

SIFMA Insights:

US ETF Primer

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Executive Summary

Exchange-traded funds (ETFs) are pooled investment vehicles holding an underlying basket of securities, whether it be equities, bonds, commodities, currencies or hybrids. They trade intraday on exchanges and other trading venues (similar to single stocks) and are priced based on market demand for their shares, typically driven by the underlying securities' prices¹. ETFs can be broken out by asset class, region, investment style, or a number of other classifications, providing investors a multitude of choices to meet many different investment objectives.

ETFs differ from mutual funds (MFs) in a variety of ways, in particular increased price transparency and intraday liquidity² from being traded on exchanges. ETFs may also provide greater tax efficiencies and, in general, lower total expense ratios (albeit this can vary by fund), compared to MFs with similar investment strategies. Morningstar estimates ETFs cost one-third the price of an average MF and carry one-half of the tax expense of the average actively managed MF (as of FY17; this can vary by fund). In light of their general cost efficiency, ETFs have shown strong demand from individual and institutional investors, both of which are cost sensitive. Although most ETFs are structured similarly, they can come in varying legal structures which can impact capital distributions (dividends) and have tax implications. While there has always been individual investor appeal, ETF usage by institutional investors in portfolio management strategies continues to grow as well.

U.S. domiciled ETFs have seen significant growth since 2000, growing at a 24.5% CAGR for the total market to \$3.4 trillion as of FY17. Yet, the U.S. domiciled ETF market is still small compared to other U.S. markets – fixed income markets are 11.6x greater than ETFs; equities are 9.4x ETFs; and MFs are 5.5x ETFs. A truer parallel can be drawn between investment products, ETF and MFs, as well as to the growth experienced in the development of the MF industry. Since 2000, ETFs grew at a 25% CAGR, versus 6% for MFs.

What makes ETFs unique is the creation/redemption process, which increases or decreases the number of ETF shares available to the market, based on investor demand. As detailed in this report, authorized participants (APs) deliver a specified basket of underlying securities (creation basket; APs may also provide cash) to the ETF – the primary market. The ETF will then provide the AP with a fixed amount of ETF shares (creation units; large blocks of shares, typically ranging from 25,000 to 200,000), increasing the supply of ETF shares in the market. (The reverse is done by buying back a redemption basket from the ETF, which then takes back creation units to decrease the supply of ETF shares in the market.) APs can sell all or part (they may hold some for their own inventory) of the creation units on exchanges and other trading venues – the secondary market. Responding to supply and demand imbalances in the market – when the price of an ETF share does not equal the price of the underlying securities – APs add to (or reduce) the number of ETF shares available. This arbitrage process keeps the ETF share price close to net asset value, which is primarily determined by the market prices of the securities held in the ETF's portfolio, and meets market liquidity needs.

¹ Throughout this report, we use the terminology underlying securities to include a broad category of potential assets, such as: stocks, bonds, commodities and other investments.

² Liquidity is defined as ease with which an asset (ETF shares, MF shares or single stocks) can be quickly and efficiently bought or sold in the market without significantly affecting its price.

Defining Exchange-Traded Funds

ETFs Are One Type of ETP

Exchange-traded products (ETPs) are portfolio exposure investment products which trade on exchanges. The most common ETPs include exchange-traded funds (ETFs) and exchange-traded notes (ETNs). ETFs are pooled investment vehicles holding an underlying basket of securities, whether it be equities, bonds, commodities, currencies or hybrids. They trade intraday on exchanges and other trading venues (similar to single stocks) and are priced based on market demand for their shares, typically driven by the underlying securities' prices. ETNs differ from ETFs in that they are structured investment products issued as senior unsecured debt notes and backed by the creditworthiness of their issuer, i.e. ETNs possess credit risk.

The History of ETFs

The first attempt at a pseudo ETF can be traced back to the 1989 launch of Index Participation Shares for the S&P 500 (these were eventually deemed similar to futures contracts and ordered to trade on futures exchanges). Then in 1990, the Toronto Stock Exchange launched Toronto 35 Index Participation Units (TIPs 35), which were a warehouse receipt-based instrument tracking the TSE-35 Index.

Finally, State Street launched the first true ETF in the U.S. in 1993, the S&P 500 Trust ETF (SPY).

The Baskin Robbins of Choices

ETFs provide investors with a multitude of choices to meet many different investment objectives. (There are several hundred categories listed on etf.com.) Common language used when analyzing ETFs and types of ETFs (or the ETF may be a combination of types) include, but are not limited to:

- **Index-Based** – According to Investment Company Institute FY17 data, 97% of all U.S. domiciled ETFs are index-based. Index-based ETFs track the performance of a reference index, with portfolio holdings (typically) fully transparent (daily disclosure of basket securities or portfolio holdings). These ETFs can replicate every security in the index, investing all of its assets proportionately. Or, the ETFs can sample an index by holding a representative selection of index securities (or non-index securities with similar performance attributes) and/or weighting its holdings differently. Sampling is often more practical for large indexes, such as total stock market or bond indexes.
- **Actively Managed** – Actively managed ETFs pursue an investment objective and policy – for example, follow a specific sector in the stock market – with the securities selected by a portfolio manager. As they do not follow a specific index, style drift can occur with actively managed ETFs, whereby the fund strays from its investment objective either due to market cap appreciation or a change in portfolio managers, etc. (meaning an investor may not be investing in the strategy they thought they were). While this most common in actively managed MFs, it may potentially occur in actively managed ETFs.

- **Non 1940 Act ETFs** – These are funds not registered with the SEC under the Investment Company Act of 1940.
- **Funds of Funds** – An investment strategy where an ETF invests in other funds.
- **Asset Class** – Equities, fixed income, commodities, currency or alternatives; with each broad category having multiple sub categories as well.
- **Region** – Based on the broad market of domestic securities only; based on a sector of domestic securities only; international securities; country specific (U.S., Australia, U.K, etc.); or regional groupings (developed, emerging, BRICs, etc.).
- **Sectors/Groups/Industries** – Financials, healthcare, retail, infrastructure, merger arbitrage, trend following, environment, artificial intelligence, etc.
- **Investment Style** – These can include, among others:
 - Broad market (attempts to represent 100% of total market cap)
 - Market cap (large, mid, small)
 - High dividend yield
 - Volatility (linked to volatility futures, the VIX)
 - Smart beta (rules-based strategies aiming to deliver better risk-adjusted returns than traditional market-cap-weighted indexes)
 - Alpha seeking (attempt to outperform the market)
 - Leveraged³ – Use derivatives and debt to produce a return that is a multiple of the underlying index
 - Inverse³ – Use derivatives to profit from a decline in the value of an underlying benchmark (similar to a short position on a stock)

³ Most leveraged and inverse ETFs reset daily, i.e. they are designed to achieve their stated objectives on a daily basis, or another specified time period.

ETF versus Other Investment Products

Investors have many types of products to choose from – stocks versus bonds; individual securities versus exchange-traded funds (ETFs), closed-end funds (CEFs), unit investment trusts (UITs) or mutual funds (MFs); style of a select fund, based on investment objective; etc. In addition to fund specific factors, there are many moving pieces that go into an investment decision. Investors look not just at the investment product itself. Rather, they think through their own objectives in totality, and different investors will need unique investment products to meet their own individual needs. In this report, we assess similarities and differences between ETFs and MFs (among the most common investment vehicles in the U.S.), showing comparisons to single stocks where applicable.

- **Similarities** – Both ETFs and MFs hold baskets of underlying securities and are most commonly structured as open-end funds. They both post mark-to-market NAVs at the end of the trading day.
- **Differences** – ETFs differ from MFs in a variety of ways, in particular increased price transparency and intra-day liquidity⁴ from being traded on exchanges. ETFs may also provide greater tax efficiencies and, in general, lower total expense ratios (albeit this can vary by fund), compared to MFs with similar investment strategies. Morningstar estimates ETFs cost one-third the price of an average MF and carry one-half of the tax expense of the average actively managed MF (as of FY17; this can vary by fund).

Common similarities and differences between ETFs and MFs are summarized below:

(These are generalizations, and some types of funds within each category could stray from these points. For example: there are no-load MFs, some MFs do not have redemption fees and some MFs may not have investment minimums.)

	ETF	MF	Single Stock
Ability to Track Index	X	X	
Diversification	X	X	
Provide Investment Product Options	X	X	
Professional Management	X	X	
Exchange Traded	X		X
Price Transparency, as defined by:			
Intraday Trading	X		X
Intraday Pricing	X		X
Total Expenses			
Sales Charges/Loads		X	
Investment Minimums		X	
Operating Expenses (management fees, other)	X	X	
Redemption Fees		X	
Tax Efficiency	X		X
Trading Commissions (secondary market)	X		X

Note: MFs do not trade on exchanges and therefore do not have trading commissions as defined in this table; they do have other sales charges/loads. Tax efficiencies can be dependent upon fund structure (discussed in more detail below).

⁴ Liquidity is defined as ease with which an asset (ETF shares, MF shares or single stocks) can be quickly and efficiently bought or sold in the market without significantly affecting its price.

Further details on similarities and differences between ETFs and MFs include:

(These are generalizations, and some types of funds within each category could stray from these points.)

- **Strategy** – Both are a collection of underlying securities, built around a specific investment objective or strategy. Actively managed ETFs and MFs strive to utilize a manager's expertise to outperform market benchmarks or select index(s). Most MFs (and some ETFs) are actively managed, requiring an investment style objective (albeit managers have some leeway in security selection). Conversely, index-based ETFs and MFs seek to match, or track, benchmark performance as close to exactly as possible.
- **Diversification** – Investors can get diversification in their portfolio via MFs or ETFs, which differs from investing in single individual stocks (albeit, a portfolio or basket of stocks can provide diversification).
- **Transparency** – ETFs are traded intraday on exchanges or other trading venues (similar to stocks), which brings increased price transparency through intraday pricing and trading capabilities, and most are required to disclose portfolio holdings daily. MFs are not traded on an exchange, and their shares are only issued at the current day's closing price, or NAV, with holdings generally disclosed quarterly. Given the lengthy disclosure time horizon, managers of actively managed mutual funds can experience style drift, or a divergence from a fund's investment style or objective.
- **Pricing** – ETF shares are traded intraday on exchanges or other trading venues (secondary market), like individual stocks, whereas MFs are purchased through the fund company or financial intermediaries (primary market). MFs are forward priced – all orders received during the day are transacted at the same price, the NAV (which is reset only when it is next computed, typically 4:00 PM ET to match the close of U.S. equities trading). In the primary market, ETFs operate similarly to MFs, via authorized participants (discussed later in this report). Yet, ETF shares (secondary market) are continuously traded on exchanges and other trading venues and priced at market-determined rates. Investors may transact at different prices, which may vary from end-of-day NAV.
- **Liquidity** – Liquidity can be described as the ease with which an asset (ETF shares, MF shares, stocks) can be quickly and efficiently bought or sold in the market without significantly affecting its price, which is enhanced by price transparency and ease of execution (speed, ability to fill the entire order). With increased price transparency and continuous pricing brought on by intraday exchange trading, ETFs are typically considered more liquid than MFs on an intraday basis (MFs have end of day liquidity).
- **Total Expenses** – Part of an investment decision will be around costs, and total expenses may vary widely among both types of funds and within each category of funds. Some ETF transactions include trading commissions (transaction costs), like a stock, which are paid directly by investors to the broker. MFs do not have trading commissions. Rather, MF expenses may include sales charges (loads) or redemption fees, paid directly by investors. ETFs and MFs have expense ratios, equal to operating costs divided by the average dollar AUM. This ratio is calculated annually at the fund's fiscal year end, with the largest and most

variable piece typically representing the management fee. Both MFs and ETFs have management fees. Other fees in the expense ratio include (not every ETF or MF will have all these fees): custodial and administrative, index licensing, legal and accounting, marketing (12b-1 fees), acquired fund fees if investing in other funds, etc. The expense ratio is subtracted from the fund itself, lowering the return on investment. Typically, actively managed funds carry higher expense ratios than index-based strategies, which is why ETFs generally have lower expense ratios (97% of ETFs are index-based).

- **Taxes⁵** – For investments held in taxable accounts, ETFs can be more tax efficient than MFs. As almost all ETFs are index-based, there is generally less turnover of the underlying securities which generates fewer taxable capital gains than actively managed funds (which most MFs are). Since ETFs generally utilize an in-kind creation/redemption process, investors exchange ETF shares for a basket of securities, rather than cash, from the ETF. ETF managers do not have to sell holdings to meet redemptions, sales which could trigger net capital gains that could be allocated to fund shareholders. ETF investors with taxable accounts can incur taxable capital gains when the ETF creates and redeems shares to rebalance its holdings. ETFs (and stocks) may also generate taxable capital gains when an investor sells shares.

MF investors redeem shares directly from the fund, sometimes requiring the manager to sell appreciated securities to meet the redemption, and potentially incurring net capital gains. Net gains are passed to other current investors, even if the gains are attributed to prior periods of ownership. These general guidelines are not universal. MFs can be tax efficient if the fund contains built-in losses or its managers minimize turnover, and ETF shareholders can't avoid capital gains taxes on the overall appreciation of their investment. The difference is ETFs have more tools available to manage and minimize taxable capital gains that are passed to ETF holders. However, ETFs have a structural advantage by virtue of the in-kind creation and redemption process.

⁵ This document is intended for general informational purposes only and is not intended to serve as tax advice to any individual or entity. Readers are strongly urged to consult with a qualified tax professional before taking action based on the information presented here. In considering your investment options, it is important to keep in mind that the tax impact on an individual investor will depend on many factors, including the presence of other losses, and whether you are investing through a tax favored retirement account. It's important to consult a tax advisor before making decisions based on tax considerations.

ETF Legal Structures

ETFs can come in varying legal structures, which can impact capital distributions (dividends) and tax implications. The common types of legal structures include:

- **Open-End Funds (OEFs)** – The vast majority of ETFs are structured this way. Dividends and interest received by the ETF can be immediately reinvested; derivatives, portfolio sampling, and (sometimes) securities lending can be utilized.
- **Unit Investment Trusts (UITs)** – Used by a small number of ETFs tracking broad asset classes, these ETFs generally hold a static investment portfolio and must fully replicate the indexes they track. There are no boards of directors or investment advisors managing the portfolio, and these funds have less investment flexibility than open-end ETFs. UITs do not reinvest dividends and are not permitted to lend securities in the portfolios or use derivatives.
- **Grantor Trusts** – These ETFs typically invest in physical commodities or currencies. Grantor trusts must hold a fixed portfolio and consider investors direct shareholders in the underlying basket of investments.
- **Partnerships** – One of the least common types of ETFs, these structures are unincorporated business entities (similar to statutory trusts or limited partnerships) electing to be taxed as a partnership. These ETFs can include different types of investments, such as futures, providing exposure to currencies or commodities that are hard to store physically (ex: natural gas, oil).

ETF Regulation

History and Required Exemptive Relief

All of the ETF legal structures discussed above are regulated by the SEC and subject to the Securities Act of 1933 and the Securities Exchange Act of 1934. Only OEFs and UITs are also regulated under the Investment Company Act of 1940 ('40 Act). On the commodities side, partnerships are usually regulated as commodity pools by the CFTC, while grantor trusts are not regulated by the CFTC.

The majority of ETFs are registered with the SEC and operate under the same rules as MFs. In order to register under the '40 Act, ETFs must first receive exemptive relief from certain provisions which apply to other funds, such as MFs. MFs can only sell and redeem shares at NAV and must redeem any shares presented by a shareholder (not exchange traded). ETFs operate differently and therefore need exemptive relief from certain provisions of the '40 Act, including:

- **Creation and Redemption** (discussed in detail later in this report) – ETFs need relief to enable the creation/redemption process. ETFs only redeem securities (a) to authorized participants (APs), not shareholders; and (b) in creation units, not individual shares.

Under the '40 Act, redeemable securities can be redeemed by any shareholder for the share of the issuer's current net assets.

- **Exchange Trading** – ETF shares trade on exchanges at market prices rather than NAV. Relief is granted only to ETFs complying with conditions facilitating the arbitrage process (daily disclosure of portfolio holdings, intraday indicative value disclosure, listed on an exchange, etc.).

Under the '40 Act, redeemable securities must be sold at NAV.

- **In-Kind Transactions with Affiliates** – ETFs require relief to enable the creation/redemption process. Otherwise, APs for an early-stage ETF could be considered affiliated persons, triggering certain prohibitions.

Under the '40 Act, affiliated persons (own at least 5% of the issuer's outstanding voting securities) of a fund are prohibited from buying securities from or selling them to a fund.

- **Redemption Proceeds Delivery Time** – ETFs require relief when trading in foreign markets, given differences in market hours and potential market holiday schedules.

Under the '40 Act, funds cannot postpone the completion of redemption requests for greater than seven days.

- Additionally, most ETFs have obtained exemptive relief to permit other funds to invest in ETFs in excess of prescribed limits.

The core investor protections on risks and conflicts of interest under the '40 Act still apply to ETFs. ETFs must also seek relief from certain Securities Exchange Act rules (for example, activities of broker-dealers related to the distribution of ETF shares). Section 19(b) of the Securities Exchange Act requires an exchange to obtain SEC approval to list or trade a new ETF. The SEC has approved rules for many exchanges allowing index-based and actively managed ETFs meeting SEC-approved generic listing requirements to be listed without SEC approval.

Until 2008, exemptive relief was only granted for index-based ETFs. After 2008, some actively managed ETFs received exemptive relief, if they were fully transparent and met certain requirements (daily disclosures on their public website listing the securities in the fund with their weights).

Current and Proposed Regulations

Securities Act of 1933

<http://legcounsel.house.gov/Comps/Securities%20Act%20Of%201933.pdf>

Catalyst: The stock market crash of 1929

Objective: (1) Ensure transparency in financial statements to assist investors in making informed decisions; (2) prohibit deceit, misrepresentation and other fraud in the sale of securities

Details:

Also known as the Securities Act or Truth in Securities Act, this was the first federal law used to regulate the stock market and the first major law on the sale of securities, which had historically been governed by state laws. Importantly, the act created a uniform set of rules to protect investors against fraud.

The Securities Act required companies to register with the SEC prior to going public, providing relevant financial and other information in a prospectus and registration statement. Information required included: corporate description of properties and businesses; management information; financial statements certified by an independent account; and a description of the security being offered. Some exemptions from the registration requirement existed (private offerings to a limited number of persons or institutions; offerings of limited size; intrastate offerings; and securities of municipal, state and federal governments).

Securities Exchange Act of 1934

<http://legcounsel.house.gov/Comps/Securities%20Exchange%20Act%20Of%201934.pdf>

Catalyst: The stock market crash of 1929

Objective: (1) Create the SEC to regulate the securities industry; (2) establish self regulation; (3) regulate trading of securities

Details:

Also known as the Exchange Act, this law empowered the SEC with broad authority over all aspects of the securities industry. It tasked the agency to register, regulate and oversee brokerage firms, transfer agents, and clearing agencies as well as the nation's securities self-regulatory organizations (SROs). This act identified and prohibited certain types of conduct and provided the SEC with disciplinary powers over regulated entities and persons associated with them. The Exchange Act also enabled the SEC to require periodic reporting of information by publicly traded companies. Further, the act established supervised exchange self regulation, with direct and flexible requirements for exchanges. On the direct side, exchanges must: register with the SEC; restrict broker-dealer borrowing; and prohibit manipulative practices. Additionally, exchanges have discretion in monitoring their markets, relying on self-regulation (the flexible aspect).

Investment Company Act of 1940

<http://legcounsel.house.gov/Comps/Investment%20Company%20Act%20Of%201940.pdf>

Catalyst: The stock market crash of 1929

Objective: (1) Require investment company registration; (2) regulate product offerings issued by investment companies in public markets

Details:

Also known as the '40 Act, this act regulates the organization of companies, including mutual funds, engaging primarily in investing, reinvesting and trading in securities, whose own securities were offered to the investing public. The regulation was designed to minimize conflicts of interest by requiring disclosure of these companies' financial condition and investment policies to investors when stock is initially sold, and on a regular basis thereafter. The focus of the disclosures is on: fund details; investment objectives; and investment company structure and operations.

Proposed Rule 6c-11

<https://www.sec.gov/news/press-release/2018-118>

Catalyst: A need to modernize regulations to match changes in the markets

Objective: Permit ETFs to operate within the Investment Company Act of 1940 without an exemptive order

Details:

In June 2018, the SEC proposed Rule 6c-11 of the Investment Company Act of 1940 to permit ETFs satisfying certain requirements to organize and operate without the expense and delay of obtaining an exemptive order. The objective is to ease regulatory burdens of bringing ETFs to market and create a level playing field for ETF sponsors.

This includes: rescinding prior exemptive orders; allowing custom creation/redemption baskets; and eliminating the classification between index-based and actively managed ETFs (the rule does not create a distinction between actively managed and index-based products).

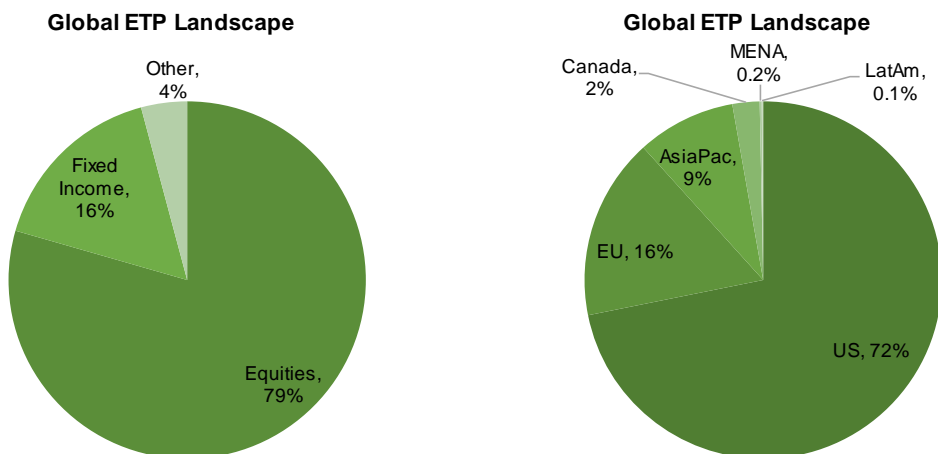
Highlights of conditions in the proposed rule include:

- **Transparency** – ETF sponsors would be required to post portfolio holdings on their website daily.
- **Custom Baskets Policies and Procedures** – An ETF sponsor may use custom baskets (those not reflecting a pro-rata representation of the fund's portfolio or differing from other baskets used in transactions on the same business day) if they have written policies and procedures for custom basket construction and parameters.
- **Website Disclosure** – The proposed rule would require website disclosures (historical premiums/discounts, bid-ask spreads and information on creation/redemption baskets).

Proposed rule 6c-11 would be available to ETFs organized as open-end funds. ETFs organized as UITs, ETFs structured as a share class of a multi-class fund and leveraged or inverse ETFs would not be able to rely on the proposed rule.

Global ETP and US ETF Landscapes

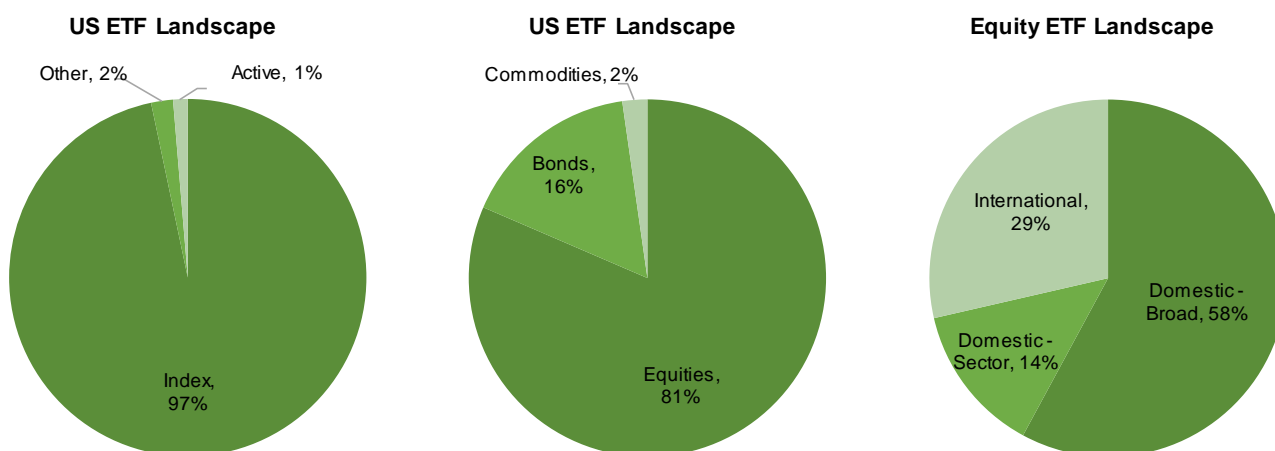
As of December 2017, there was \$4.8 trillion in global ETP AUM and a total number of 6,354 ETPs, increasing 5% and 36% Y/Y respectively. \$633 billion in assets flowed into global ETPs in 2017, a 67% increase Y/Y. The majority of ETPs are in equity products, and the U.S. dominates the ETP landscape:



Source: BlackRock Global ETP Landscape, SIFMA estimates

Note: As of FY17. EU = European Union inclusive of the U.K. LatAm = Latin America; MENA = Middle East and Africa; AsiaPac = Asia Pacific

As over 97% of the total ETP landscape consists of ETFs and 72% of total ETPs are U.S. domiciled, this report focuses on U.S. domiciled ETFs. The U.S. domiciled ETF market can be broken out as follows:



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: As of FY17. Other = non 1940 act (not SEC registered). Commodities = commodities, currencies and futures plus hybrids. Domestic-broad = correlated with an entire market; domestic-sector = sector specific. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

This U.S. ETF market can be further broken out to show management style and asset class allocations:

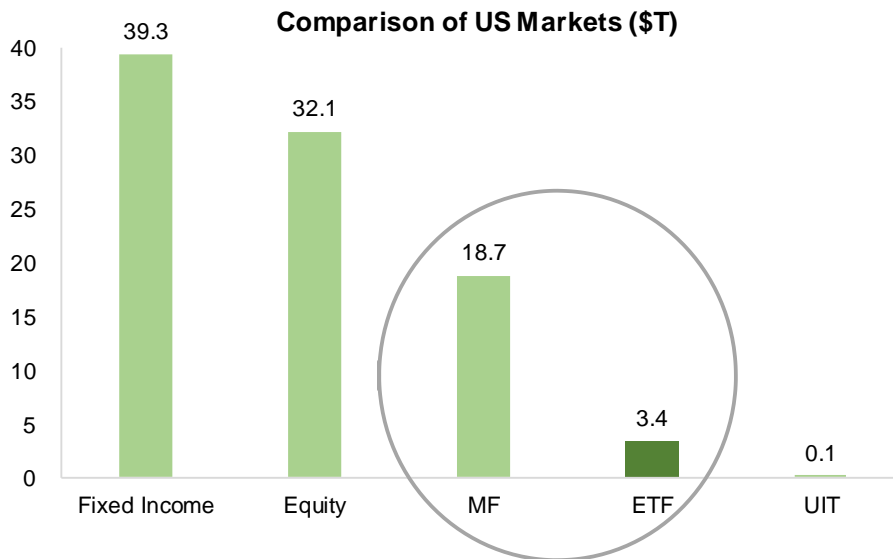
	Total	Indexed	Active	Non-1940 Act	Equities	Bonds	Commodities	Hybrid
AUM (\$B)	3,400.7	3,288.5	44.9	67.3	2,770.7	553.3	68.9	7.8
<i>% of Total</i>		96.7%	1.3%	2.0%	81.5%	16.3%	2.0%	0.2%
Number	1,832	1,569	194	69	1,399	309	91	33
<i>% of Total</i>		85.6%	10.6%	3.8%	76.4%	16.9%	5.0%	1.8%

Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: As of FY17. Commodities = commodities, currencies and futures. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

While there has been significant growth in the U.S. ETF market, the market is still small compared to other U.S. markets. For example:

- Fixed income markets are 11.6x greater than ETFs
- Equities are 9.4x ETFs
- MFs are 5.5x ETFs

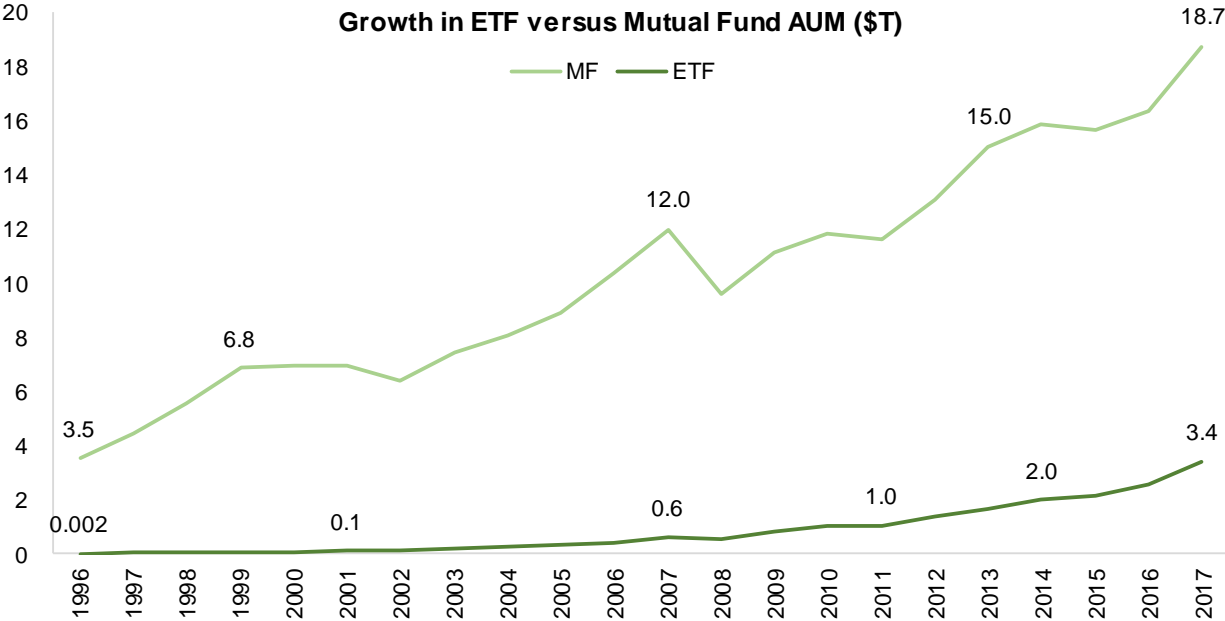


Source: Bank for International Settlements, World Federation of Exchanges, Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates
 Note: As of FY17

While we wanted to show the size of U.S. ETF market in comparison to other markets, a truer parallel can be drawn between investment products, ETF and MFs, as well as to the growth experienced in the development of the MF industry.

We observed the following:

- Since the start of each market (the start of the data set: 1996 for ETFs, 1940 for MFs), ETFs grew at a 39% CAGR, versus 15% for MFs
- Since 2000, ETFs grew at a 25% CAGR, versus 6% for MFs
- Since the financial crisis in 2008, ETFs recovered at a 20% CAGR, versus 7% for MFs



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Growth In The US ETF Market

ETFs have experienced significant growth since the early 2000s, given increased interest in low-cost index-based investing strategies. ETFs hold many characteristics to meet this objective, including: intraday tradability, price transparency, tax efficiency, (generally) lower total costs and the ability to gain access to markets or an asset class. While there has always been individual investor appeal, institutional investors have adopted ETFs into portfolio construction, adjustments and general strategy. Some market participants now discuss ETF investing more as an active portfolio management strategy versus passive investing. Investors across the board are cost sensitive, whether institutional or individual. On the individual investor side, financial advisors have seen an increase in clients paying fees based on AUM (versus brokerage commissions). Advisors have adopted the use of ETFs to keep costs down and assist in asset allocation strategies.

In addition to managing their portfolios, institutional investors use ETFs to decrease risk associated with single security exposure or gain exposure to a country or region. Further, much has been written on the ability of ETFs to provide liquidity to underlying securities in certain asset classes. Examples of use cases for ETFs include:

- As liquidity declined in certain fixed income markets, investors turned to ETFs to access more liquid instruments, especially for large transactions. AUM in bond ETFs have grown at a 36.3% CAGR since 2000.
- Around 25% of today's developed markets have a negative yield. While emerging markets present higher yields, they can be hard to access. ETFs help investors access these markets and generate higher returns.

In light of this increase in demand by investors of all types, ETFs grew at a 24.5% CAGR from 2000 to 2017. We assess ETF CAGRs by type and asset class:

	Non-							
	Total	Indexed	Active	1940 Act	Equities	Bonds	Commodities	Hybrid
AUM	24.5%	24.3%	68.4%	38.6%	23.1%	36.3%	38.9%	46.3%
Number	19.0%	18.0%	31.0%	42.3%	17.2%	25.7%	45.6%	18.7%

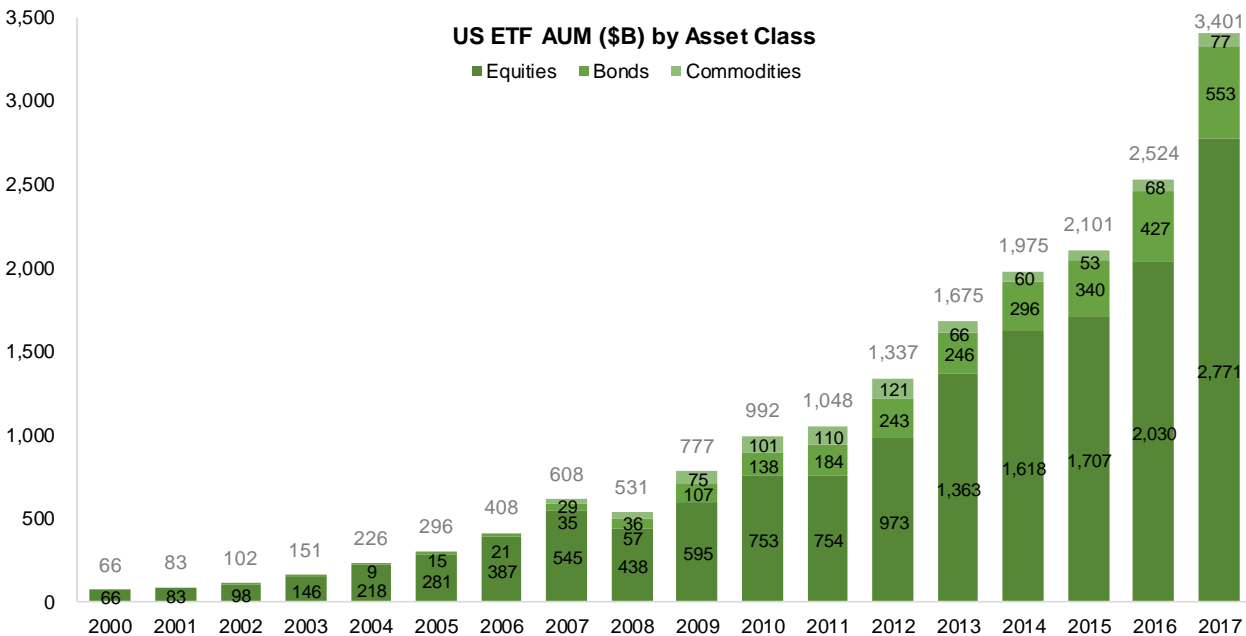
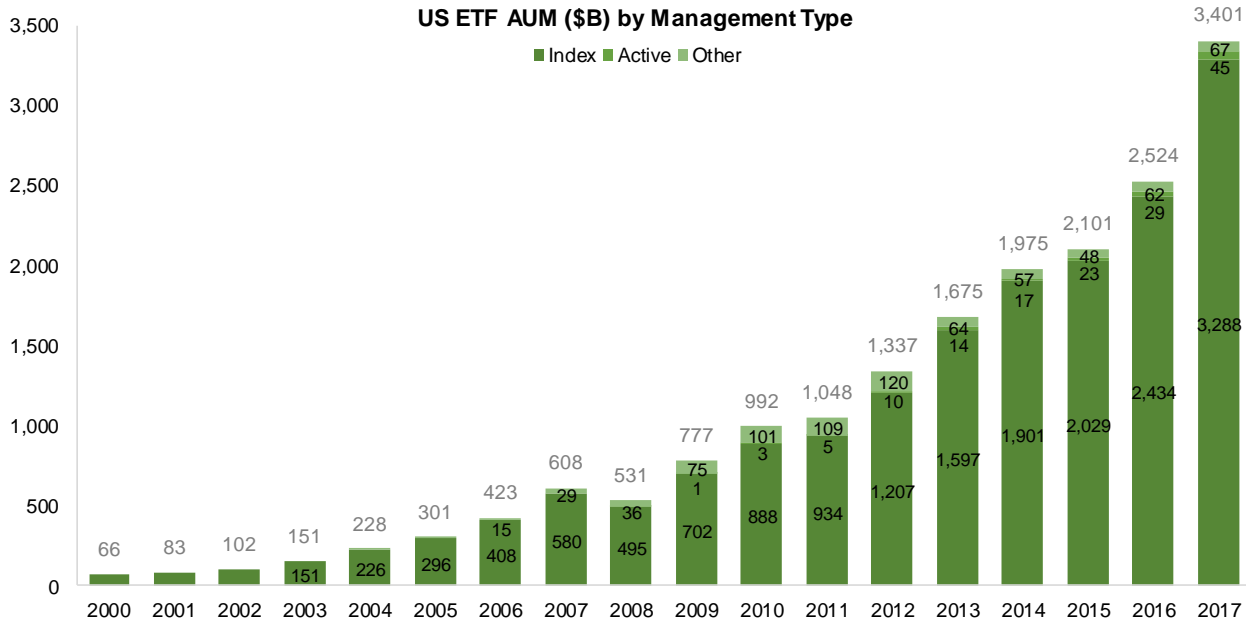
Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: As of FY17. Commodities = commodities, currencies and futures

This compares to the following CAGRs for other investment products (shown for AUM and then number): MFs 5.7% and -0.1%; CEFs 3.7% and 0.5%; UITs 4.9% and -2.7%. (Please see the Appendix for more details on MFs, CEFs and UITs.)

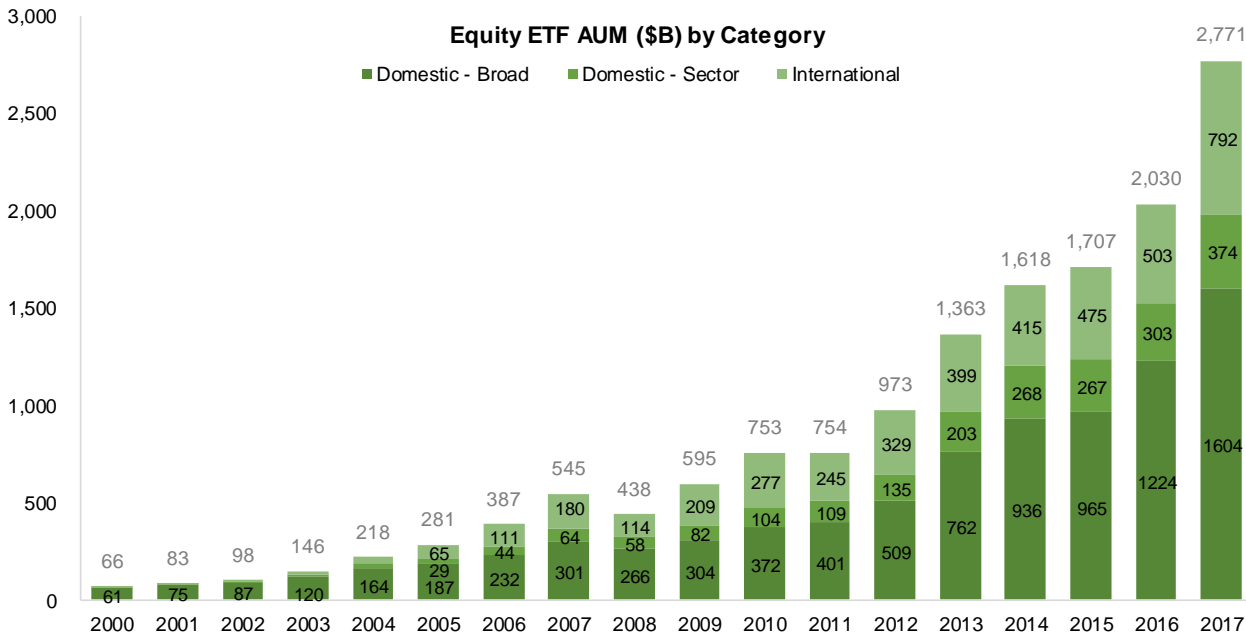
The following pages show growth in AUM and number of ETFs by: management type, asset class and specific equity sectors.

Growth in AUM by Type of ETF

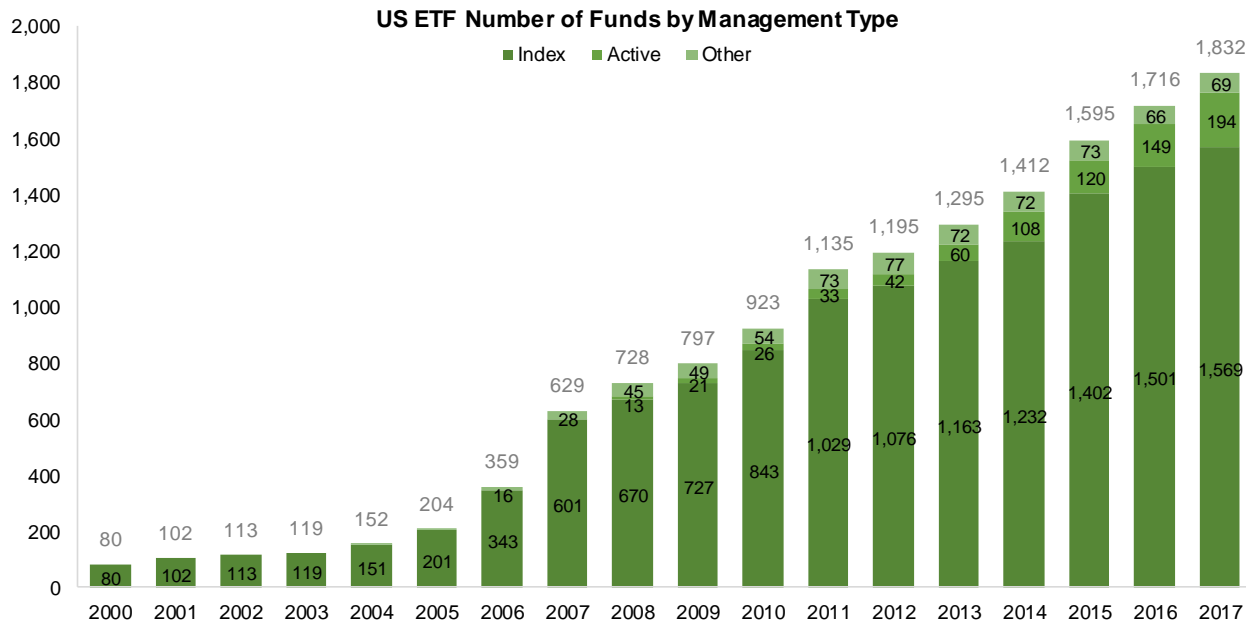


Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: Other = non 1940 act (not SEC registered). Commodities = commodities, currencies and futures plus hybrids. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

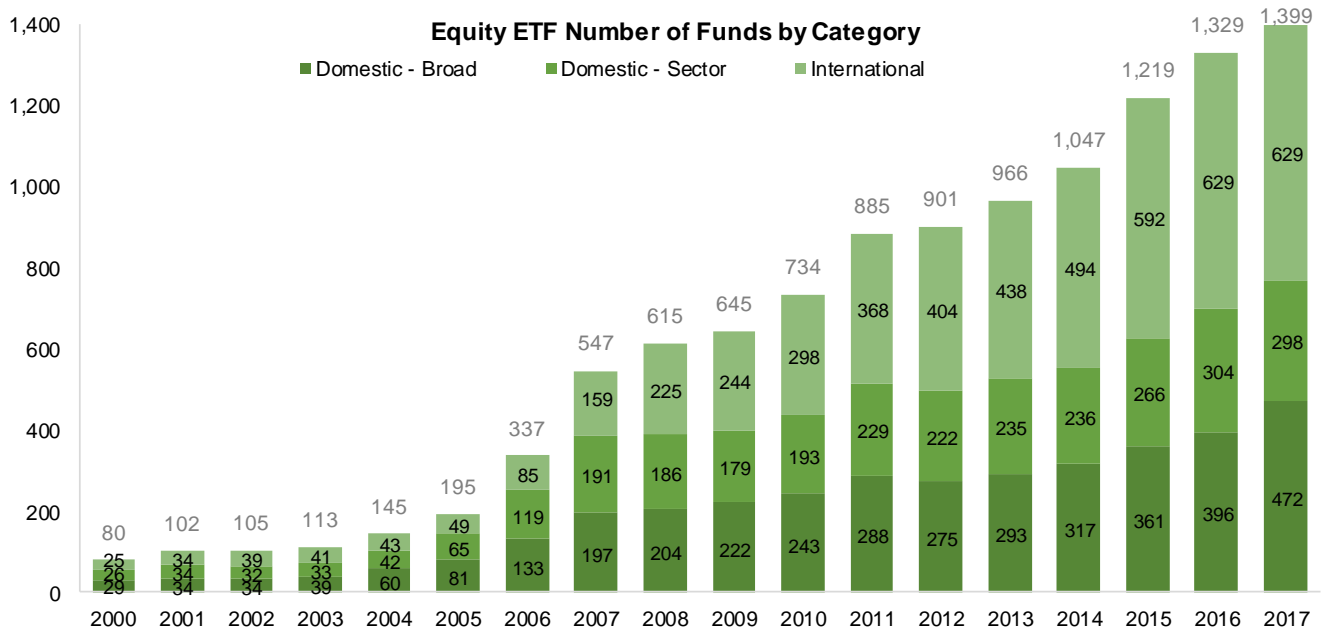
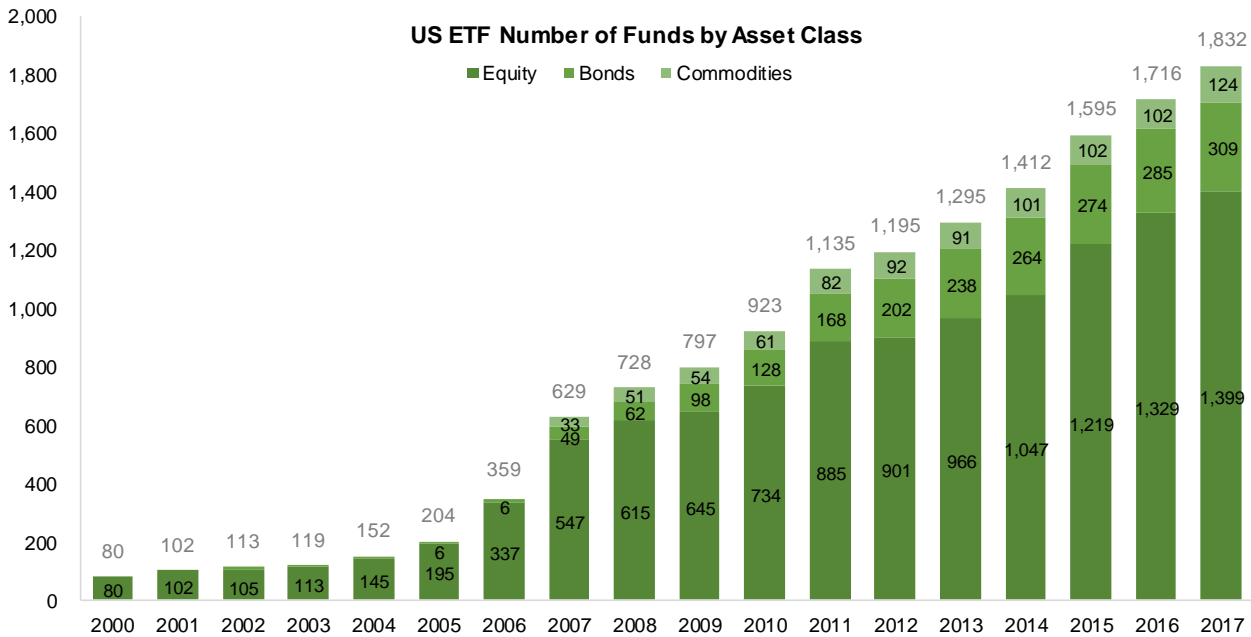


Growth in Number of ETFs by Type



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: Other = non 1940 act (not SEC registered). Domestic-broad = correlated with an entire market; domestic-sector = sector specific. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

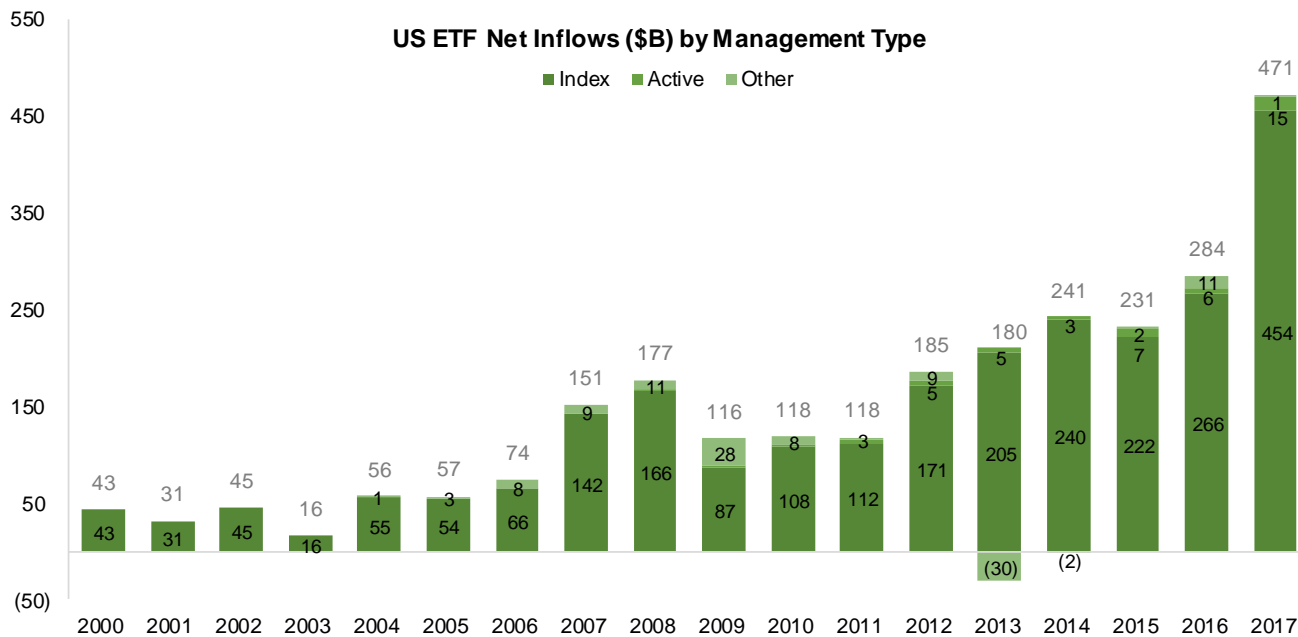
Note: Commodities = commodities, currencies and futures plus hybrids. Domestic-broad = correlated with an entire market; domestic-sector = sector specific. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

Net Inflows by Type of ETF

2017 saw significant net issuance, up 66% Y/Y. Looking within categories, the data shows the shift to using ETFs as part of an active portfolio management strategy, as investors allocate across styles and asset classes to generate higher returns. Examples of this include:

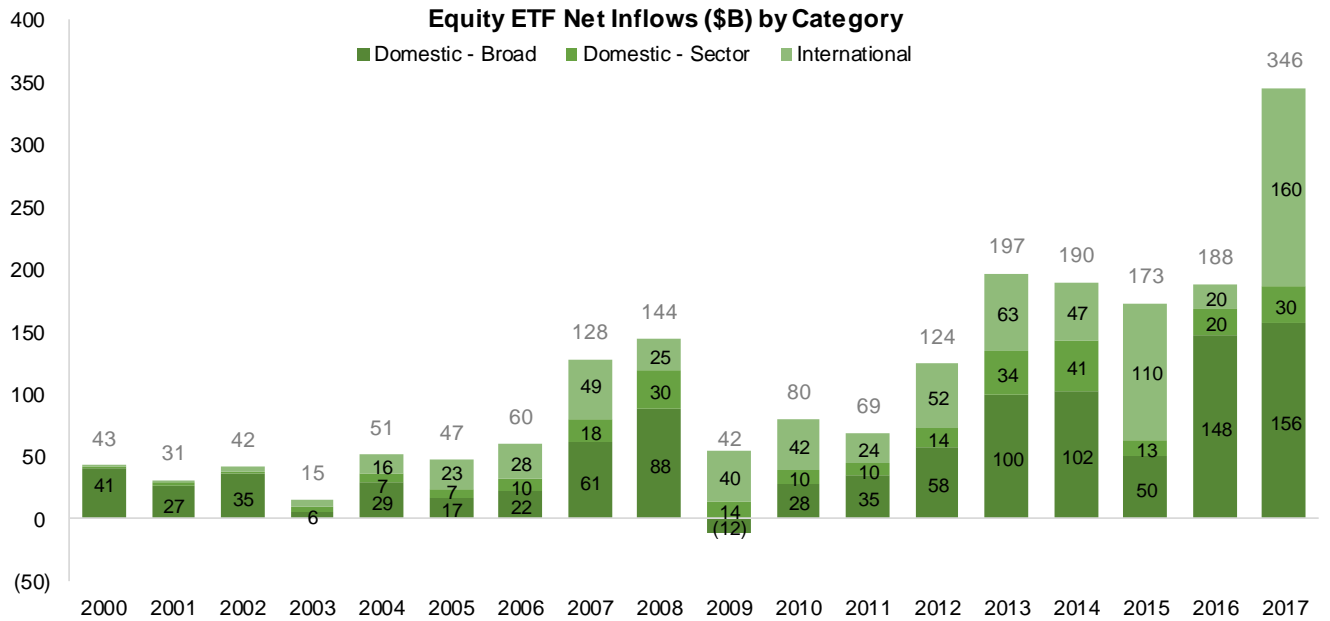
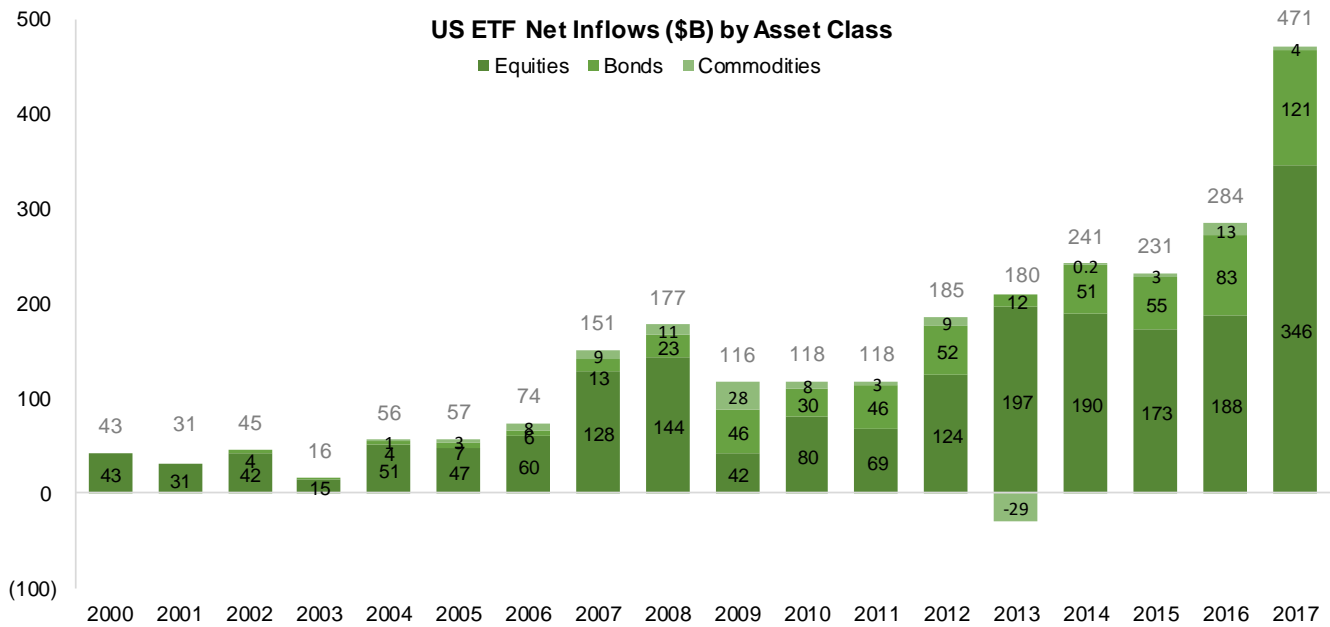
- Active was up 147% Y/Y, versus 71% for index
- Within equities, domestic broad-based (correlating with an entire market) was only up 6% Y/Y, versus +50% for sector specific and +691% for international (or around a 120% increase versus a more normalized 2013-2015 average, since 2016 was a down year).
- Bonds were up 45%

Of note, recent fund flows turned negative (organic growth) for actively managed MFs and ETFs. Market commentary indicates this is a sign of clients shifting funds among asset classes and products as they de-risk and rebalance, rather than an indicator of a long-term fund flow trend out of ETFs.



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: Other = non 1940 act (not SEC registered). Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.



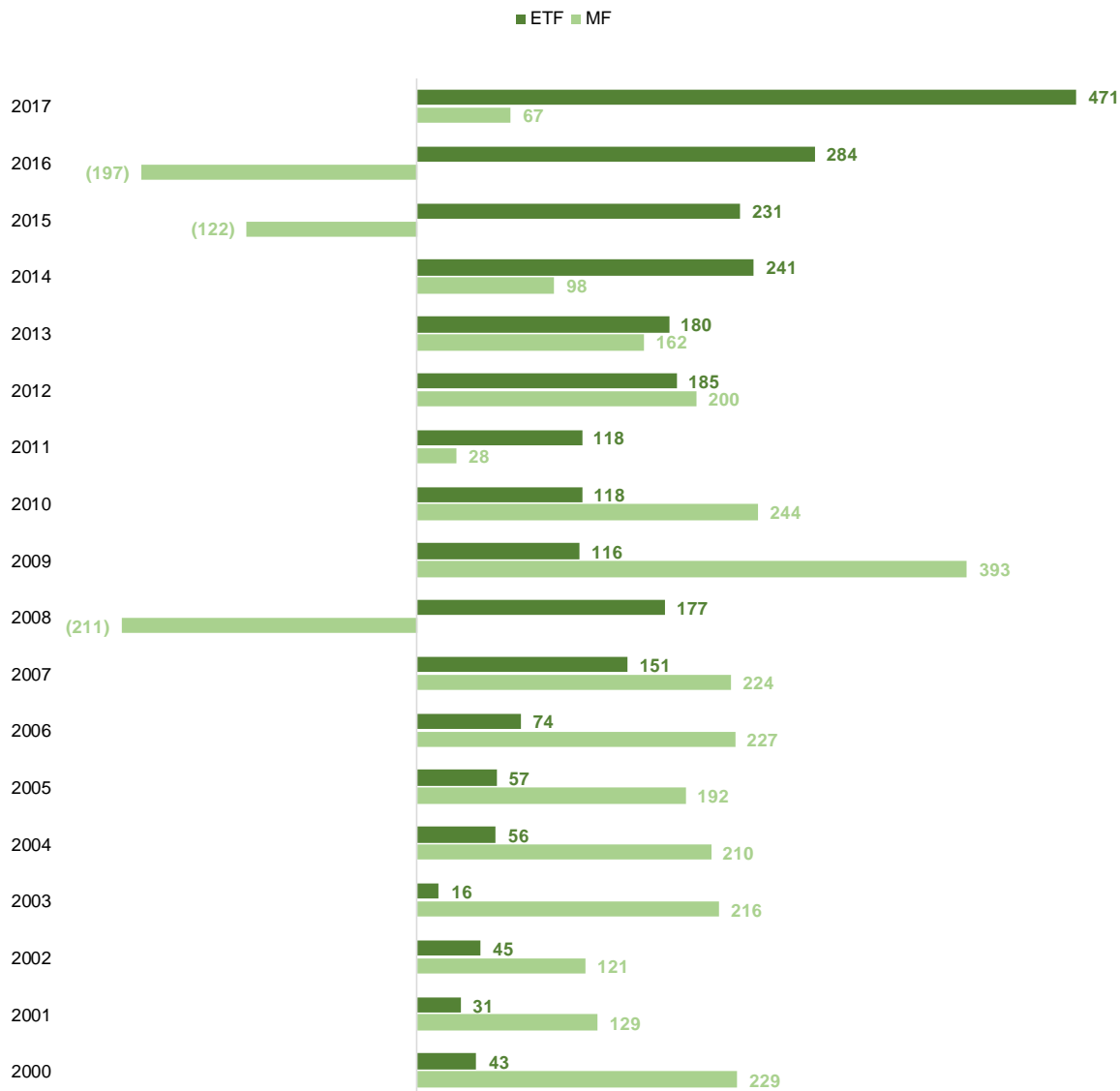
Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates

Note: Commodities = commodities, currencies and futures plus hybrids. Domestic-broad = correlated with an entire market; domestic-sector = sector specific. Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

ETF Net Inflows and MF Net New Cash Flow

While not a perfect apples-to-apples comparison – types of funds within each category may experience different trends than the total group – we look at ETF net new issuance and MFs net new cash flow. In 2015 and 2016, MFs saw outflows as net issuance increased for ETFs. In 2017, MFs recovered, but the upswing was not nearly as significant as for ETFs.

US ETF Net Issuance versus US MF Net New Cash Flow (\$B)



Source: Investment Company Institute (includes data from Strategic Insight Simfund), SIFMA estimates
 Note: Firms may have data that differs from this publicly available source, as they have their own proprietary trading data.

ETF Creation/Redemption Process

In this section, we describe the ETF creation/redemption process. APs will create/redeem shares to: facilitate client trades (access additional liquidity in ETF shares outside of the secondary market, i.e. the authorized participant (AP; typically a broker-dealer) will create ETF units to allow the client to purchase more ETF shares); capitalize on an arbitrage opportunity; etc.

To set the scene for this discussion, we lay out some useful terminology:

- **Primary Market** – The creation/redemption process between the AP and the ETF increases or decreases the number of ETF shares available to the market based on investor demand, i.e. primary market activity. This process is done one time per day, priced at net asset value (NAV).
- **Secondary Market** – ETF shares then trade on exchanges and other trading venues as with single stock equities, i.e. secondary market activity. Trading is intraday, and prices fluctuate based on market supply and demand characteristics. Intraday ETF share prices may vary from end-of-day NAV. Most individual investors transact here, never interacting with the ETF itself. Investors (individual and institutional) interact with each other, with an AP, via their broker or a through a market maker⁶ to trade shares. Investors pay the spread between the bid (offer to buy) and ask (price a seller will accept), plus the broker commission.
- **Arbitrage Process** – When the price of an ETF share does not equal its NAV, which is primarily determined by the market prices of the securities held in the ETF's portfolio, a premium/discount exists. APs will buy/sell ETF creation units and capture the profit, i.e. the arbitrage process.

To manage the number of ETF shares outstanding, those available for trading in the secondary market, an AP will deliver a specified basket of underlying securities (creation basket; APs may also provide cash) to the ETF – the primary market. The ETF will then provide the AP with a fixed amount of ETF shares (creation units; large blocks of shares, typically ranging from 25,000 to 200,000), increasing the supply of ETF shares in the market. APs can sell all or part (they may hold some for their own inventory) of the creation units on exchanges and other trading venues – the secondary market.⁷ The reverse is APs buy back a specified basket of underlying securities (redemption basket) from the ETF. The ETF then takes back creation units, thereby decreasing the supply of ETF shares in the market.

In the secondary market, the price of an ETF share is a function of supply and demand. A supply/demand imbalance can occur, causing the price of the ETF share to deviate somewhat from the price per share of its underlying securities (large deviations tend to be short lived).⁸ This creates a premium/discount in the ETF shares. When this

⁶ A market maker can also be an AP, but it does not have to be the AP on the ETF it is trading in the secondary market.

⁷ APs do not receive compensation from the ETF sponsor and are not legally obligated to create or redeem shares. This differs from the role of a market maker in single-stock equities, who has legal obligations to consistently take the other side of a trade.

⁸ The difference in values between the ETF and its underlying securities can also be created by timing differences. For example, with non-U.S. stock ETFs, market hours to buy/sell the underlying securities can vary from the U.S. stock market where the ETFs trade. Or, in the case of bond ETFs, the underlying bond is valued at the bid whereas the ETF can be valued at the bid, ask or anywhere in between.

premium/discount exists, APs will buy/sell ETF creation units and capture the profit (the arbitrage process). This changes the price of and therefore demand for ETF shares and the underlying securities. This price change narrows the price gap between the ETF share and the price of the underlying securities.

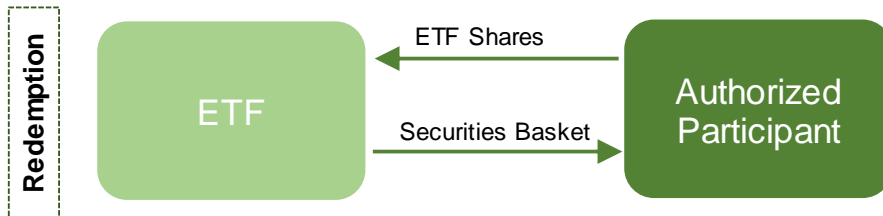
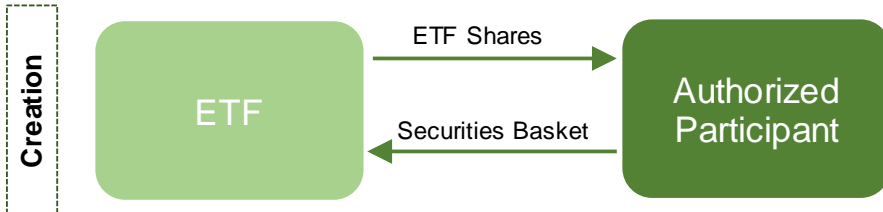
- **Premium** – If the ETF is trading at a premium to the price of the underlying securities, investors can sell shares in the ETF and/or buy the underlying securities. This should reduce the ETF share price and/or raise the price of the underlying securities.
- **Discount** – If the ETF is trading at a discount to the price of the underlying securities, investors can buy shares in the ETF and/or sell the underlying securities. This should increase the ETF share price and/or lower the price of the underlying securities.

For the most part, the price of an ETF share remains similar to its NAV, which is primarily determined by the market prices of the securities held in the ETF's portfolio. Part of this is attributed to the transparency around ETF portfolio holdings (daily disclosure of basket securities or portfolio holdings). A portfolio composition file (PCF) is published each business day, describing the makeup of the creation/redemption baskets. It specifically lists the names and quantity of each underlying security in the basket. These details provide transparency to market participants, who can follow price movements of the ETF shares and compare this to the price of the underlying securities.

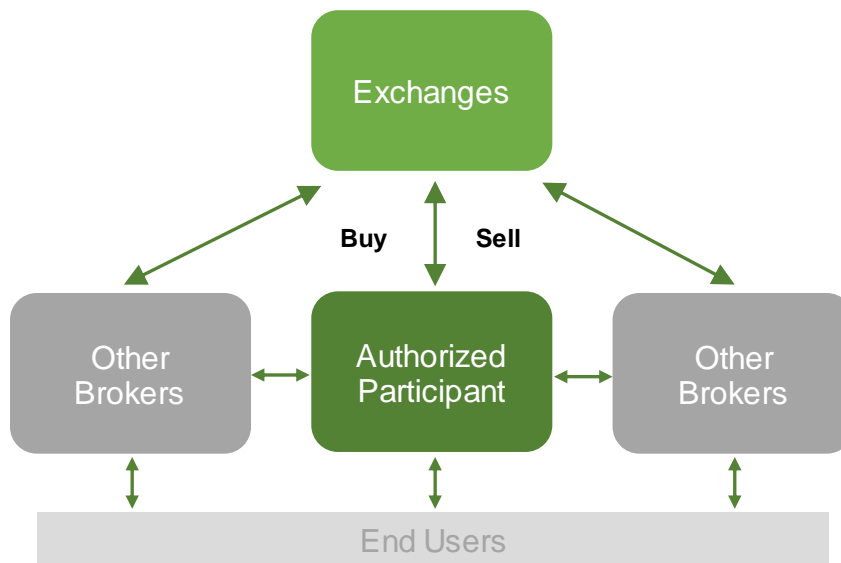
Additionally, intraday trading consistently shows changes in the ETF share price, allowing investors to attempt to profit from discrepancies between the price of the ETF share and price of the underlying securities. Intraday indicative values (IIV) are calculated real time, estimating ETF values. These are disseminated regularly during the day, and APs, market makers or institutional investors can also make their own real time assessments.

The visibility of portfolio holdings or basket securities and the arbitrage process keeps ETF shares trading close to NAV, which is primarily determined by the market prices of the securities held in the ETF's portfolio.

Primary Market



Secondary Market



Thoughts on ETF Liquidity

Liquidity can be described as the ease with which an asset can be quickly and efficiently bought or sold in the market without significantly affecting its price. In single-stock equities, liquidity is about the breadth and depth of trading volumes, which is enhanced by price transparency and ease of execution (speed, ability to fill the entire order). As an ETF is not a common stock, liquidity requires a different discussion than one just on volumes. ETFs are highly liquid, but liquidity is not just measured by volumes on exchanges or other trading venues. Understanding liquidity requires understanding the unique nature of and interaction between the ETF primary and secondary markets and the key participants in each.

In the secondary market, where the price of an ETF share traded on exchanges is a function of supply and demand determining market value, liquidity is associated with volumes of ETF shares. However, in the primary market function as described above, an AP is incentivized by the arbitrage process to meet investor demand, which can inherently increase volumes. Liquidity, therefore, is associated with the efficiency of the creation/redemption process⁹, or the ease and cost of aggregating a creation basket. This process is more representative of the price of the underlying securities, which are delivered in baskets to create ETF shares as shown above, rather than the ETF shares themselves.

Liquidity in these two markets is not equal nor indicative of the other. Yet, the two have a direct relationship. The easier an AP can access and trade the underlying securities, the more efficiently it can create/redeem ETF shares to meet investor demand, increasing volumes. While there can be over 40 registered APs for an ETF¹⁰, on average five will be active (less for smaller or niche funds). Should an AP cease to create/redeem ETF shares, another AP may enter the market seeking the potential profit from the arbitrage process described above. In the unlikely scenario all APs stop acting for an ETF, the supply of ETF shares becomes fixed in the short run (the creation/redemption process halts), and the ETF trades similarly to CEFs¹¹. The ETF share price would still be determined on exchanges and other trading venues, based on supply and demand characteristics, and the ETF may trade at a premium/discount to the price of the underlying securities. This creates an incentive for APs to jump back in the process to capitalize on the arbitrage opportunity. APs again begin the process of changing the supply of ETF shares.

As shown by this cycle, APs generally keep the arbitrage process functioning efficiently to meet market demand and liquidity needs.

⁹ The majority of ETFs do not have any primary market activity on most trading days; some larger ETFs have daily creations and redemptions, but these ETFs generally have more active APs.

¹⁰ According to an Investment Company Institute 2015 report: average 34 APs for all ETFs, with an average of 5 active APs; average 38 APs for ETFs >\$790M AUM, with an average of 9 active APs; average 31 APs for ETFs \$27M AUM and less, with an average of 2 active APs.

¹¹ A CEF is a pooled investment fund which raises a fixed number of shares only once through an IPO and is then traded like a stock on an exchange.

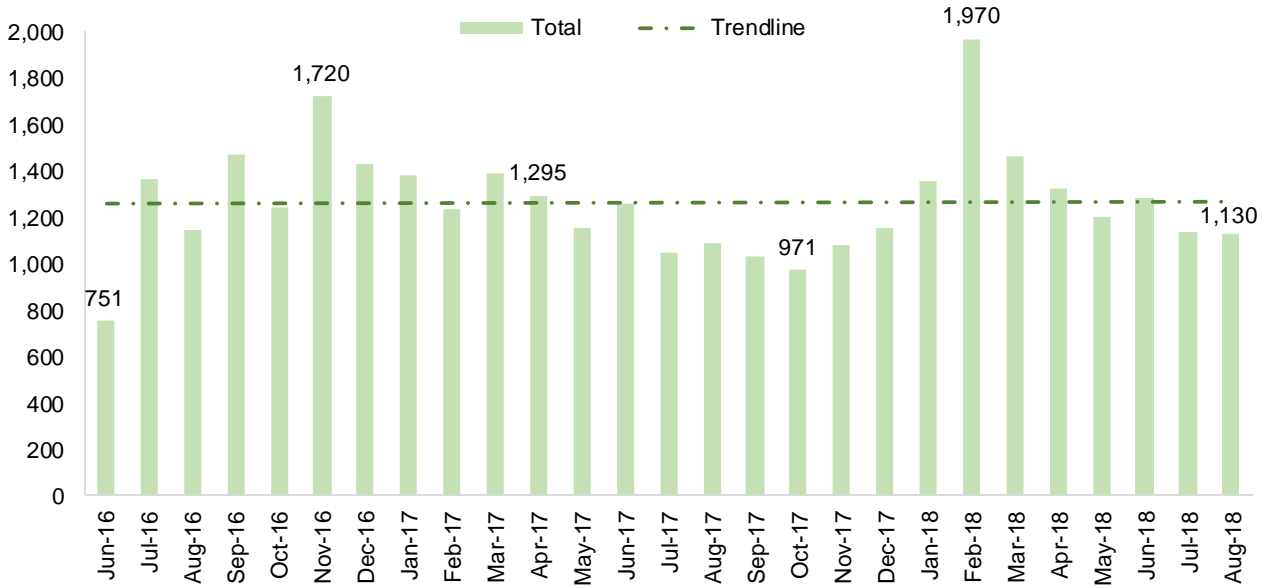
Secondary Market Volumes

As ETF shares trade on the U.S. equity markets in the secondary market – as do the underlying stocks used to create equity ETFs – please see [*SIFMA Insights: US Equity Market Structure Primer*](#) for details on drivers of volumes, market structure, order routing and regulations.

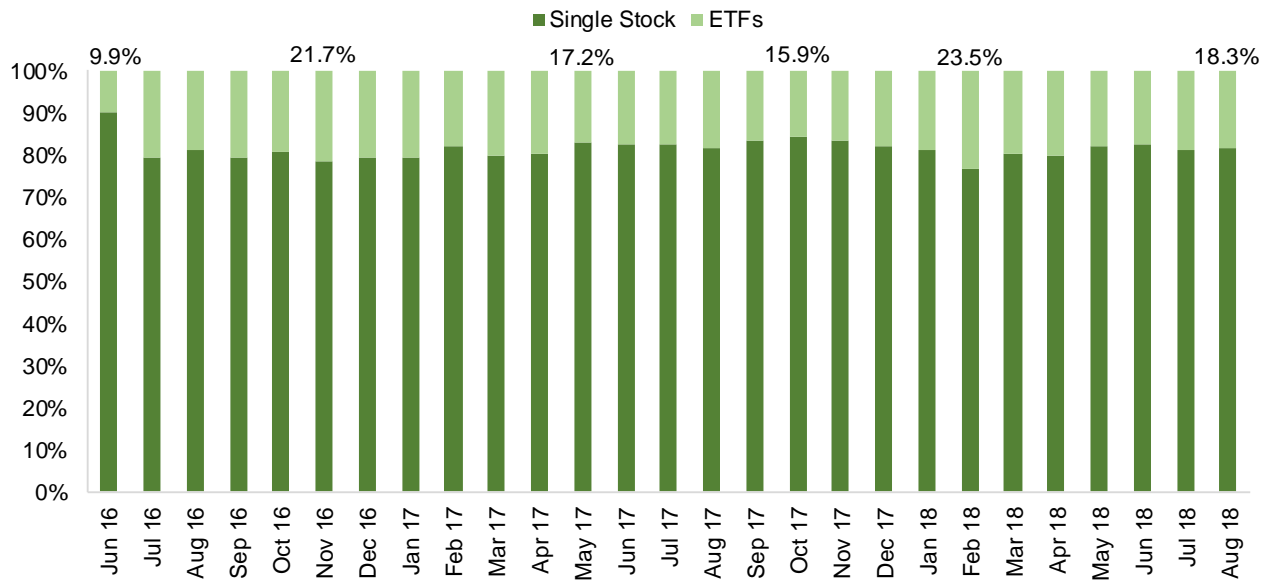
As shown on the following page, ETF shares ADV was 1.1 billion in August 2018, up from 0.8 in 2016. The low was 0.8 billion in June 2016, with a high of 2.0 billion in February 2018. ADV averaged 1.3 billion for each of the last 12 and 24 months. The six month average was 1.4 billion given the February peak noted above, as volatility increased significantly over inflation and other economic concerns (similar to single stock equity volumes increases on VIX moves).

ETF shares are a sub sector of total equities volumes. ETF share volumes as a percent of total equities averaged 18.5% to 18.9% over the last 12 to 24 months. The seven month average was 19.4%, in light of the volatility spike in February. Similar to single-stock equities, ETF share volumes are often correlated with volatility, which spiked in February of this year to 19.85 (FY17 average 11.05).

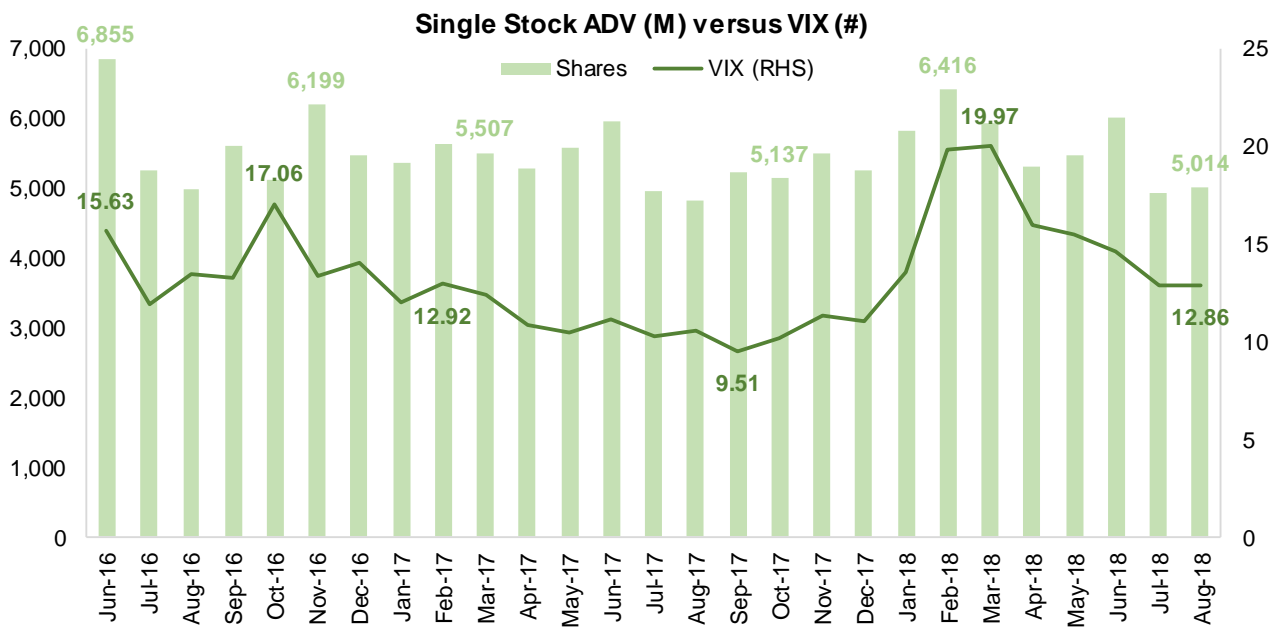
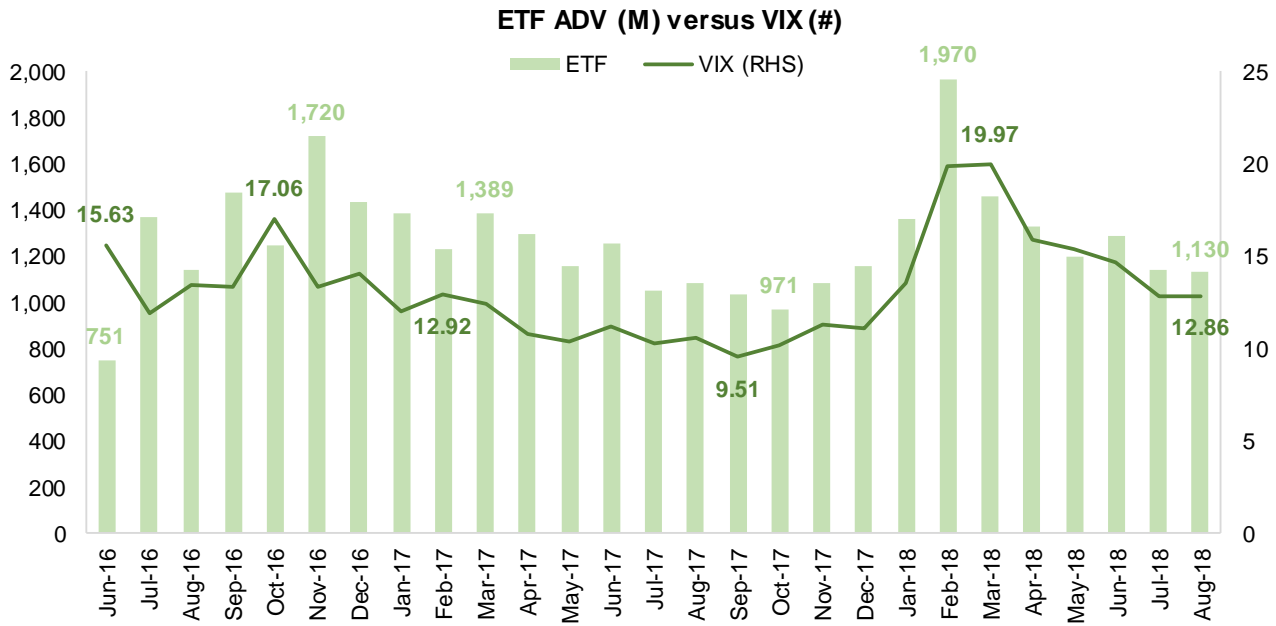
ETF Average Daily Volume Shares Traded (M)



ETFs as a Percent of Total Equities ADV



Source: Cboe Global Markets, SIFMA estimates (as of August 2018)

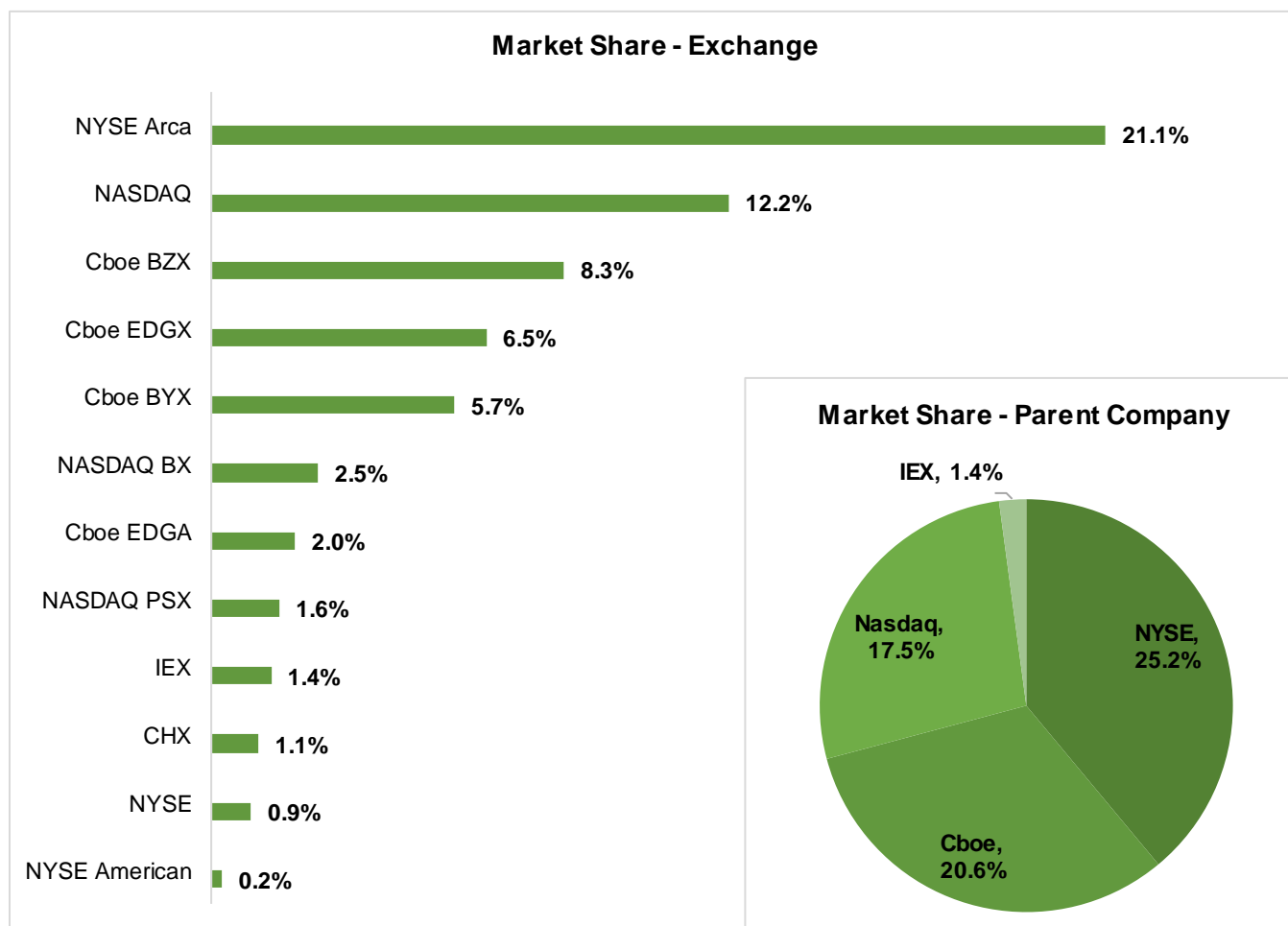


Source: Cboe Global Markets, Bloomberg, SIFMA estimates (as of August 2018)

Market Share Overview

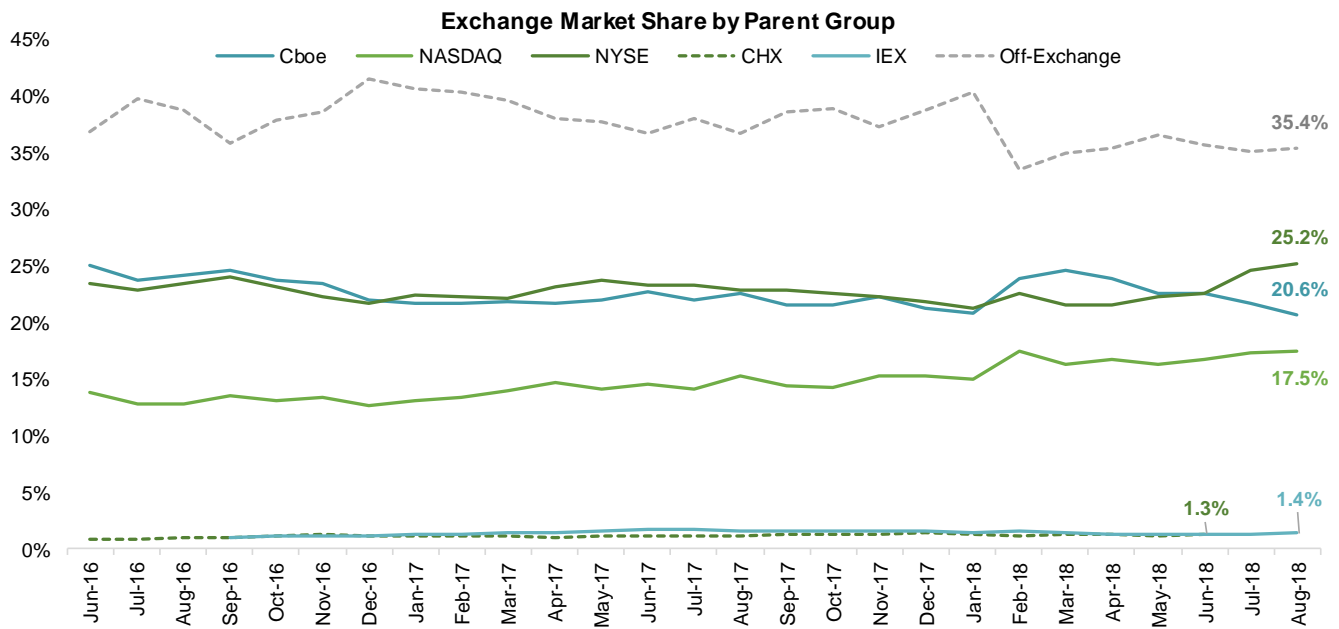
Market Shares Across Exchange and Off-Exchange Trading

Within trading on exchanges, the top two exchange groups hold a 25%/21% market share in aggregate across all their individual exchanges, followed by 17.5% at the number three exchange group. Market share can vary within each exchange group's individual exchanges, as shown in the following charts. Off-exchange trading represents around 37% of the total.



Source: Cboe Global Markets, SIFMA estimates

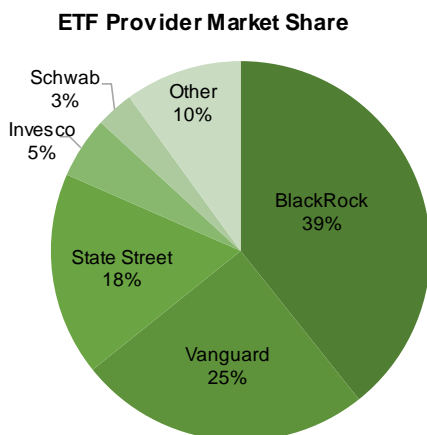
Note: Market share – exchange = as of August 2018 for CHX, IEX and May 2018 for all others. Market share – parent company = as of August 2018. Intercontinental Exchange (ICE) owns the NYSE exchanges, as well as other exchanges and clearing houses across the globe, and completed its acquisition of the Chicago Stock Exchange (CHX) in July 2018. Total exchange trading, as shown in these charts, represents ~63% of total volumes; numbers may not sum up due to different time periods and rounding.



Source: Cboe Global Markets, SIFMA estimates (as of August 2018)
 Note: As of August 2018, NYSE completed its acquisition of CHX in July 2018

Market Share by Providers

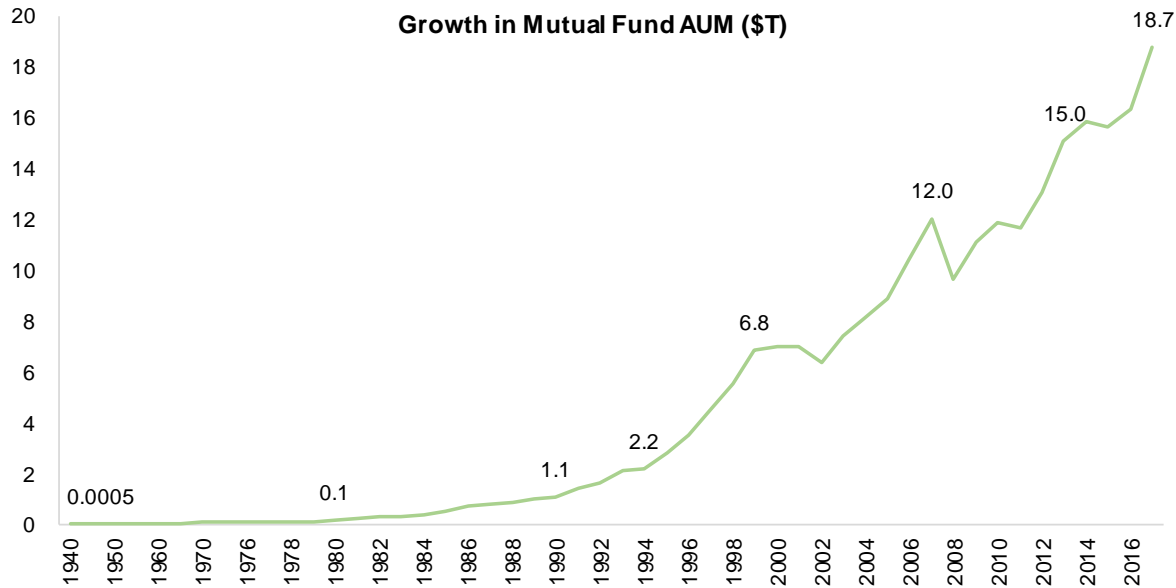
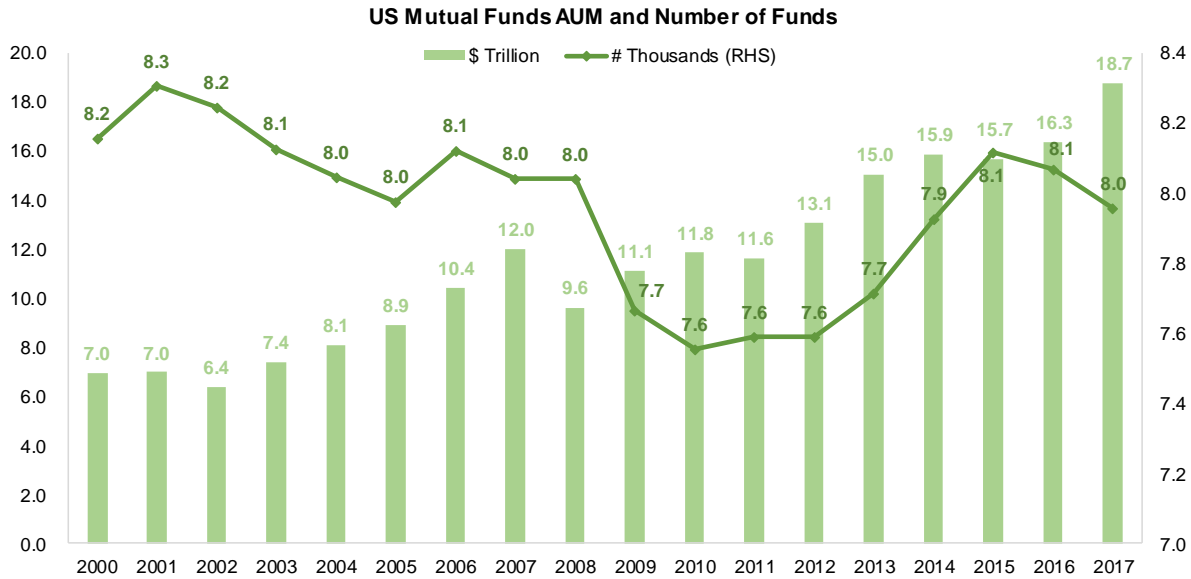
Regarding market share for ETF providers, three firms hold 82% of the total AUM. After the next few players, market shares drop off quickly. We counted 98 providers on etf.com, meaning the other 10% shown in the following chart - which is less than market share held by each of the top three firms - is aggregate AUM for 93 firms.



Source: etf.com, SIFMA estimates (as of June 2018)

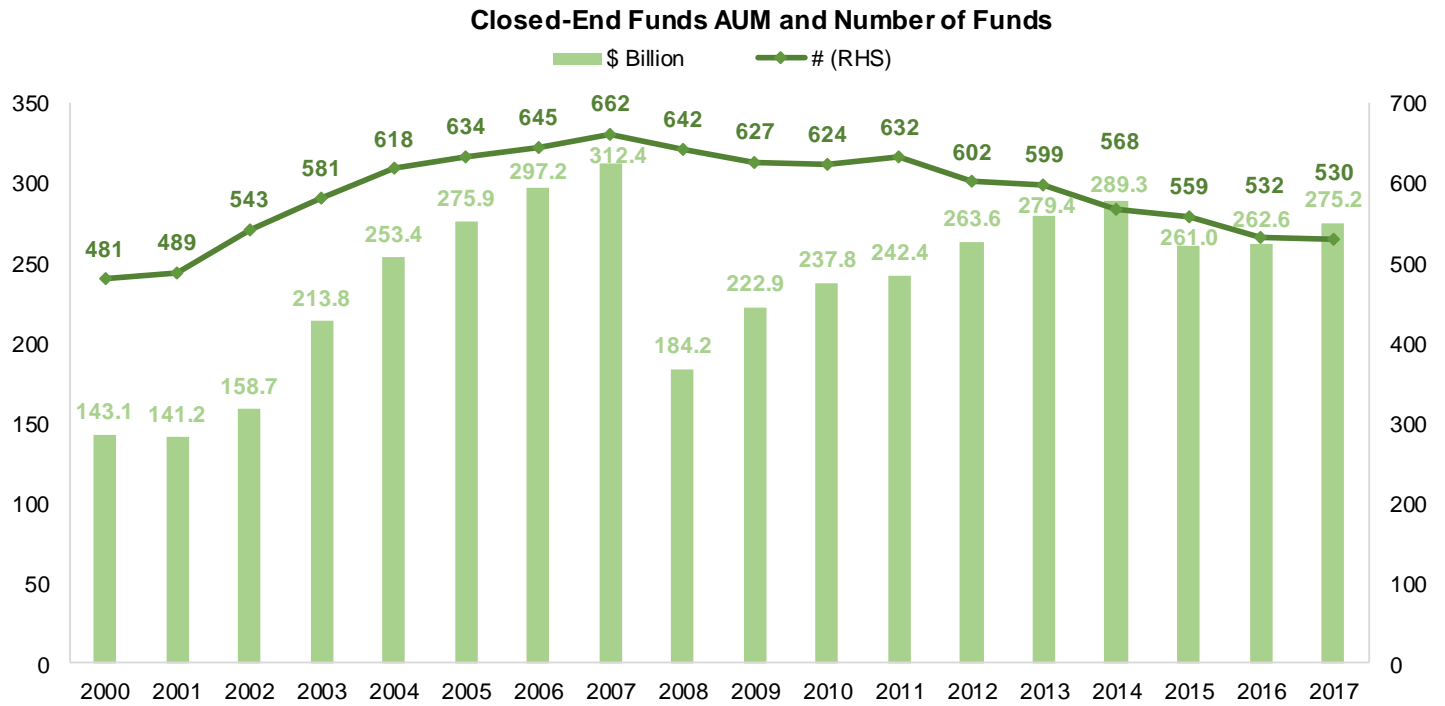
Appendix

Appendix: Mutual Funds Statistics for Comparison



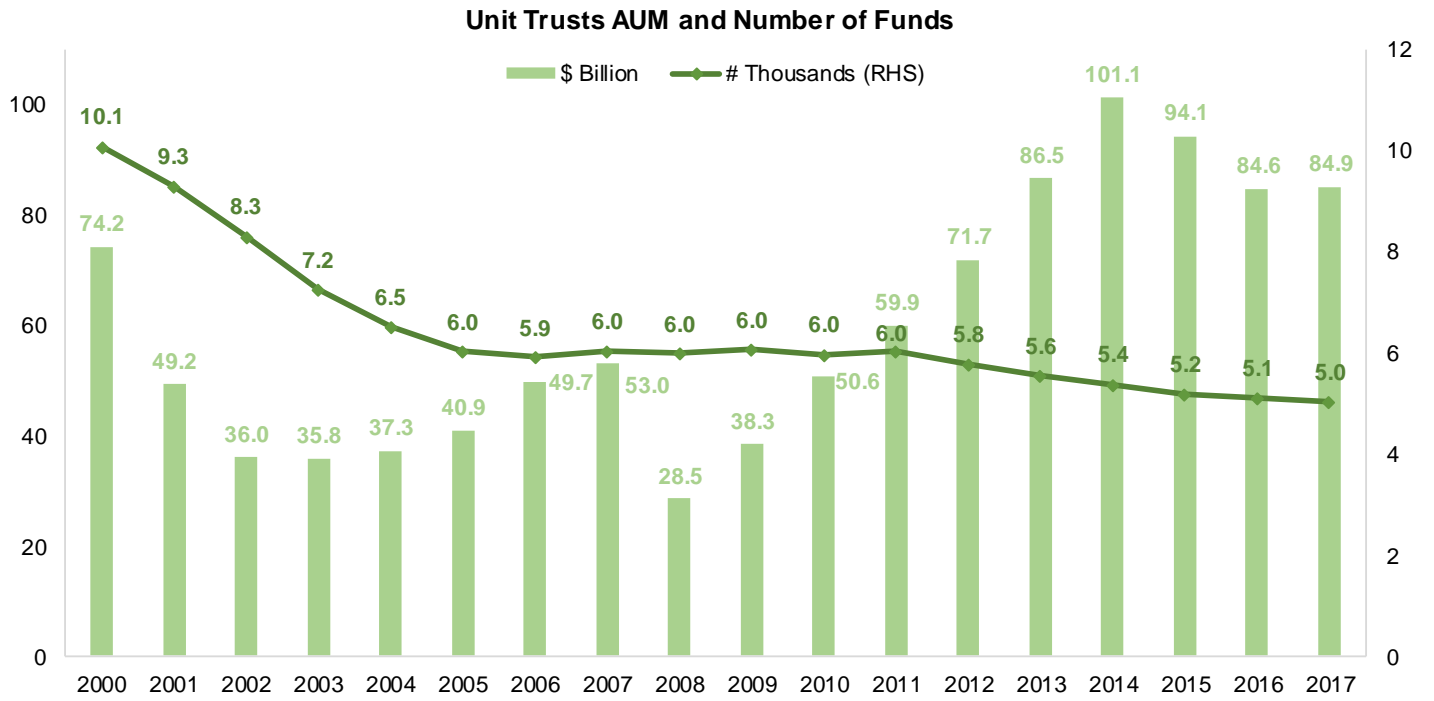
Source: Investment Company Institute, SIFMA estimates

Appendix: Closed-End Funds Statistics for Comparison



Source: Investment Company Institute, SIFMA estimates

Appendix: Unit Investment Trusts Statistics for Comparison



Source: Investment Company Institute, SIFMA estimates

Appendix: Terms to Know

FINRA	Financial Industry Regulatory Authority
SEC	Securities and Exchange Commission
SRO	Self-Regulatory Organization
AP	Authorized Participant
PCF	Portfolio Composition File
NAV	Net Asset Value
IIV	Intraday Indicative Value
MF	Mutual Fund
OEF	Open-End Fund
CEF	Closed-End Fund
UIT	Unit Investment Trust
ADV	Average Daily Trading Volume
ATS	Alternative Trading System
AUM	Assets Under Management
Best Ex	Best Execution
Dark Pool	Private trading venues, not accessible by the public
ECN	Electronic Communication Network
EMS	Equity Market Structure
ETF	Exchange-Traded Fund
ETP	Exchange-Traded Product
HFT	High-Frequency Trading
IOI	Indication of Interest
IPO	Initial Public Offering
MM	Market Maker
OTC	Over-the-Counter
PFOF	Payment For Order Flow
SI	Systematic Internaliser
Tick Size	Minimum price movement of a trading instrument
Bid	An offer made to buy a security
Ask, Offer	The price a seller is willing to accept for a security
Spread	The difference between the bid and ask price prices for a security, an indicator of supply (ask) and demand (bid)
NBBO	National Best Bid and Offer
Locked Market	A market is locked if the bid price equals the ask price
Crossed Market	A bid is entered higher than the offer or an offer is entered lower than the bid
Opening Cross	To determine the opening price of a stock, accumulating all buy and sell interest a few minutes before the market open
Closing Cross	To determine the closing price of a stock, accumulating all buy and sell interest a few minutes before the market close
Order Types	
AON	All or none; an order to buy or sell a stock that must be executed in its entirety, or not executed at all
Block	Trades with at least 10,000 shares in the order
Day	Order is good only for that trading day, else cancelled
FOK	Fill or kill; must be filled immediately and in its entirety or not at all
Limit	An order to buy or sell a security at a specific price or better
Market	An order to buy or sell a security immediately; guarantees execution but not the execution price
Stop	(or stop-loss) An order to buy or sell a stock once the price of the stock reaches the specified price, known as the stop price
CAGR	Compound Annual Growth Rate
RHS	Right hand side
Y/Y	Year over year
Investors	
Institutional	Asset managers, endowments, pension plans, foundations, mutual funds, hedge funds, family offices, insurance companies, banks, etc.; fewer protective regulations as assumed to be more knowledgeable and better able to protect themselves
Individual	Self-directed or advised investing; some considered accredited investors: income > \$200K (\$300K with spouse) in each of the prior 2 years or net worth >\$1M, excluding primary residence

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