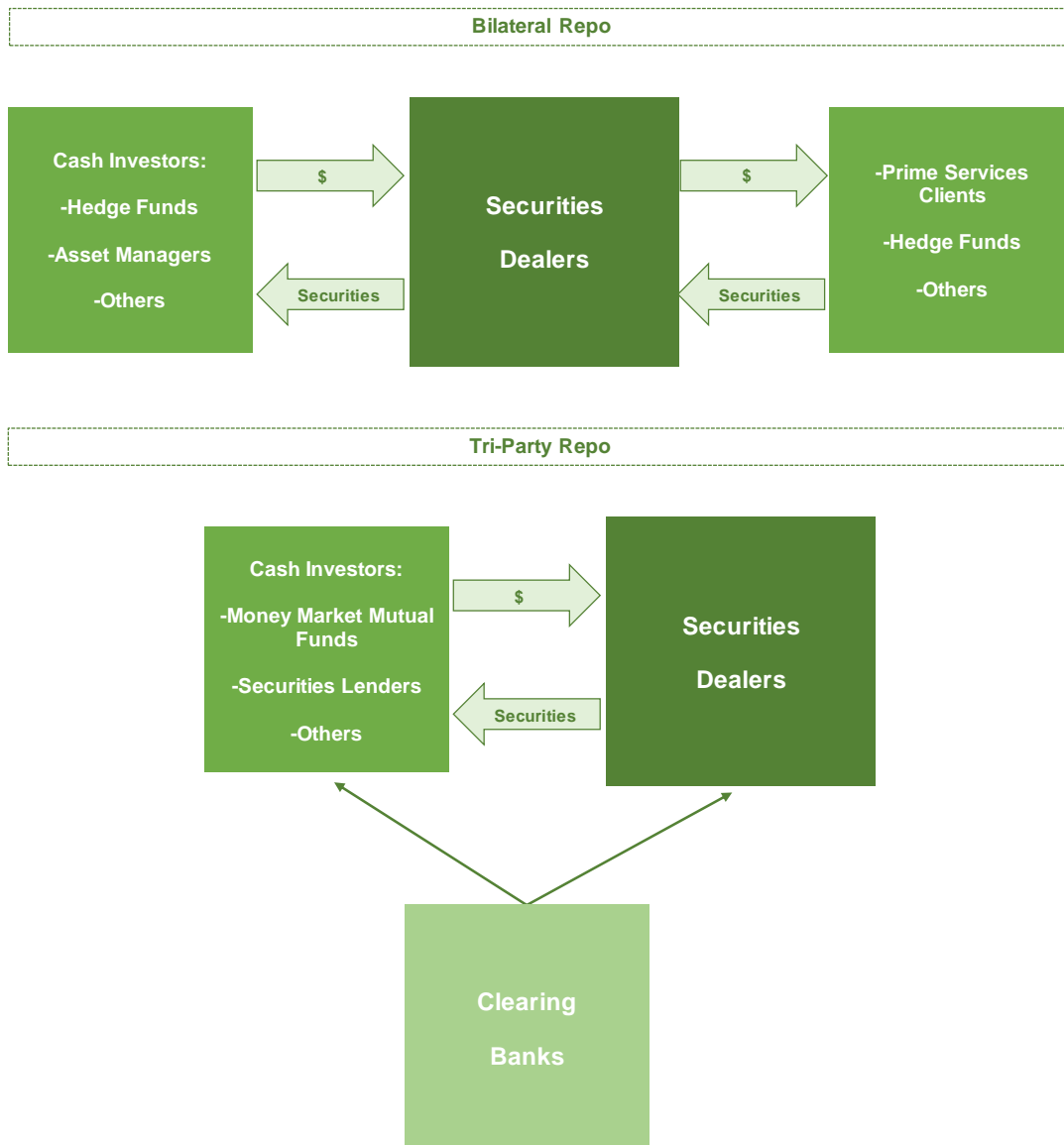
In light of this, regulators have sought to increase the resiliency of the repo markets, ensuring they become a more stable source of funding during periods of market stress. While comprehensive data for all segments of this market are not available, the Federal Reserve Bank of New York (New York Fed) provides data for certain segments of and specific firms operating in this market. The repo market can be split into two main segments:

- **Bilateral Repo** – The bilateral repo market has investors and collateral providers directly exchange money and securities, absent a clearing bank. Bilateral repo transactions can either allow for general collateral or impose restrictions on eligible securities for collateral. Bilateral repo is preferred when market participants want to interact directly with each other or if specific collateral is requested.
- **Tri-Party Repo** – The tri-party repo market is named as such given the role played by clearing banks in facilitating settlement. The clearing banks (Bank of New York Mellon, JPMorgan) act as an intermediary, handling the administrative details between the two parties in the repo transaction. Tri-party repo is used to finance general collateral, with investors accepting any security within a broad class of securities. According to the New York Fed, market participants view tri-party repo as more cost efficient.

There is also the general collateral finance (GCF) repo market, which is offered by the Fixed Income Clearing Corporation (FICC), a central clearing counterparty. GCF repo is predominantly used by securities dealers, who

negotiate the trade on an anonymous basis and then submit it to FICC. FICC then interposes itself as the legal counterparty to both sides of the repo transaction.

Securities dealers are at the heart of the repo market, operating in all repo market segments. The following shows the interaction of market participants in both repo market segments described above.

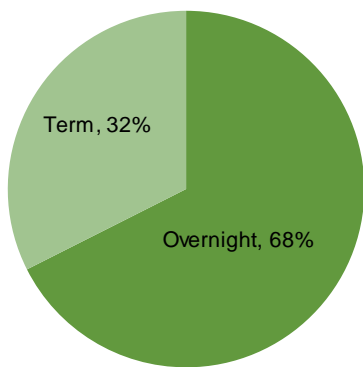


Source: Federal Reserve Bank of New York

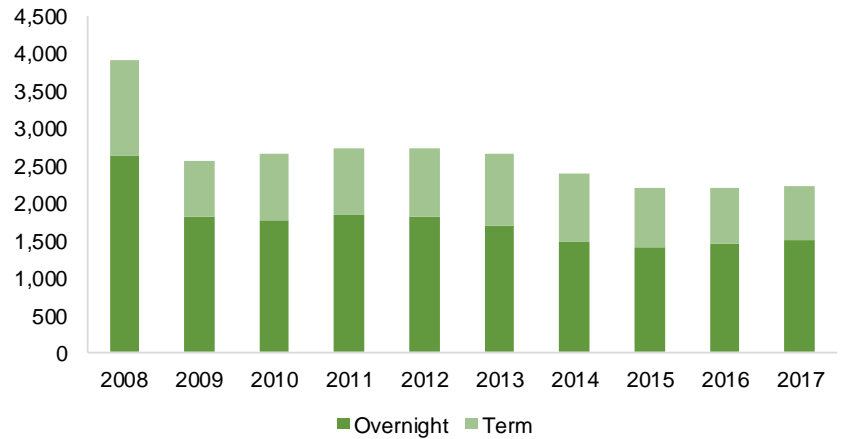
Chartbook

Bilateral Repo Markets

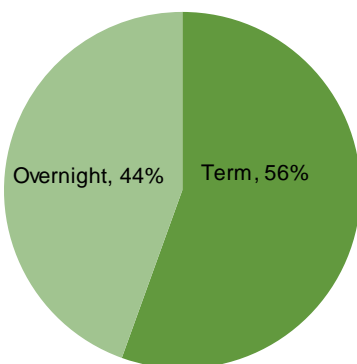
Avg Daily Outstanding - Repo



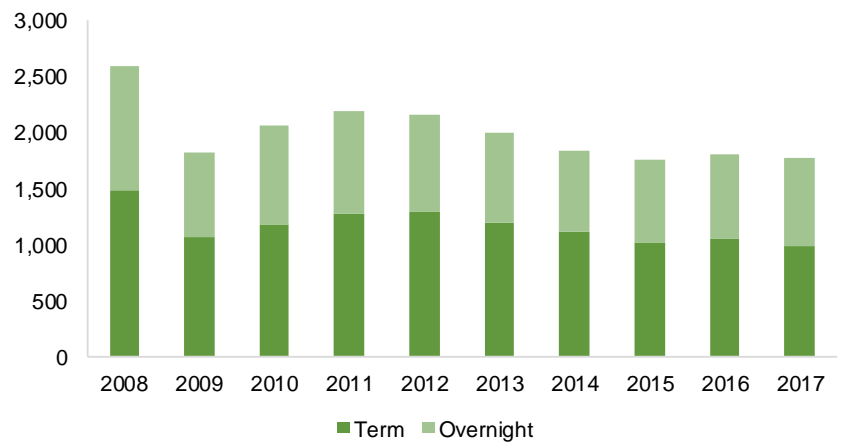
Average Daily Outstanding (\$B) - Repo



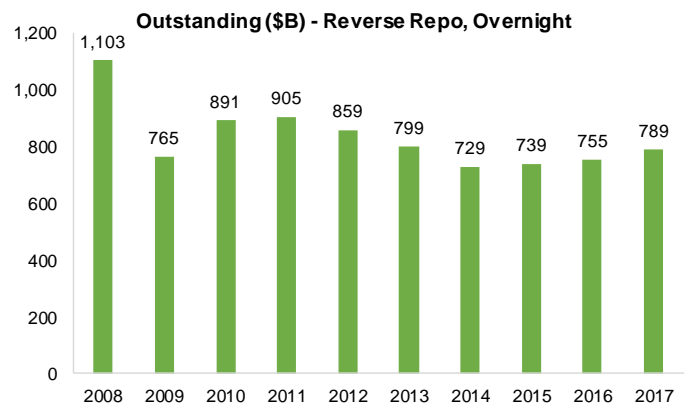
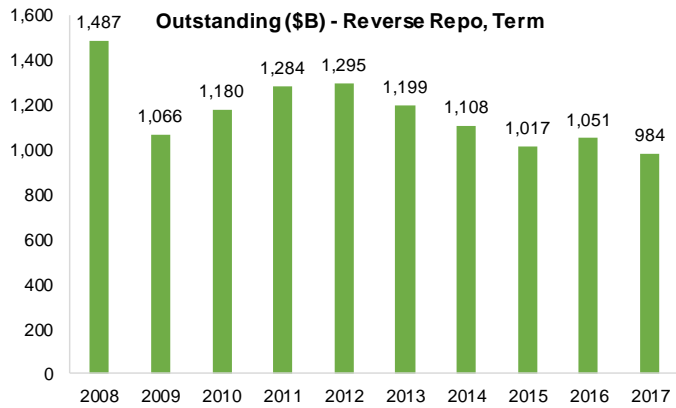
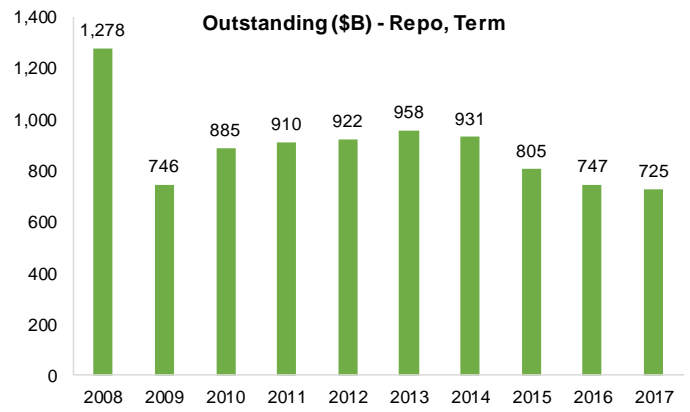
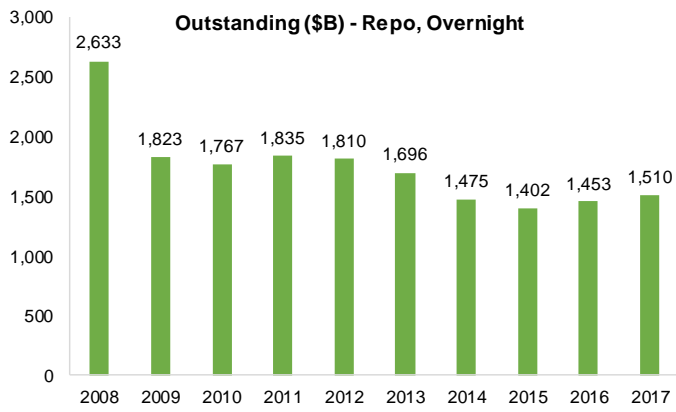
Avg Daily Out - Reverse Repo



Average Daily Outstanding (\$B) - Reverse Repo



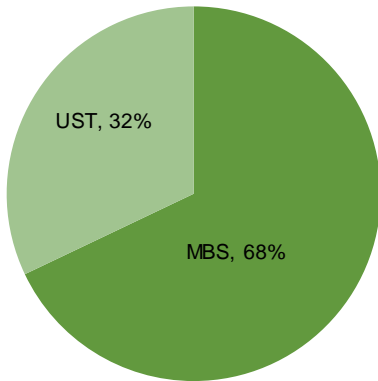
Source: [SIFMA](#). As of FY17. Please see the Appendix for details.



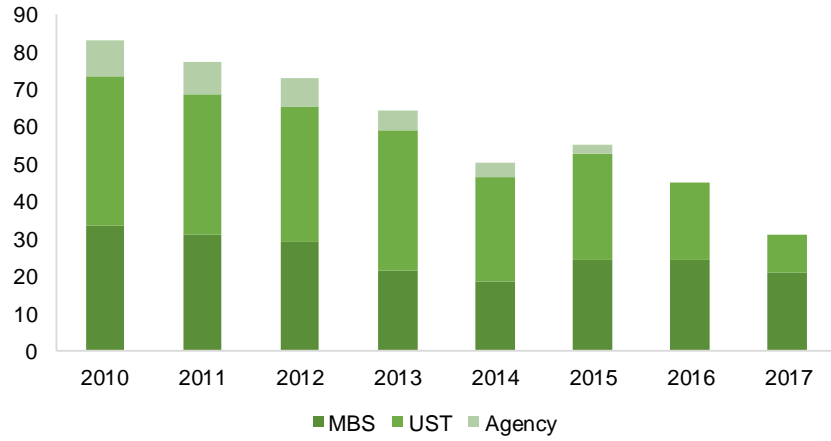
Source: [SIFMA](#). Please see the Appendix for details.

GCF Repo Markets

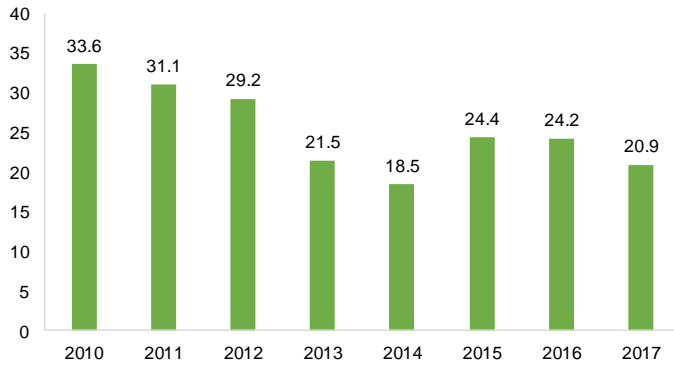
Avg Daily Outstanding - Repo



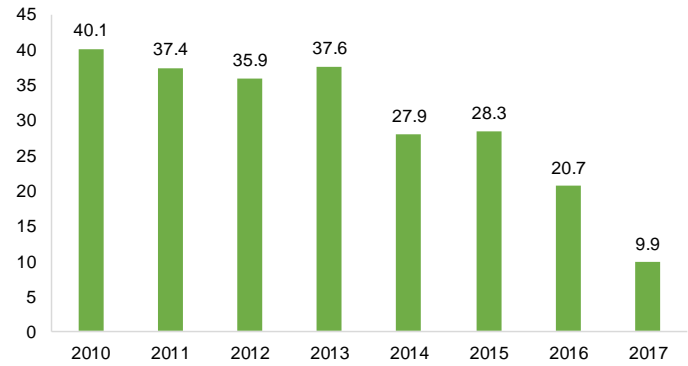
GCF Repo Total Par Amount (\$T)



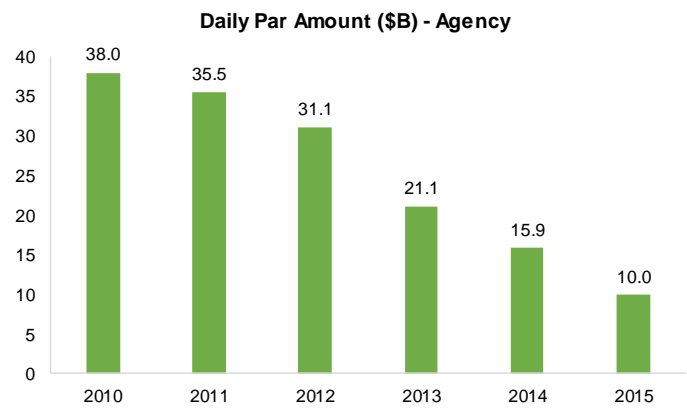
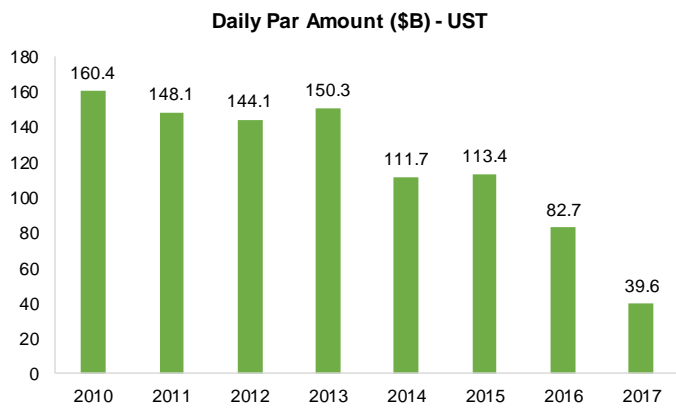
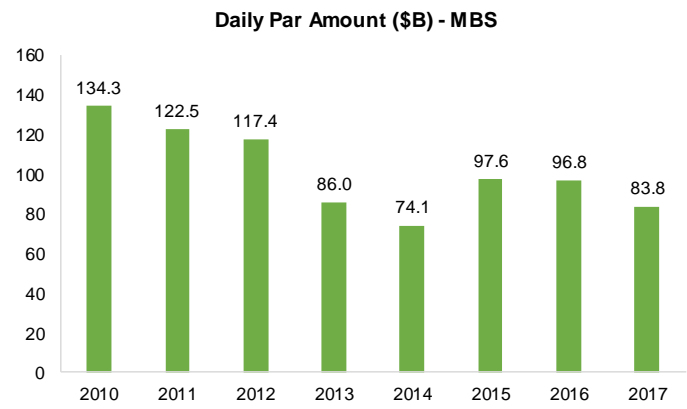
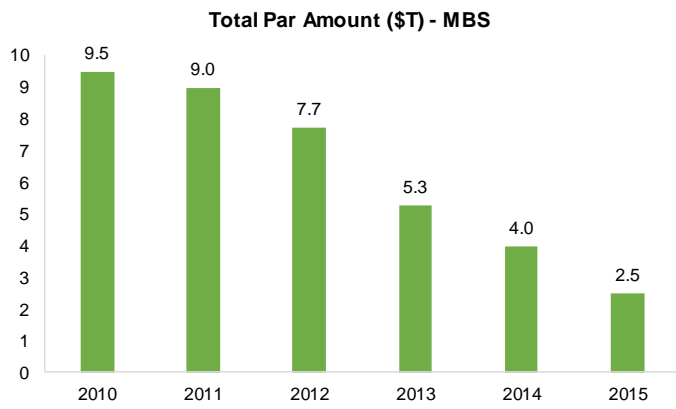
Total Par Amount (\$T) - MBS



Total Par Amount (\$T) - UST



Source: [SIFMA](#). Please see the Appendix for details.



Source: [SIFMA](#). Please see the Appendix for details.

Appendix: Current Primary Dealer List

The following is the current list of primary dealers, as per the Federal Reserve Bank of New York:

- Bank of Nova Scotia, New York Agency
- BMO Capital Markets Corp.
- BNP Paribas Securities Corp.
- Barclays Capital Inc.
- Cantor Fitzgerald & Co.
- Citigroup Global Markets Inc.
- Credit Suisse AG, New York Branch
- Daiwa Capital Markets America Inc.
- Deutsche Bank Securities Inc.
- Goldman Sachs & Co. LLC
- HSBC Securities (USA) Inc.
- Jefferies LLC
- J.P. Morgan Securities LLC
- Merrill Lynch, Pierce, Fenner & Smith Incorporated
- Mizuho Securities USA LLC
- Morgan Stanley & Co. LLC
- NatWest Markets Securities Inc.
- Nomura Securities International, Inc.
- RBC Capital Markets, LLC
- Société Générale, New York Branch
- TD Securities (USA) LLC
- UBS Securities LLC.
- Wells Fargo Securities, LLC

Appendix: Terms to Know

ADV	Average Daily Trading Volume
Algo	Algorithm (algorithmic trading)
AUM	Assets Under Management
BPS	Basis Points
CAGR	Compound Annual Growth Rate
CUSIP	Committee on Uniform Securities Identification Procedures; a nine character security identifier
ETF	Exchange-Traded Fund
FICC	Fixed Income, Currencies and Commodities
FI	Fixed Income
OTC	Over-the-Counter
TRS	Total Return Swap

D2C	Dealer-to-Client
D2D	Dealer-to-Dealer
CLOB	Central Limit Order Book
ECN	Electronic Communications Network
ETP	Electronic Trading Platforms
IDB	Inter-Dealer Broker
OTC	Over-the-Counter

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

CD	Certificate of Deposit
CDO	Collateralized Debt Obligation
CP	Commercial Paper
ABCP	Asset-Backed Commercial Paper
MMF	Money Market Mutual Funds

Fed	Federal Reserve System
FIMSAC	Fixed Income Market Structure Advisory Committee
SEC	Securities and Exchange Commission

UST	U.S. Treasury Securities
Mortgage	Mortgage-Related Securities (GNMA, FNMA & FHLMC MBS & CMOs; private-label MBS & CMOs)
Corporates	Corporate Bonds
Munis	Municipal Securities
Agency	Federal Agency Securities (FNMA, FHLMC, FAMC, FHLB, FCS, TVA, etc.)
ABS	Asset-Backed Securities (auto, credit card, home equity, manufacturing, student loans, etc.; CDOs)
MM	Money Markets (CP, bankers acceptances, large time deposits)

FRN	Floating Rate Note
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

Appendix: Credit Ratings Scale

Moody's		S&P		Fitch		Rating Description		
Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term			
Aaa	P-1	AAA	A-1+	AAA	A-1+	Prime	Investment Grade Bonds	
Aa1		AA+		AA+		High Grade		
Aa2		AA		AA				
Aa3		AA-	AA-					
A1		A+	A-1	A-1	Upper Medium Grade			
A2		A	A					
A3	P-2	A-	A-2	A-	A-2			
Baa1		BBB+		BBB+				
Baa2	P-3	BBB	A-3	BBB	A-3	Lower Medium Grade		
Baa3		BBB-		BBB-				
Ba1	Not Prime	BB+	B	BB+	B	Speculative	High-Yield Bonds	
Ba2		BB		BB				
Ba3		BB-		BB-				
B1		B+		B+				
B2		B		B				
B3		B-	B-					
Caa1		C	CCC+	C	CCC	C		Substantial Risks
Caa2			CCC					Extremely Speculative
Caa3			CCC-					Default Imminent (low probability of recovery)
Ca	CC							
C	C							
/	D	/	DDD	/		In Default		
			DD					
			D					

Appendix: Sources and Notes to Data

Source: SIFMA

The data and statistics sourced to SIFMA throughout this Primer are available at www.sifma.org/research. Explanatory notes follow below:

US Bond Market Trading Volume

- Daily Trading Figures – Daily trading figures do not include all trades reported for the asset class due to time, trade type, or trade size cutoffs. Monthly and certain annual averages are derived from daily trading and therefore will often be an undercount to actual figures.
- Annual Trading Figures – Annual trading figures are sourced from agency annual reports on a 2-year lag.
- Data Sources
 - Municipal = MSRB
 - Treasury – US Primary Dealer Trading Volumes (NY Fed)
 - Agency MBS – Until May 2011, from US primary dealer trading volumes (NY Fed); beginning May 2011, from FINRA Trace
 - Non-Agency MBS – FINRA Trace
 - ABS = FINRA Trace
 - Corporate = FINRA Trace
 - Federal Agency Securities – Until March 2010, from US primary dealer trading volumes (NY Fed); beginning March 2010, from FINRA Trace
- Notes
 - Municipal – Annual figures are sourced from daily averages not from MSRB's yearbook.
 - Treasury – US Primary Dealer Trading Volumes (NY Fed)
 - Agency MBS – Full year 2011 and year to date 2011 average figures are only sourced from FINRA daily volumes. Annual figures are also sourced from daily figures.
 - Non-Agency MBS – Non-Agency MBS trading figures will include CMBS figures; daily figures include 144A trades but do not include certain subcategories in which there are <5 trades made. New issue transactions are sometimes included.
 - ABS – ABS figures will not include CMBS figures, but also include CDO and Other trading volumes; daily figures include 144A trades but do not include certain subcategories in which there are <5 trades made. New issue transactions are sometimes included.
 - Corporate – Annual figures are sourced from FINRA's yearbook when available. Monthly figures are sourced from daily reporting and are subject to 5:15pm cutoff which causes monthly volumes to be understated. For more detailed data, please visit Corporate Bond Trading Volume sheet on the website.

US Bond Market

- Changes, December 2016 – Large time deposits are no longer reported for the money market category.
- Changes, September 2016 – Risk transfer and single family rentals have been moved from ABS to MBS.
- Changes, Jun 2016 – ABS issuance now includes CDOs marketed in the US.
- Changes, Sep 2014 – Revisions in Flow of Funds methodology for non-financial corporate bonds have reduced outstanding sizes and are subsequently reflected in the table.
- Changes, Nov 2013 – Home equity and manufactured housing issuance has been moved from ABS to MBS. Overall bond totals have not changed.
- Issuance
 - Treasury – Long-term only, interest bearing marketable coupon public debt. Includes floating rate notes.

- Mortgage-Related – Includes GNMA, FNMA, and FHLMC mortgage-backed securities and CMOs and private-label MBS/CMOs.
- Corporate Debt – Includes all non-convertible debt, MTNs and Yankee bonds, but excludes CDs and federal agency debt.
- Federal Agency – Beginning with 2004, Sallie Mae has been excluded due to privatization. Data for Federal Agency issuance is posted with a month lag.
- Outstanding
 - Treasury – Interest bearing marketable coupon public debt.
 - Asset-Backed – Includes auto, credit card, home equity, manufacturing, student loans and other; USD-denominated CDOs are also included.
 - Money Markets – Includes commercial paper, bankers acceptances, and large time deposits.
 - Mortgage-Related – Includes GNMA, FNMA, and FHLMC mortgage-backed securities and CMOs and private-label MBS/CMOs.
 - Corporate Debt – Includes all non-convertible debt, MTNs and Yankee bonds, but excludes CDs and federal agency debt.
 - Federal Agency – Contains agency debt of Fannie Mae, Freddie Mac, Farmer Mac, FHLB, the Farm Credit System, and federal budget agencies (e.g., TVA). Beginning with 2004, Sallie Mae has been excluded due to privatization. Beginning in 2010 Q1, the Federal Reserve Flow of Funds is no longer our source of agency debt going forward due to FAS 166/167 changes.
 - Municipal – Due to the change in underlying sourcing from the Federal Reserve, municipal securities outstanding has been restated from 2004 onward and revised upward by about \$840 billion.
- Sources: Bloomberg, Dealogic, Thomson Reuters Eikon, Thomson Reuters SDC, U.S. Treasury, Fannie Mae, Freddie Mac, Ginnie Mae, Farmer Mac, Farm Credit, FHLB

US Treasury Issuance and Outstanding

- Issuance & Outstanding – Includes marketable securities only.
- Interest Rates – Averages for the month and year.
- Source: U.S. Treasury, Thomson Reuters

US Treasury Average Daily Trading Volume

- Note – Primary dealer activity
- Source: Federal Reserve Bank of New York

US Corporate Bond Issuance

- Notes – Includes all corporate debt, MTNs and Yankee bonds, but excludes all issues with maturities of one year or less and CDs. – Average maturity is based on non-convertible debt issuance, rather than outstanding, volumes.
- Source: Thomson Reuters

US Corporate Average Daily Trading Volume

- Notes: Annual and quarterly figures are sourced from FINRA's yearbook when available. Monthly figures are sourced from daily reporting and are subject to 5:15pm cutoff which causes monthly volumes to be understated. Monthly 144A data is available only from July 2014 on. – Publicly traded data includes non-convertible corporate debt, MTNs, and Yankee bonds, but excludes all issues with maturities of one or less and CDs.
- Source: FINRA TRACE, FINRA Fact Book

US Municipal Bond Issuance

- Issuance – All issuance figures are based on deals with maturity of 13 months or greater.
- Average Maturity – Average maturity is based on issuance, rather than outstanding, volumes. Maturity year is based on final date of maturity of the issue.
- Source: Thomson Reuters

US Municipal Trading

- Source: MSRB EMMA

US Agency Debt

- Changes, 2017 Q3 – Farmer Mac data from 2016: Q4 onward now reflect maturity breakouts based on contractual maturity on issuance.
- Sources: FNMA, FHLMC, FFCB, FAMC, FHLB, TVA, Federal Reserve archives
- Short and Long Term – Long-term and short-term breakouts are based on contractual maturity on issuance; <1 year debt will not include long-term debt due within a year except for Farmer Mac prior to 2016: Q4.
- Structured Products – Figures do not include structured products (e.g., student loan ABS from Sallie Mae, MBS from FNMA/FHLMC, etc.).
- GSEs & Agencies Tracked – FNMA, FHLMC, FFCB, FHLB, TVA, and FAMC. SIFMA does not actively track debt levels of other US GSEs or agencies.

US Repo and Reverse Repo Data

- Tri-Party
 - Data – Subcategories may no longer add up to totals listed due to omission of asset classes with fewer than 3 dealers.
 - Source: Federal Reserve Bank of New York
- Primary Dealer
 - Data – Primary dealer financing values include both triparty and bilateral agreements. Figures cover financing involving U.S. government, federal agency, corporate and federal agency MBS securities. Beginning in April 2013, figures also include equity and other securities; beginning in January 2015, figures also break out ABS.
 - Source: Federal Reserve Bank of New York
- GCF Repo
 - Data – GCF Repo data are only overnight rates and dollar amounts. Figures are total nominal value of GCF repos submitted for clearing to FICC.
 - Treasury – Treasury securities are containing those securities 30-year or less.
 - Agency – Agency debenture securities.
 - MBS – 30Y MBS securities issued by Fannie or Freddie.
 - Source: DTCC

US Mortgage-Related Issuance and Outstanding

- Mortgage-Related Changes
 - 2017 June – Beginning in June 2017, multifamily credit risk transfer has now been broken out in CMBS.
 - 2016 September – Risk transfer (agency and non-agency) and single family rental securities have been moved from ABS to MBS - RMBS for issuance. Outstanding values will reflect this change in the 2016 Q3 reporting.
 - 2016 Q2 – Beginning in 2Q'16, all non-agency home equity securitizations have been consolidated in RMBS; a new non-agency CMBS and RMBS addendum tab has been added for clarity.

- 2015 Q4 – Beginning in 4Q'15, Freddie Mac 1-4 family and multifamily outstanding breakdowns have been changed to reflect changes in 10K and 10Q filings.
- 2015 June – As of June 2015, all non-agency CMBS and RMBS issuance data has been supplemented with data from Bloomberg beginning in 2008. Revisions to issuance data will be made quarterly. Sources for CMBS and RMBS issuance are now Dealogic, Thomson Reuters, and Dealogic.
- 2014 Q3 – As of 2014 Q3, Option ARMs have been included in Alt-A. Outstandings have been changed to reflect the addition.
- Mortgage-Related Issuance
 - Agency Securitizations – Agency issuance includes both agency & residential and multifamily securitizations from Fannie Mae, Freddie Mac, or Ginnie Mae excluding risk transfer deals. All other government agency or GSE securitizations/guarantees and GSE risk transfer deals are part of non-agency ABS or MBS.
 - CMBS – CMBS resecuritizations and ReREMICs are included in issuance totals.
 - NIMs – All NIM deals are included under MBS - Resecuritization.
 - Sources: Federal Agencies (FHLMC, FNMA, GNMA, NCUA, and FDIC), Bloomberg, Dealogic, Thomson Reuters
- Mortgage-Related Outstanding
 - Non-Agency – Non-agency MBS includes both CMBS and RMBS. Resecuritizations and Re-remics are included and underlying collateral may overlap.
 - Sources: GSEs, Bloomberg, Eikon, Dealogic, Fitch Ratings, Moody's, S&P, Thomson Reuters, SIFMA
 - Sources: Thomson Reuters Eikon, Bloomberg, prospectus filings, Fitch Ratings, Moody's, S&P, SIFMA
- US Agency MBS Issuance and Outstanding
 - Issuance – Agency securities include both multi- and single-family. Freddie Mac began issue in 1971, Fannie in 1981. Fannie Mae CMOs include strip issuance.
 - Federal Reserve Differences – Totals may not be exact matches to Federal Reserve totals due to consolidation of trust data and classification of certain securities; FNMA data reported prior to 2010 to the Fed differ to a greater extent than the other agencies. MBS values reported in the Federal Reserve may differ slightly from values reported by FHFA.
 - FHLMC – Beginning in 4Q'15, 1-4 family MBS outstanding are single family mortgage-related securities outstandings of consolidated trusts plus unconsolidated other mortgage-related securities. Multifamily outstandings are from consolidated trusts as well as unconsolidated K certificates and other unconsolidated securitization products. Totals may not add up due to rounding.
 - Sources: Federal Reserve archives, HUD, FHFA, Fannie Mae, Freddie Mac, Ginnie Mae; data compiled by SIFMA

US ABS

- Recent Changes
 - Changes, 2017 April – SBA pools have now been incorporated in ABS issuance under ABS - Other. This change has been retroactively applied.
 - Changes, 2016 Sep. (Issuance) – The housing-related securities category is no longer broken out; risk transfer and rental securitizations have been moved into MBS. Servicing advances have been moved to ABS - Other. CDOs have been removed from Other and into its own category. All data have been retroactively revised to reflect these changes. Outstanding figures will reflect these changes beginning in 2016 Q3.
- Issuance
 - Source: Bloomberg, Dealogic, Thomson Reuters
- Outstanding contains
 - Auto – Auto (prime, near-prime, subprime) loans and leases; auto dealer floorplans; RV; motorcycle; fleet lease
 - Credit Card – Credit cards, resecuritizations of credit card securities
 - Equipment – Equipment, resecuritizations of equipment securities. Includes both small and large ticket. As of 2013: Q1, truck leasing has been moved into equipment and totals subsequently reflect this change; as of 2014: Q4, large ticket transportation deals (aircraft, container, railcar) have been moved into this category.

- Student Loans – Student loans, public and private. Due to the nature of this particular submarket, student loan ABS outstandings are an undercount of true totals. Deals may be bucketed within municipal or ABS categories based on the deal structure and issuer choice of market.
- Other – Anything that does not fit into any of the above categories, including those with mixed asset categories (e.g., tax liens, trade receivables, boat loans, etc.)
- CDO – All tranches of CDOs denominated in USD, regardless of collateral source
- Agency Debt – Agency securitizations of ABS securities are included in outstanding totals (e.g., Resolution Trust Corporation, Sallie Mae pre-privatization, Farm Credit, etc.) with the exceptions of Ginnie Mae, Fannie Mae, and Freddie Mac.
- Sources: Bloomberg, Dealogic, Thomson Reuters, prospectus filings, Fitch Ratings, Moody's, S&P, SIFMA – All subcategories are subject to revision.

ABS Outstanding – Addendum

- Notes – Subsets of overall ABS categories are selections and are not designed to add up to totals; only Auto and Student Loan subcategories do so. Outstanding by ratings are current rating, not rating assigned at issuance.
- Changes, 2016 Q4 – Large time deposits are no longer reported.
- Source: Federal Reserve

US Structured Trading Volume

- Changes
 - 2016, March – Beginning Q2 2015, all data in the FINRA Trace Fact Book tabs are based on remaining principal balance rather than original principal balance. Data that have remaining principal balance information available beginning Q1 2015 are noted in italics.
- TRACE Data
 - Monthly Averages – Monthly averages are derived from daily TRACE reporting and will be an undercount to the averages reported quarterly from the TRACE Fact Book due to differences in cutoff times, <5 trades, and difference in reporting values (with or w/o factors applied); see FINRA's Trace's Structured Product Reports FAQ for more detail.
 - CMBS – CMBS trade volumes are aggregated ultimately under our non-agency trading figures. Please note that agency CMBS trading volumes are, however, reported under CMBS instead of agency CMO.
 - * Trades – Trade categories marked as * (<5 trades) are counted as 0 and will affect totals and averages in the daily and monthly averages.
 - Source: FINRA Trace, NY Fed

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