Asset Managers

ETF primer – demystifying and shedding light on growth, function, and risks

Primer

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Primer on ETFs – understanding growth, function, & risks

ETFs (Exchange Traded Funds) have had significant growth over the past decade, and given the product benefits and expanding uses, we expect the growth rate to remain attractive, with assets likely doubling over the next five plus years. This can bode well for some asset managers and create headwinds for others. Given the rise of the product and to aid understanding, in this primer we explain the ETF market, players, growth potential, how they actually work versus stocks or mutual funds, and potential risks.

ETFs are like mutual funds, but trade on exchanges

Similar to a mutual fund (MF), an ETF is an investment fund that can be composed of different underlying securities. However, ETFs can be traded on exchanges just like a stock. Most ETFs are passive and seek to deliver a particular index's return less any costs, though there are actively managed ETFs and others that seek modified returns.

There are pros & cons to owning an ETF vs a mutual fund

Generally speaking, the pros to owning an ETF over a MF include lower costs, tax efficiency, transparency, and intraday liquidity. The cons include trading costs (in the form of bid/ask spreads, arbitrage, and commissions), tracking error, and the limited ability to deliver alpha, given their predominant passive nature.

ETFs are positioned for continued healthy growth

Since the 1993 launch of the first U.S. ETF (SPDR S&P 500 or SPY), global ETF assets have grown to ~$3T with a 13% average ann. org. growth rate since 2010 vs 8% and 0% for index funds and active MFs, respectively (Chart 1). Growth has been driven by the advantages of ETFs as well as new uses. Given this scope, new products, and the still small relative size versus the overall market, we expect healthy growth to continue.

The ETF industry is dominated by top firms and funds

The ETF market, of which the US accounts for roughly 70%, consists of roughly 5,000 ETFs and 250 managers. Despite the fragmentation, the ETF market is concentrated, with the top five firms (2% of the total) accounting for 75% of ETF assets and the top 5 ETFs (0.1% of all ETFs) accounting for 14% of assets (Tables 1-2).

ETFs work like stocks with a unique primary market feature

ETFs are created by a sponsor with an idea, followed by SEC registration and exemptive relief and processes to launch the product. Once launched, 90% of transactions occur in the secondary market and work like a stock trade. Secondary market activity does not involve the ETF or the underlying securities directly, as only the ETF shares trade hands. The other 10% of trading occurs in the primary market where shares are created or redeemed in blocks known as "creation units" by an Authorized Participant (AP) through the creation redemption (CR) mechanism, which helps to foster equilibrium.

A few potential risks to understand with ETFs

Despite the success and benefits of ETFs, a few primary risks to ETFs include potential issues with certain levered or inverse products, though a small portion of the industry; liquidity perception, as ETFs are liquid, but in times of stress, liquidity could fall to the underlying asset level; market maker challenges particularly in times of stress; and market structure issues, which are not ETF specific, but the larger the passive market becomes, the importance of market structure stability and underlying asset price creation rises, though recent market structure issues create some challenges.

Refer to important disclosures on page 19 to 20. 11634513

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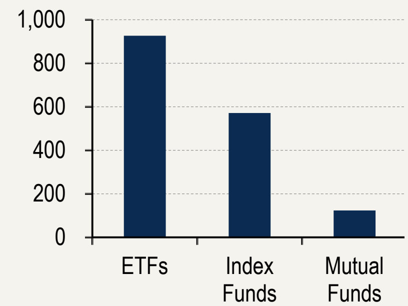
Chart 1: Cumulative Flows Since '10 ($B)



Source: Simfund and BofA Merrill Lynch Global Research
Note: Data includes US domiciled funds only

Table 1: Top 5 Firms by Assets

Firm	AUM ($M)
BlackRock	1,075,567
Vanguard	504,996
State Street	428,525
Invesco	99,396
Deutsche Bank	84,398
Total	2,192,882

Source: Simfund.
Note: AUM as of 12/31/15

Table 2: Top 5 ETFs by Assets

Fund	AUM ($M)
SPDR S&P 500 ETF	182,039
iShares Core S&P 500 ETF	70,259
iShares MSCI EAFE ETF	60,154
Vanguard Total Stock Mkt Index	57,434
PowerShares QQQ	42,360
Total	412,246

Source: Simfund.
Note: AUM as of 12/31/15

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Overview

Exchange traded funds (ETFs) have been a significant growth driver for the asset management industry (particularly for a few firms, as well as competition for many others) and market makers in the last decade. ETFs now total $3T in global assets, up significantly from $400B 10 years ago, but still a small portion of the overall fund universe at 8% (or 15% of the long term U.S. fund market). We see significant growth potential ahead, but also some potential risks. Because ETFs are not well understood, in this report we explain how ETFs work in the market, the pros and cons of owning an ETF, the industry make-up, growth drivers, and risks.

We view the growth outlook for ETFs as attractive, given the product benefits, rate of adoption by users/channels, product innovation, regulatory changes, and new financial uses. However, we also think users need to understand the risks, particularly on liquidity levels in all market backdrops, and the importance of market structure and market makers as the passive market continues to grow.

What is an ETF (Exchange Traded Fund)?

An ETF is a basket of securities that trades on stock exchanges

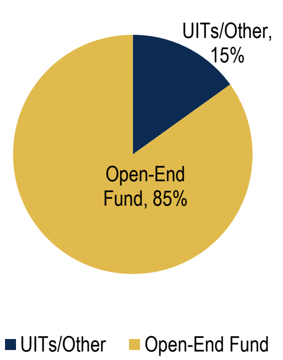
An ETF is a pooled investment vehicle with shares that can be bought and sold throughout the trading day on stock exchanges at a market-determined price. Investors can trade ETF shares through a broker or in a brokerage account, just as they would any publicly traded stock.

Similar to mutual funds, ETFs are typically composed of many different underlying securities. This offers investors a simple and cost efficient avenue for broad exposure, much like a mutual fund. ETFs can provide exposures to different asset classes, regions, and investing strategies.

ETFs are mostly structured as open-end investment companies

The vast majority of ETFs are open-end funds. However, some notable ETFs are structured as Unit Investment Trusts (UITs) including SPY and QQQ. ETFs structured as UITs do not have investment advisers and are limited to replicating the index they track and may not participate in securities lending, among other practices. The more limiting nature of the UIT structure is reason newer ETFs and now the majority of ETF assets fall within an open-end fund structure. There are also grantor trusts, exchange traded notes (debt instrument), and partnerships (Chart 2 and Table 3).

Chart 2: ETF Assets by Structure as of 2015



Source: Simfund and BofA Merrill Lynch Global Research.

Table 3: Largest Non-Open End Fund ETFs & Legal Structure

Fund	AUM ($M)	Legal Structure
SPDR S&P 500 ETF	182,039	UIT
PowerShares QQQ	42,360	UIT
SPDR Gold Shares ETF	21,931	Grantor Trust
S&P 400 Midcap SPDR	14,826	UIT
SPDR DJ Ind Avg ETF	12,901	UIT
iShares Gold Tr	5,210	Grantor Trust
iShares Silver Tr	4,392	Grantor Trust
JPMorgan Alerian MLP Index ETN	3,446	Debt Instrument
US Oil	3,083	Partnership
PowerShares DB Cmmdty Idx Track	1,987	Partnership

Source: Simfund, Bloomberg, and BofA Merrill Lynch Global Research. AUM is as of 12/31/15.

ETFs are regulated like mutual funds, but require special exemptions

ETFs structured as open-end funds and UITs (98% of the market) are registered investment companies (RICs) and regulated under the Investment Company Act of 1940 similar to mutual funds. These ETFs invest in securities and are typically regulated under three more sets of securities laws including the Securities Act of 1933, the Securities Exchange Act of 1934 and the Investment Advisers Act of 1940.

ETFs that invest in commodities are not regulated under the Investment Company Act of 1940 but by the Securities Act of 1933. Additionally, derivatives based commodity ETFs are regulated by the CFTC.

Although ETFs are registered and regulated like mutual funds, they require exemptive relief from the SEC on a number of legal provisions of the Investment Advisors Act, the Exchange Act and the rules promulgated thereunder. The relief granted to ETFs relate to the ability to create/redeem shares at NAV in creation units while trading at secondary market prices, transacting only with APs, in-kind purchases and redemptions, among other things. Without such exemptions, the ETF framework would not otherwise be permitted.

Non-40 Act ETFs are a small but interesting part of the market

Aside from open-end and UIT structures, ETFs can also be structured as grantor trusts, exchange traded notes (ETNs), and partnerships. Grantor trusts typically invest solely in physical commodities or currencies and are required to hold a fixed portfolio. Grantor trusts are not RICs and are regulated by the 1933 and 1934 Acts. A popular grantor trust ETF is GLD or SPDR Gold Shares which tracks gold bullion prices.

ETNs are debt instruments with a maturity date, not investment companies, and are also not regulated under the 1940 Act. ETNs have no underlying holdings, but instead promise to pay investors a return of an index or an asset class at a later date.

Purchasers of ETNs become unsecured creditors of the issuer and assume credit risk, thus ETN values can fluctuate based on the issuer's credit rating. A popular ETN is VXX or the iPath S&P 500 VIX Short-Term Futures ETN, which provides investors with a cash payment at maturity based on the performance of the S&P 500 Short-Term VIX Futures Total Return Index.

A partnership is the least common type of ETF and is an unincorporated business entity, also not regulated under the 1940 Act. These ETFs typically track commodities such as natural gas or oil. A notable partnership ETF is the United States Oil Fund (USO), which reflects changes in the price of WTI crude oil.

There are advantages and disadvantages of ETFs versus a mutual fund

There are both advantages and disadvantages of an ETF vs a mutual fund. Advantages of an ETF include low costs, tax efficiency, trading flexibility, and transparency. Disadvantages include hidden costs, tracking error (deviation from the benchmark the ETF is meant to mimic), and the limited ability to deliver alpha.

Advantages:

- **Lower expense ratios**: In general, ETF expense ratios are lower relative to mutual funds' for several reasons including the use of in-kind transactions, lower administrative costs, the absence of 12b-1 fees, as well as lower management fees (Tables 4-5).
    - **In-kind transactions**: In-kind transactions are the exchange of securities for securities. ETFs service creation redemption orders in the primary market in kind or by delivering ETF shares for securities and vice versa. By doing this, ETFs can avoid selling securities to raise cash for redemptions and they avoid having to put new money to work which would carry transaction-related costs.
    - **Lower administrative costs**: The majority of ETF transactions occur in the secondary market, which does not involve the ETF directly. Only the primary market requires the ETF's involvement and they need to

deal with only a few selected authorized participants transacting large blocks of shares or securities, while the issuing and redeeming of mutual fund shares requires a fund to handle potentially thousands of individual clients, each with differing size orders. This dynamic leads to relatively low administrative costs.

- **No 12b-1 fees**: Mutual fund expense ratios can have 12b-1 (sales/marketing expense) fees built into them, but these do not exist in ETFs.

- **Lower management fees**: Given that ETFs are predominantly passive vehicles, they typically benefit from low management fees compared to active mutual funds.

Table 4: Expense Ratios of the 10 Largest Active Mutual Funds

Fund	Ticker	Exp Ratio (bps)	AUM ($M)
Growth Fund of America	AGTHX	0.70	138,579
Europacific Growth	AEPGX	0.75	118,506
Fidelity Contrafund	FCNTX	0.66	109,629
Vanguard Wellington	VWELX	0.22	86,798
Capital Income Builder	CAIBX	0.67	84,741
PIMCO Total Return	PTTRX	0.69	79,595
Income Fund of America	AMECX	0.95	76,447
Franklin Income Series	FKINX	0.73	74,216
MetWest Total Return Bond	MWTRX	0.50	69,241
American Balanced	ABALX	0.75	62,681
Average		0.66	

Source: Simfund
Note: bps = basis points

Table 5: Expense Ratios of the 10 Largest ETFs

Fund	Ticker	Exp Ratio (bps)	AUM ($M)
SPDR S&P 500 ETF	SPY	0.09	182,039
iShares Core S&P 500 ETF	IVV	0.07	70,259
iShares MSCI EAFE ETF	EFA	0.33	60,154
Vanguard Total Stock Mkt Index	VTI	0.05	57,434
PowerShares QQQ	QQQ	0.20	42,360
Vanguard 500 Index	VOO	0.05	40,440
Vanguard Emrg Mkt Stk Idx	VWO	0.15	34,452
iShares Russell 1000 Growth ETF	IWF	0.20	31,590
iShares Core US Aggregate Bd ETF	AGG	0.07	30,566
Vanguard Dvlpd Mkts Idx	VEA	0.09	29,288
Average		0.13	

Source: Simfund
Note: bps = basis points

- **No sales loads or investment minimums:** To purchase an ETF, there are no sales loads as there may be when buying a mutual fund (but instead an investor may pay a commission as for ordinary stock trades). ETFs do not require a minimum investment amount, which is common with mutual funds.

- **Tax efficiency**: ETFs tend to distribute far fewer taxable gains than do mutual funds. When ETFs meet a redemption request by delivering the creation redemption basket, there is typically no sale of securities that could yield taxable gains. When mutual funds meet redemptions, they often need to sell their positions to raise cash, and by doing so foster taxable gains, which must be distributed to the shareholders at year-end.

- **Trading flexibility**: ETFs can be bought or sold throughout the day during market hours, and they exhibit the same trading qualities as a stock. ETFs can be sold short, bought on margin, and can be transacted via limit or stop orders. Additionally, options on ETFs can be bought or sold.

- **Transparency**: ETFs are required to report their holdings daily so investors have transparency. This dynamic mitigates the opportunity for the manager to deviate from the stated objective of the fund as well as enables investors to know exactly what they own.

Disadvantages:

- **Trading costs**: Along with bearing regular commissions charged by brokers, trading costs include bid/ask spreads as well as price differential vs the underlying or NAV (though this could be a cost or a benefit). The less liquid an ETF, the higher this cost can be, but transparency is fairly limited.

- **Costs rise with lower assets/liquidity:** While ETFs have lower expense ratios, the bid/ask spread ratio (spread/last price) on average is 35bps (arithmetic average; skewed by smaller less liquid funds), so it is important to factor in the trading costs of ETF investing as in some cases they make ETFs more expensive than mutual funds. The larger and more liquid and widely known ETFs have low bid/ask spread ratios, while smaller niche ones have high ratios (Tables 6-7).

Table 6: Highest ETF Bid Ask Spreads

Fund	Ticker	BAS Ratio	AUM ($M)
Zacks Earnings Small-Cap U.S.	ZSML	8.54%	1
Global X FTSE Andean 40 ETF	AND	6.45%	4
First Trust Australia AlphaDEX	FAUS	6.27%	3
Global X China Industrials ETF	CHII	5.92%	4
Global X China Materials ETF	CHIM	5.82%	1
Falah Russell-IdealRatings US	FIA	4.50%	1
Zacks Earnings Large-Cap U.S.	ZLRG	4.41%	1
iShares Currency Hedged MSCI A	HAUD	4.30%	10
Wisdomtree Strong Dollar US Eq	USSD	4.19%	1
WisdomTree BofA Merrill Lynch	HYZD	4.17%	13

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of April 2016 and the universe includes US ETFs only.

Table 7: Lowest ETF Bid Ask Spreads

Fund	Ticker	BAS Ratio	AUM ($M)
SPDR S&P500 ETF Trust	SPY	0.00%	187,808
SPDR Dow Jones Industrial Aver	DIA	0.01%	12,321
SPDR S&P MidCap 400 ETF Trust	MDY	0.01%	15,787
iShares 20+ Year Treasury Bond	TLT	0.01%	8,754
iShares iBoxx $ Investment Gra	LQD	0.01%	28,386
SPDR Gold Shares	GLD	0.01%	32,326
iShares S&P 500 Growth ETF	IVW	0.01%	13,882
iShares Russell 1000 ETF	IWB	0.01%	15,303
iShares Russell 2000 ETF	IWM	0.01%	25,787
iShares TIPS Bond ETF	TIP	0.01%	17,154

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of April 2016 and the universe includes US ETFs only.

- **Tracking error**: Deviation from a stated index's return by an ETF meant to track that index is known as tracking error. Tracking error can spur from expenses and security selection within the fund. Investors seeking an index return via an ETF may not receive that return predicated on the degree of tracking error.
- **Limited ability to produce alpha**: Given the passive nature of most ETFs plus some operating and management costs, investors are not likely to achieve excess returns by simply buying an ETF.

How are ETFs created and how do they work?

ETFs begin with an idea and a sponsor

An ETF originates with a sponsor that chooses an investment objective, which is typically to generate the returns of a stated benchmark index. Sponsors that elect to track or mimic the returns of an index do so by replicating the index or by selecting a representative sample. A sponsor would elect the sampling method if securities within the index are too numerous, difficult to obtain, or have ownership restrictions.

The sponsor of an actively managed ETF (seeks excess returns) would determine an investment objective and select securities and manage them in accordance with its investment objective, much like an actively managed mutual fund.

Establishing important relationships and acquiring SEC approval pre-launch

After an idea for an ETF has been formulated, there are several steps a firm must take before filing a prospectus. A firm would need to establish a Trust (e.g. iShares Trust) and fund advisor (e.g. BlackRock Fund Advisors) and have them be registered with the SEC. Then collectively with a registered distributor (e.g. BlackRock Investments LLC), form 40-APP would be filed with the SEC seeking exemptive relief from a number of provisions of law and rules promulgated thereunder.

Additionally, an ETF would need to select and contract with authorized participants to serve as the intermediary between the ETF and end users of its shares, an exchange to list with, custodians that often provide other services including administrative and transfer agent, among other things.

BlackRock is the largest distributor of ETFs, while State Street is the largest custodian, admin, and transfer agent by AUM. ICE/NYSE lists the most ETFs and the largest authorized participants are the bulge bracket brokerages, though a public list is not available (Tables 8-11).

Table 8: Top 10 Distributors

Firm	AUM ($M)
BlackRock Investments LLC/NY	810,551
Vanguard Marketing Corp	458,333
ALPS Portfolio Solutions Distr	389,310
State Street Global Markets LL	122,985
SEI Investments Distribution C	64,930
Foreside Fund Services LLC	52,891
Vanguard Group	52,706
Invesco Aim Distributors Inc	36,880
First Trust Portfolios LP	34,795
Amundi Investment Solutions/Fr	29,419

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of May 2016

Table 9: Top 10 Custodians

Firm	AUM ($M)
State Street Bank & Trust Co	1,336,759
JPMorgan Chase Bank	342,647
Bank of New York Mellon/The	231,184
State Street Custodial Services Ireland Ltd	208,915
Brown Brothers Harriman & Co	142,803
State Street Bank Luxembourg SCA	132,012
Mitsubishi UFJ Trust & Banking Corp	94,008
Societe Generale SA	46,274
Zuercher Kantonalbank	46,230
SGA Societe Generale Acceptance NV	42,782

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of May 2016

Table 10: Top 10 Administrators

Firm	AUM ($M)
State Street Bank & Trust Co	993,244
Vanguard Group Inc/The	515,708
State Street Fund Services Ireland Ltd	202,280
SSgA Funds Management Inc	182,641
Bank of New York Mellon/The	171,843
State Street Bank Luxembourg SCA	132,012
Mitsubishi UFJ Trust & Banking Corp	93,492
Societe Generale Securities Services	67,304
Zuercher Kantonalbank	46,230
Charles Schwab Investment Management Inc	44,681

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of May 2016

Table 11: Top 10 Exchanges by ETF Listings

Exchange	% of ETFs
NYSE Arca	28%
Xetra ETF	12%
London	10%
Toronto	9%
Euronext Paris	7%
NASDAQ GM	5%
SIX	5%
Korea Stock Exchange	4%
Tokyo	3%
Hong Kong	2%

Source: Bloomberg and BofA Merrill Lynch Global Research. Data is as of May 2016
Note: With respect to ETF AUM, NYSE's market share is roughly 60%.

Once the initial process is complete, the SEC has granted relief and permission to issue shares, and seed capital has been raised (often from the APs), the ETF may begin trading on exchanges and in the primary market via the creation redemption (CR) mechanism.

ETF liquidity is derived from two primary sources

After an ETF is launched, it derives its liquidity or tradability from two sources. The first source of liquidity is the AP(s) through the creation redemption mechanism. The degree of liquidity provided by the AP(s) is predicated on the liquidity of the underlying basket of securities. The basket can be exchanged for ETF shares through an AP; therefore, if it is easy to buy/sell the basket, it is just as easy to buy/sell the corresponding ETF. Thus an ETF will be at least as liquid as the underlying basket, which can be reduced during times of market stress.

The second source of liquidity is the exchange(s). The degree of liquidity provided by the exchanges is predicated on the number of buyers and sellers including market makers and the ability for them to match at low bid/ask spreads.

The creation redemption process has multiple steps

The creation redemption (CR) process, also known as the primary market for ETF shares, involves multiple steps and begins on T-1 or the day prior to which the CR order is placed by an AP. At the end of each business day, it is the responsibility of the ETF's manager to release a portfolio composition file (PCF), which details a list of securities and their weights which constitutes the ETF's CR basket or Fund Deposit.

The CR basket mirrors the ETF's portfolio or contains a representative sample of the portfolio. The CR basket is what needs to be deposited with the ETF in order for shares to be created or is what is delivered from the ETF when shares are redeemed.

The PCF is relayed to the ETF's agent or the fund's custodian, and then submitted to the National Securities Clearing Corporation (NSCC) or the clearing house responsible for guaranteeing settlement to check for errors. If accepted, the PCF is made available to Authorized Participants.

Authorized Participants (APs) are large financial institutions, members of the NSCC and Depository Trust Company (DTC) that enter into agreements with distributors to create and redeem ETF shares in large blocks known as creation units which are typically 50,000–100,000 shares. APs are the only entities that can directly request creation and redemptions of ETF shares, which may only be created and redeemed in units.

Throughout the day, APs accumulate creation and redemption orders based on market demand from their clients. However, like the primary market in mutual funds, the ETF primary market transacts only once per day at NAV (typically 4pm for equity ETFs), at which time the AP submits its orders to the distributor who notifies the agent who delivers the orders or instructions to NSCC.

The instructions identify the AP involved, the number of creation redemption units and any necessary cash amount. CR baskets often have cash components to account for accumulated dividends and accrued fund expenses as of the market close on T as well as to ensure equality between the ETF NAV and the CR basket.

After receiving CR orders, the NSCC validates and checks the orders, then distributes a file with accepted CR instructions to the ETF agent and the AP. The instructions serve as the contract for the CR activity. The transaction fee owed by the AP to the ETF for the order is then processed through the NSCC and the order is solidified.

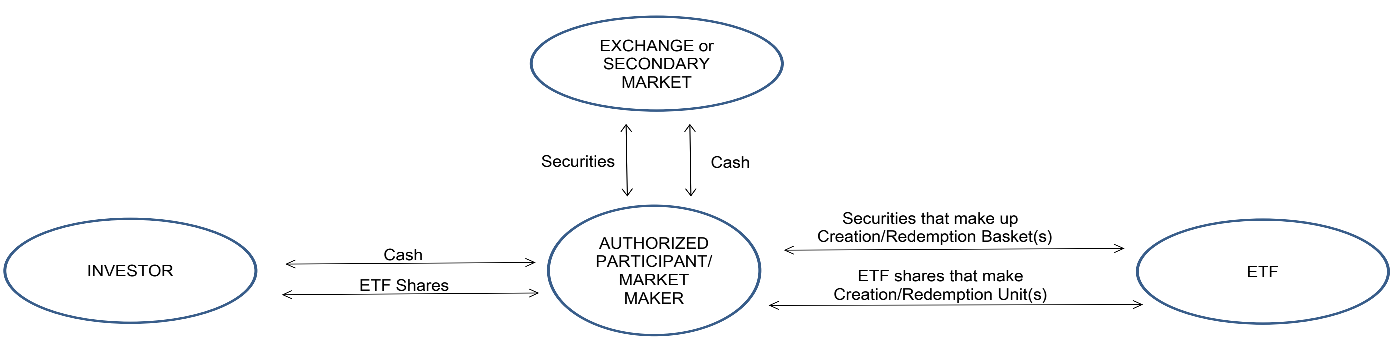
The NSCC provides insurance to the ETF if an AP defaults after agreeing to create or redeem, that is if the AP fails to deliver securities or shares, the NSCC will make the ETF whole.

Transaction fees charged by the ETF are generally small and cover and costs to the ETF in the creation/redemption of units. For example, the creation fee for SPY is $3,000 and can be scaled, i.e. that fee can pay for one unit or several units.

Exhibit 1 below is a simplified representation of the creation redemption process. An investor gives cash to the market maker which can also be an AP. The market maker takes the cash and buys the underlying securities of the ETF in the secondary market.

The market maker/AP then takes the securities which make up the specified creation basket and delivers that basket of securities to the ETF who in return delivers a creation unit or units depending upon the size of the deposit. The market maker then takes shares from the unit it receives and delivers them to its client(s) or the investor. The reverse would occur if the investor wanted to sell ETF shares.

Exhibit 1: The Creation/Redemption Process



Source: ETF Institute, ICI, and BofA Merrill Lynch Global Research

Primary market maintains supply/demand & keeps prices in check with NAVs

The CR process is employed when supply and demand are out of balance or when market makers see arbitrage opportunities with the ETF price and the price of its underlying holdings or its NAV.

Shares of an ETF may be created if a market maker gets an order to buy a large block of ETF shares while there are not enough asks on the other side of the trade. A market maker could still fill client orders by selling them the shares of the ETF (borrowed shares) and simultaneously buying the CR basket.

Effectively, the market maker is short the ETF shares and the client is long, so at the end of the day the market maker could exchange the basket for shares through an AP and cover its short position in the ETF shares. Thus new shares of the ETF would be created and classified as an inflow for that particular ETF.

A similar transaction could occur if a client sought to sell a large block of shares, except the market maker would be long the ETF and could trade in the ETF shares at the end of the day for the underlying securities, which would be an outflow.

Because ETF prices are market determined, there are differences between an ETF's NAV and its market price. However, the CR mechanism allows market participants to arbitrage any differences and therefore keep prices in check with their NAVs. Closed-end funds often can trade at large discounts or premiums to their NAVs because there is no creation redemption mechanism to keep prices in check.

For example, a market participant or market maker notices an ETF trading at a premium to NAV; it then shorts the ETF shares and simultaneously buys the underlying securities. At the end of the day the market maker could deliver the securities to an AP in exchange for newly created ETF shares which would be used to cover his/her short position.

The shares the market maker receives will be priced at NAV, and because the proceeds of the short sale were greater than NAV, when the short position is closed, a spread will have been captured. The creation of ETF shares by the arbitrageur increases supply which drives the ETF per share price down toward NAV.

The opposite would occur if an ETF was trading at a discount to NAV. The market maker would buy the ETF shares and short the underlying securities. At the end of the day the market maker would deliver the shares to an AP and get the securities in return which would be used to cover the short positions and capture a spread.

The redemption of ETF shares by the arbitrageur decreases supply, which drives the ETF per share price up toward NAV. This practice keeps ETF prices in check and minimizes tracking error.

Arbitrage opportunities rarely exist in highly liquid US securities, and for it to make sense, the spread would need to be above the costs associated with creating or redeeming including taxes. There are generally more arbitrage opportunities in international and less liquid/fixed income ETFs.

The majority of ETF transactions occur in the secondary market

The vast majority of transactions occur in the secondary market remote from the CR process and therefore the mechanics require little explanation as they are similar to any stock transaction, meaning they trade and settle similar to a stock.

According to a study conducted by the Investment Company Institute (ICI) that looked at ETF trading activity in 2013 and 2014, primary market trading accounted for roughly 10% of all trading versus 90% secondary. Equity ETF primary market trading relative to total trading was 9% and bonds were 19%.

The reason why investors use the primary market more for bond ETFs is because many bond ETFs lack scale relative to older equity ETFs so investors prefer to create shares rather than buy a big block on an exchange which could distort price.

The study also found that a majority of ETFs have no primary market activity whatsoever on a given day. For equity and bond ETFs, roughly 80-90% of the days had no primary market activity.

Looking at the volume handled by brokers or market makers in the secondary market for the 10 most heavily traded ETFs over the last year, Knight Capital ranks first in terms of market share (Table 12).

Table 12: Top 10 Market Makers in Top 10 ETFs

Firm	Market Share
Knight Capital	16%
Merrill Lynch	15%
UBS	11%
Credit Suisse	11%
Deutsche Bank	10%
Goldman Sachs	9%
JP Morgan	8%
Citi	7%
Morgan Stanley	6%
Barclays	4%

Source: Bloomberg and BofA Merrill Lynch Global Research
Note: Market share was determined by taking each firm's handled volume if it ranked in the top 10 for each of the following ETFs; SPY, IWM, QQQ, EEM, EFA, XLE, GDX, TLT, DIA, & XLF over the last 12 months ending 5/17/16 divided by the total volume of the top 10 firms for each of the top 10 ETFs. To make the list a firm would have to have been in the top 10 for at least one of the top ETFs.

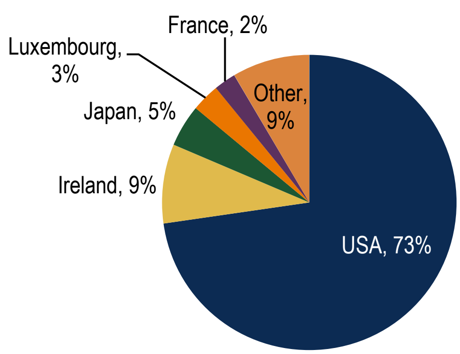
Sizing up the global ETF market and participants

The US and equity account for the majority of ETF assets

At the end of 2015, global ETF assets amounted to roughly $3T. The majority of ETF assets are US domiciled equity products. Consequently, the most popular ETF benchmark is the S&P 500 index.

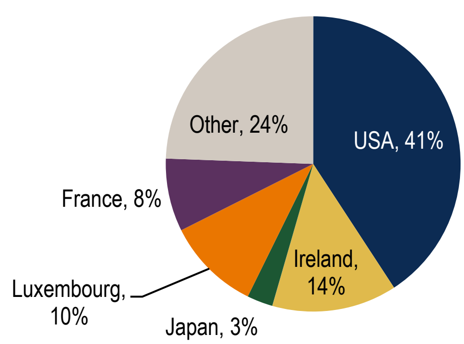
In terms of the number of ETFs, the US and equity still rank at the top, though their share is relatively less than their market share in terms of assets (Charts 3-8).

Chart 3: ETF Asset Market Share by Country of Domicile



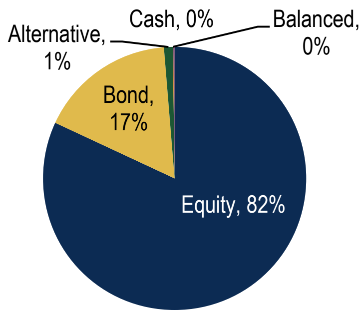
Source: EPFR Global. Data is as of 12/31/15.

Chart 4: ETF Fund Market Share by Country of Domicile



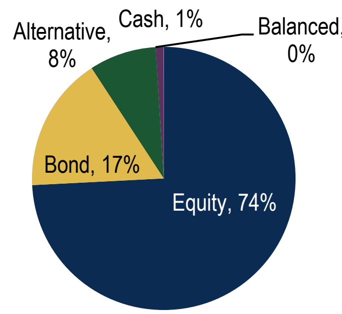
Source: EPFR Global. Data is as of 12/31/15.

Chart 5: Global ETF Asset Market Share by Asset Class



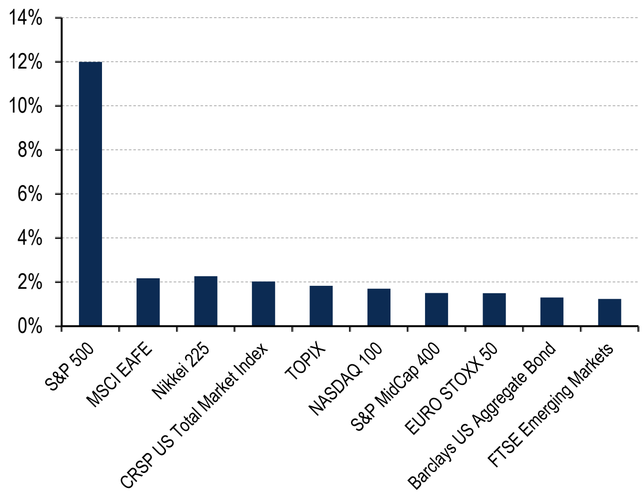
Source: EPFR Global. Data is as of 12/31/15.

Chart 6: Global ETF Fund Market Share by Asset Class



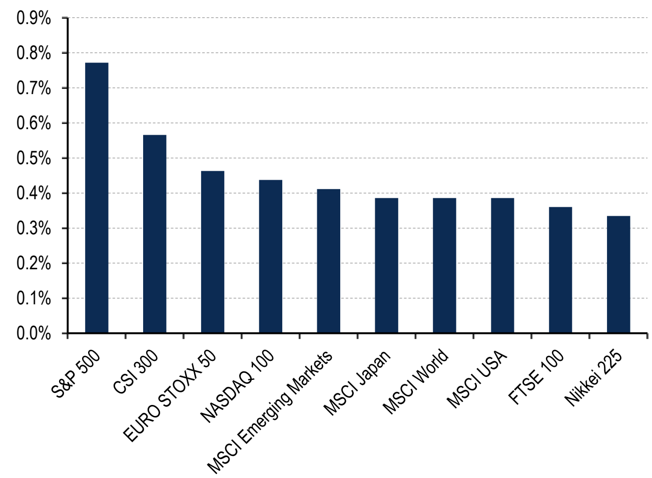
Source: EPFR Global. Data is as of 12/31/15.

Chart 7: Top 10 ETF Benchmarks by Assets



Source: EPFR Global. Data is as of 12/31/15.

Chart 8: Top 10 ETF Benchmarks by # of funds



Source: EPFR Global. Data is as of 12/31/15.

ETF assets are skewed to the top firms; flows also tend to be concentrated

Globally, there are roughly 5,000 ETFs offered by some 250 different managers at the end of 2015. Despite this fragmentation, the ETF market is concentrated, with the top five firms (~2% of total firms) accounting for 75% of ETF assets and the top 5 ETFs (0.1% of all ETFs) accounting for 14% of assets (Tables 14-15).

A main driver of concentration is the competitive advantage of scale and liquidity, i.e. once a particular index ETF like SPY has reached such scale that its expense ratio is the lowest, it is virtually impossible for other S&P 500 ETFs to launch and compete on price and liquidity. This differs in the active MF world where performance matters and smaller funds can take market share from larger funds through good performance and distribution.

Table 13: Top 5 Firms by Global Assets

Firm	AUM ($M)	% of Total
BlackRock	1,075,567	37%
Vanguard	504,996	17%
State Street	428,525	15%
Invesco	99,396	3%
Deutsche Bank	84,398	3%
Total	2,192,882	75%

Source: Simfund. Data is as of 12/31/15.

Table 14: Top 5 ETFs by Assets

ETF	AUM ($M)	% of Total
SPDR S&P 500	182,039	6%
iShares Core S&P 500	70,259	2%
iShares MSCI EAFE	60,154	2%
Vanguard Tot Stock Mkt	57,434	2%
PowerShares QQQ	42,360	1%
Total	412,246	14%

Source: Simfund. Data is as of 12/31/15.

Flows into ETFs also tend to be heavily concentrated. Forty three firms have net inflows of at least $1M this year through April, according to Simfund. Total inflows for these firms equal $61B and the top three firms account for 81% of those inflows. Twenty six firms have ETF outflows of at least $1M this year through April which amount to -$17B. The bottom three firms account for 72% of those outflows (Tables 15-16).

Table 15: Top Inflow Firms YTD

Firm	Inflows	% of Total
Vanguard	22,078	36%
BlackRock	21,435	35%
State Street	5,633	9%
Total		81%

Source: Simfund. Note: Data is through 4/30/16.

Table 16: Top Outflow Firms YTD

Firm	Outflows	% of Total
WisdomTree	-6,613	42%
First Trust	-3,327	21%
Deutsche Bank	-1,425	9%
Total		72%

Source: Simfund. Note: Data is through 4/30/16.

Attractive growth being driven by innovation and adoption

ETFs began as simple index tracking mechanisms

The first U.S. ETF was the SPDR S&P 500 ETF (SPY), which tracks the returns of the S&P 500. SPY is one of the most heavily traded securities and had $180B in assets at the end of 2015. Since SPY's inception in 1993, a vast array of index ETFs have been introduced to the market.

The ETF vehicle did not deliver an actively managed strategy until 2008. However, the ETF market remains overwhelmingly passive, as actively managed ETFs make up roughly 1% of the ETF market (as of Dec 2015). Tables 17-18 below illustrate the 10 largest passive and active ETFs.

Table 17: Largest Passive ETFs

Fund	AUM ($M)
SPDR S&P 500	182,039
iShares Core S&P 500	70,259
iShares MSCI EAFE	60,154
Vanguard Total Stock Market	57,434
PowerShares QQQ	42,734
Vanguard S&P 500	40,440
Vanguard FTSE Emerging Markets	34,452
iShares Russell 1000 Growth	31,590
iShares Core US Aggregate Bond	30,566
Vanguard FTSE Developed Markets	29,288

Source: EPFR Global
Note: AUM is as of 12/31/15. AUMs may differ slightly from other tables in this report depending upon data provider.

Table 18: Largest Active ETFs

Fund	AUM ($M)
PIMCO Enhanced Short Maturity Exchange-Traded Fund	4,104
PIMCO Euro Short Maturity Source UCITS	2,745
PIMCO Total Return	2,607
iShares Short Maturity Bond	2,046
SPDR Doubleline Total Return Tactical	1,781
PIMCO US Dollar Short Maturity Source UCITS	1,348
First Trust North American Energy Infrastructure Fund	890
SPDR Blackstone/GSO Senior Loan	783
SPDR S&P 400 US Mid Cap UCITS	747
Guggenheim Enhanced Short Duration	623

Source: EPFR Global
Note: AUM is as of 12/31/15

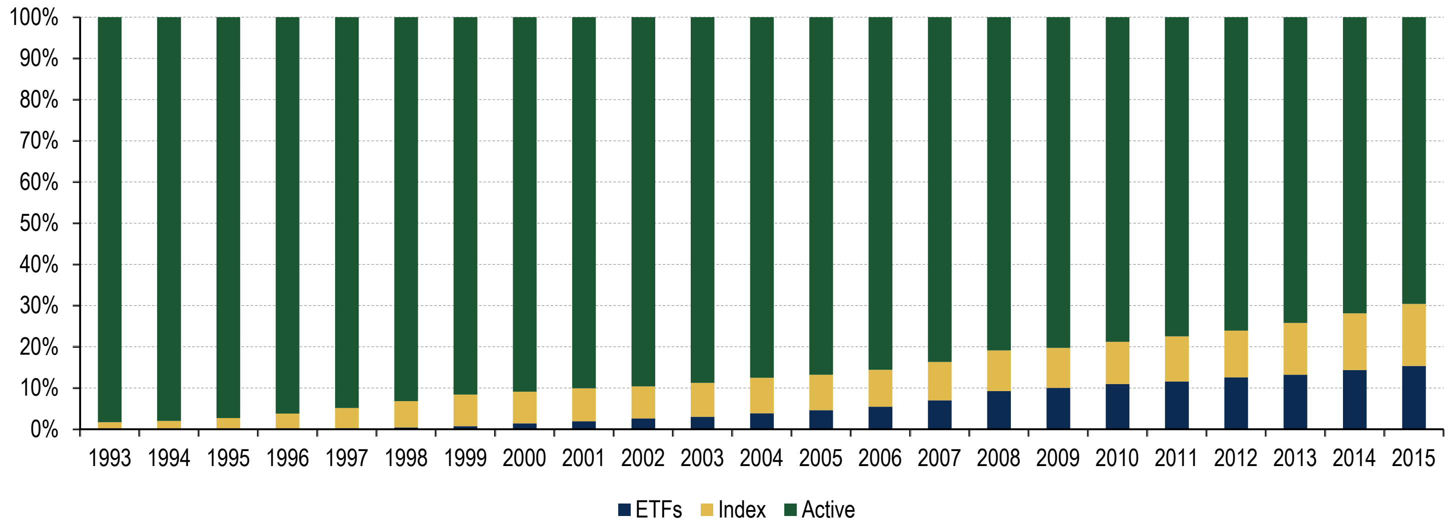
ETF Growth has been unparalleled

The growth in worldwide ETF assets has been impressive. Looking at asset growth over the trailing 1-, 3-, 5-, and 10-year periods, ETFs have sported a CAGR of 8%, 16%, 16%, and 22% vs -2%, 8%, 7%, and 6% for non-ETF funds respectively, and at the end of 2015 had roughly 8% global market share and 15% market share in the US long term fund market according to Simfund (Chart 9).

Flows are even more indicative of ETF growth, as asset growth encompasses market returns, which can be different, predicated on asset mix. ETFs in the US have had inflows and higher annualized organic growth than index funds and active mutual funds every year since 1995.

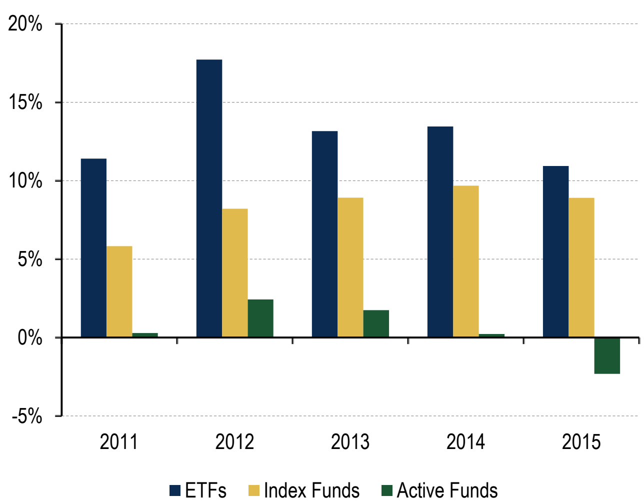
After eclipsing the $1T mark in the US in 2010, ETFs' relative growth prowess has not slowed, with a 13% average aog vs 8% for index funds and zero for active mutual funds. In addition to asset growth, the number of ETFs entering the market is greater than the number of new mutual funds (Charts 10-11).

Chart 9: US Long Term Fund Market Share by Vehicle



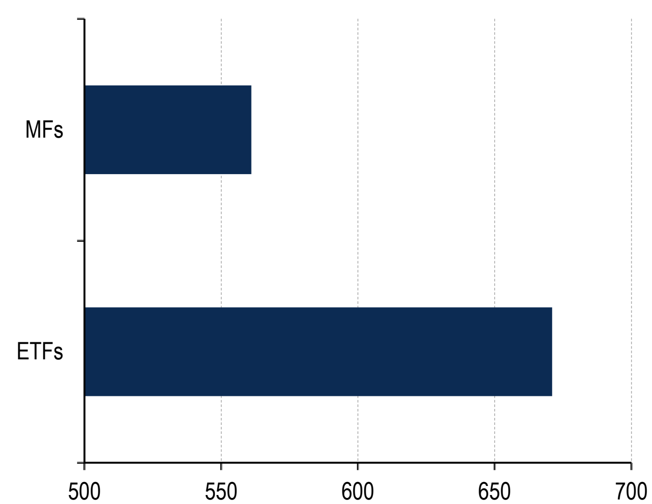
Source: Simfund and BofA Merrill Lynch Global Research

Chart 10: Annualized Organic Growth by Fund Type



Source: Simfund and BofA Merrill Lynch Global Research

Chart 11: Net New Funds Since the End of 2010 in the US

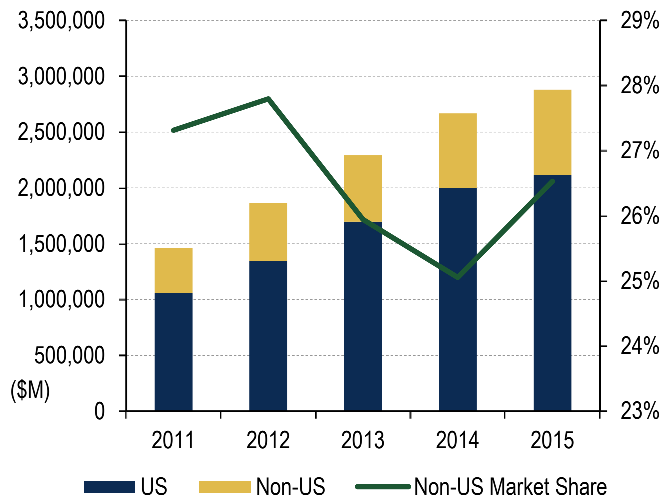


Source: ICI and BofA Merrill Lynch Global Research

Growth has been fairly even between US & non-US over the last five years

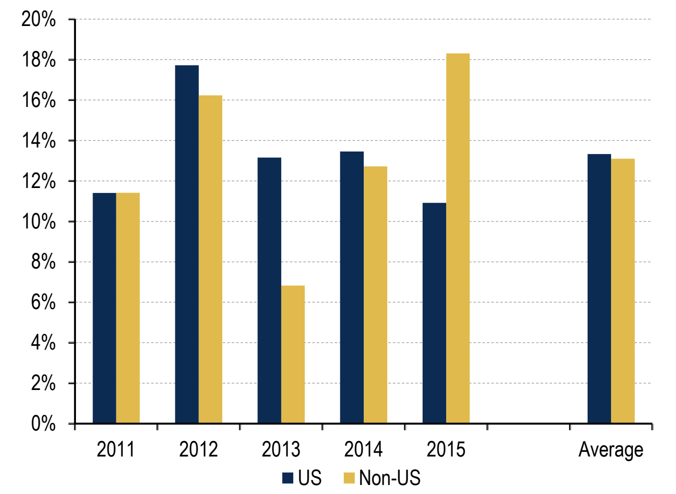
With regards to domicile, the US controls more than 70% of ETF assets. However, growth rates have been fairly equal between the US and non US; each averaging 13% annualized organic growth over the last five years (Charts 12-13).

Chart 12: ETFs Assets and Market Share by Domicile



Source: Simfund

Chart 13: Annualized Organic Growth by Domicile

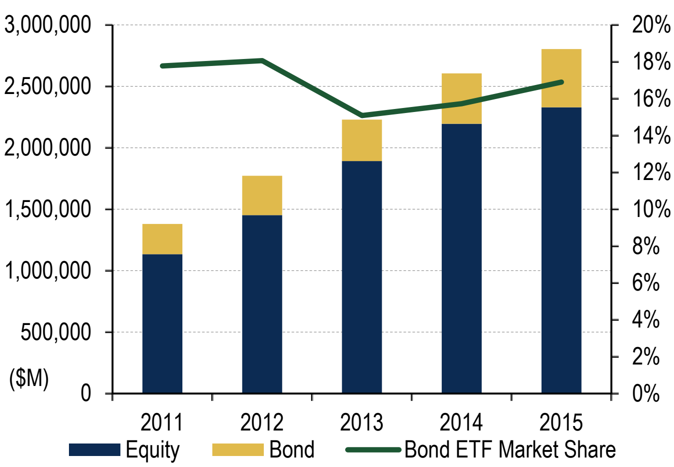


Source: Simfund

Bond ETFs have been gaining share and are roughly 20% of ETF assets

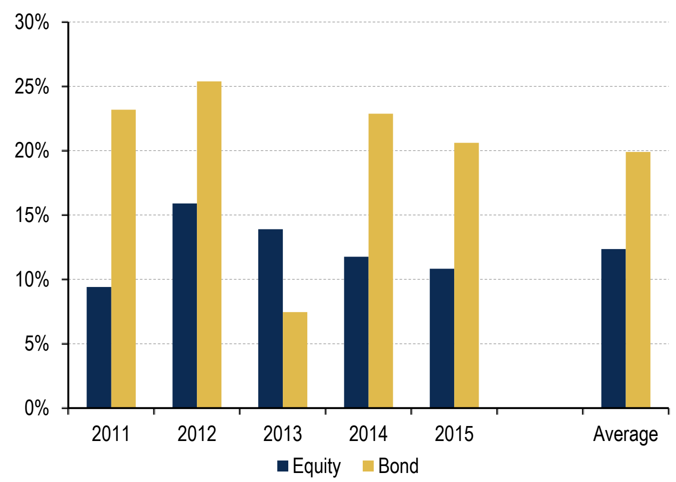
Bond ETFs were introduced in 2002 and now have roughly 20% market share. Bond ETF growth has been relatively strong at an average 20% aog over the last five years vs only 12% for equity ETFs. The largest fixed income ETF manager is BlackRock with dominating positions in both the US and outside the US. The largest equity ETF manager is also BlackRock (Charts 14-15 and Tables 20-23).

Chart 14: ETFs Assets and Market Share by Asset Class



Source: Simfund

Chart 15: Annualized Organic Growth by Asset Class



Source: Simfund

Table 19: Top 5 US Bond ETF Managers

Manager	AUM ($M)
BlackRock	171,618
Vanguard	82,987
State Street	31,342
PIMCO	10,902
Invesco	9,756

Source: EPFR Global
Note: AUM is as of 12/31/15. AUM relates to domicile.

Table 20: Top 5 Non-US Bond ETF Managers

Manager	AUM ($M)
BlackRock	83,118
State Street	19,030
Lyxor	7,435
PIMCO	6,064
Amundi	4,547

Source: EPFR Global
Note: AUM is as of 12/31/15. AUM relates to domicile.

Table 21: Top 5 US Equity ETF Managers

Manager	AUM ($M)
BlackRock	637,569
Vanguard	400,272
State Street	355,390
Invesco	81,321
Charles Schwab	35,283

Source: EPFR Global
Note: AUM is as of 12/31/15. AUM relates to domicile.

Table 22: Top 5 Non-US Equity ETF Managers

Manager	AUM ($M)
BlackRock	188,670
Nomura	62,296
State Street	55,417
Lyxor	39,332
Nikko	25,537

Source: EPFR Global
Note: AUM is as of 12/31/15. AUM relates to domicile.

There are many users and a growing number of uses for ETFs

Mutual funds are generally used for one thing: long term investing. ETFs, however, can be used to accomplish many different objectives in addition to long term investing. Consequently, ETFs attract a different cohort of market participants than mutual funds. ETFs are and can be used for long term investing, tactical trading, hedging, and equitizing cash, among other things.

Just like any mutual fund, bond, or stock, an ETF can be used to take a long or short directional view on a particular asset class, factor, geography, etc. This sort of directional investing is typically employed by retail investors and investment firms wishing to gain exposure for long periods of time at relatively low costs. In addition, ETFs are used for tactical trading exposures, either long or short, for short or medium term durations.

Since ETFs are tradable, they have also served as a viable alternative to futures for traders and money managers, either to hedge or take a view. ETFs offer investors the ability to move in and out of different exposures swiftly. Futures contracts were the predominant tool for traders and money managers alike to accomplish this sort of goal prior to the emergence of ETFs. Since ETFs can be bought, shorted, and have option contracts, investors can use ETFs to hedge away undesired exposures.

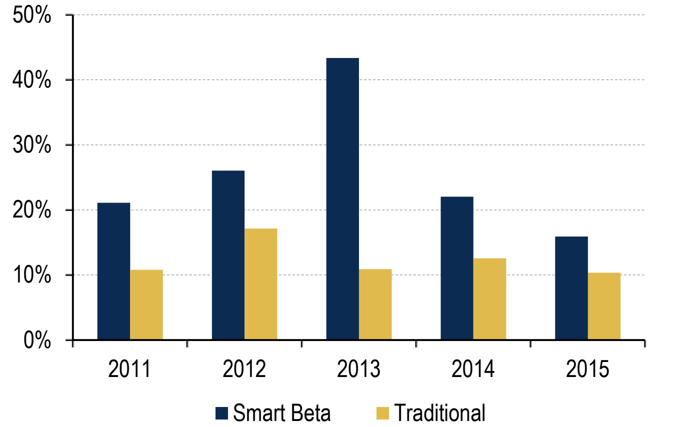
Additionally, ETFs can be used to equitize cash, particularly for money managers. To mitigate the effect of cash drag on a portfolio's return, managers would historically neutralize their cash positions by purchasing futures (likely on the S&P or whatever their benchmark was) to offset the ill effects of holding cash in a portfolio. Now, some money managers are turning to ETFs to do this same thing or take their idle cash and buy an ETF to generate additional returns in an up market with the knowledge that it can generally be sold quickly if cash needs to be raised for redemption requests.

Smart beta ETFs have soared in popularity

Smart beta ETFs have grown rapidly and offer investors easily accessible exposure to different risk factors. The smart beta ETFs allow investors to seek alpha in ways that were not offered in the past.

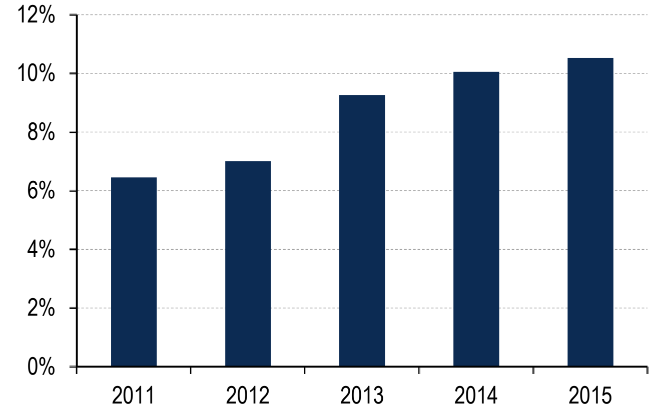
A smart beta ETF is an ETF with a benchmark or index not weighted by market capitalization. Popular alternative weighting and selection practices include equal weight, minimum or low volatility, maximum diversity, fundamental weighting, and specific sector focus among several others. Smart beta ETFs have grown faster and have gained market share from traditional ETFs over the last five years (Charts 16-17).

Chart 16: ETF Annualized Organic Growth – Traditional & Smart Beta



Source: Simfund

Chart 17: Smart Beta ETF Market Share



Source: Simfund

The smart beta market is even more concentrated than the overall ETF market. A resounding 96% of the market is controlled by the top 10 firms, and 10 products make up close to half the entire market which was about $225B in the US at the end of 2015 according to Simfund. WisdomTree is the largest participant in smart beta (Tables 23-24).

Table 23: Top 10 Smart Beta Firms

Firm	AUM ($M)	Market Share
WisdomTree Asset Management	50,426	23%
BlackRock	42,026	19%
INVESCO Ltd	37,128	17%
State Street Corp	29,938	13%
First Trust Advisors L.P.	27,743	12%
Guggenheim Partners	18,139	8%
Charles Schwab	3,129	1%
Northern Trust	3,056	1%
Yorkville ETF Holdings LLC	1,655	1%
ProFunds Advisors	1,586	1%
Total	214,827	96%

Source: Simfund

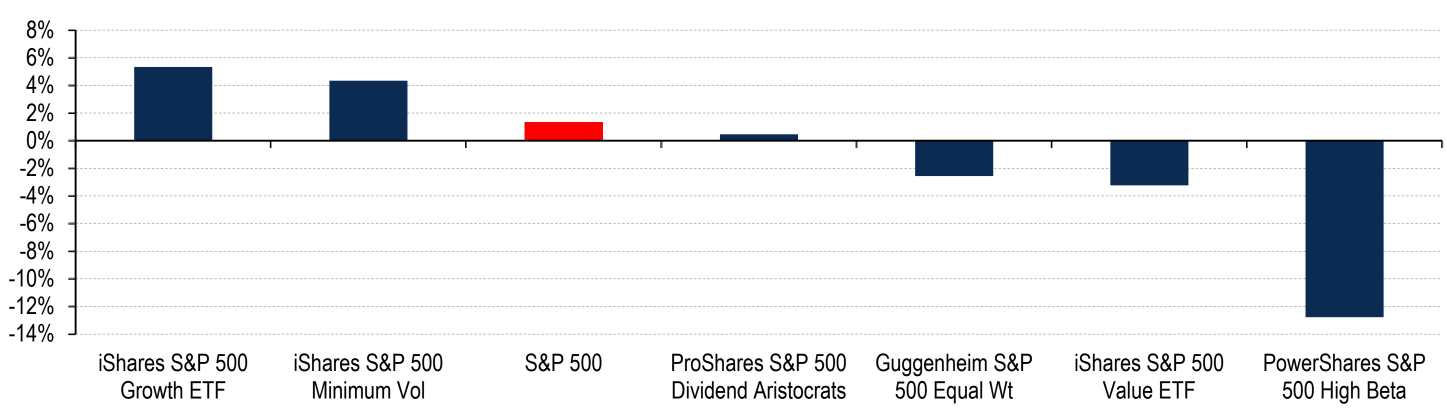
Table 24: Top 10 Smart Beta ETFs

Fund	Ticker	AUM ($M)
WisdomTree Europe Hedge Equity	HEDJ	16,941
WisdomTree Japan Hdgd Equity	DXJ	14,905
iShares Select Dividend ETF	DVY	13,265
SPDR S&P Dividend ETF	SDY	12,828
Guggenheim S&P 500 Equal Weight Idx	RSP	9,614
iShares MSCI USA Mini Volty ETF	USMV	7,180
PowerShares S&P 500 Low Volatility	SPLV	5,715
iShares MSCI EAFE Mini Volty ETF	EFAV	4,444
iShares Core High Dividend ETF	HDV	4,258
PowerShares FTSE RAFI US 1000	PRF	4,108
Total		93,258
% of Market		42%

Source: Simfund

The appeal of smart beta is that investors can produce alpha (or negative alpha) by selecting securities from an index but weight or choose them according to factors other than market capitalization. Looking at six different smart beta ETFs with the S&P 500 as their benchmark, it is clear that returns can differ materially by employing smart beta or factor based approaches (Chart 18).

Chart 18: Total Returns in 2015 of ETFs that invest in S&P 500 Stocks



Source: Bloomberg and BofA Merrill Lynch Global Research

Leveraged and inverse ETFs are a small sub-set and include added risks

Leveraged ETFs seek multiples of the return to a particular index where inverse ETFs seek the opposite return of a particular index and combined assets of these products makes up roughly 2% of the ETF market. Like ordinary ETFs, these ETFs track particular broad indices while some also track a more granular benchmark. These ETFs employ strategies that utilize swaps, futures, and other derivative instruments.

Tracking error is high in these sort of funds given they reset daily to try and achieve their objective on a daily basis and the daily differences can add up over time to make a large difference between the ETF's return and its stated index. Additionally, fees are relatively high in these funds which also increase tracking error.

Eaton Vance's ETMF is the latest innovation in ETFs

In 2014, Eaton Vance was granted exemptive relief from the SEC to begin offering exchange traded managed funds (ETMFs) under the brand NextShares. ETMFs are actively managed ETFs; however, they are non-transparent (delayed disclosure), distinguishing them from active ETFs.

Another important distinction is that the price of these ETMFs equals the fund's NAV, plus or minus a trading cost (premium/discount) determined in the market when the order executes. ETMFs have the ability to offer the advantages of ETFs while keeping the manager's investment strategy protected.

At the end of February 2016, 12 investment advisers including Ivy Funds, Gabelli Funds, Pioneer, and Hartford Funds, among others, indicated their intent to offer ETMFs by filing with the SEC. With only a few products currently out there, a relatively negligible amount of AUM, and not adopted by many distribution platforms, it is still to be determined whether ETMFs will be an industry fad or an integral part of the ETF ecosystem, though the unique structure has been a hurdle for demand.

Importantly, other non-transparent ETF offerings have been filed with the SEC by firms including BlackRock, Precidian, State Street, and T. Rowe Price, but have yet to receive approval.

The primary risks of ETFs

We see a few primary risks with ETFs, including certain product risks, perceived liquidity risk, and market structure / market maker risks in times of stress. Some of these risks are similar to other products that are traded on exchanges, but they are still risks that should be understood. In addition, there are typical financial product risks with ETFs.

Levered ETFs

Levered ETFs are a sub-sector of the industry, with roughly $55B in assets or <2% of the industry. While relatively small, given the leverage in the products, tracking error can be relatively high and liquidity low, particularly in times of stress.

Perceived liquidity

Unlike mutual funds that are generally used by buy and hold investors, with short term penalties for trading in and out of funds, ETFs are in many cases used for short term needs. Given this quality, there is a perception of healthy liquidity in ETFs, which is typically the case. However, in times of market stress, the liquidity of the ETF can drop to be equal to the liquidity of the underlying assets, which in times of stress could be significantly lower or illiquid. As an example, in "normal" environments, the liquidity in the HYG can be roughly 5x that of the underlying HY assets (based on Bloomberg and Trace data), but in stress times, both could become less liquid or even illiquid.

Market structure

The equity market structure and increasingly the fixed income market structure is becoming less secure, as a focus over the years on lower costs, increased speed, and limiting risk taking at dealers more recently, has been prioritized ahead of market stability. While there have been some benefits from market structure shifts over time, given the risk/reward trade off, the risks are starting to rise, particularly given how important the pricing of underlying securities has become with a rising passive asset base relying on the market structure to function properly.

If regulation and market structure are moving at different speeds, which they have been, then more market structure issues are likely ahead (similar to the Flash Crash, October 2014 Treasury Issues, and August 24 Equity Market Issues, to name a few), which will likely create challenges at times for passive products pricing off the underlying asset price (see link to exchange primer and regulatory primer).

Market makers

Market makers provide the liquidity in the markets and given the ETF vs underlying asset arbitrage, market makers will take on ETFs and/or the underlying assets and hedge their exposure. In times of stress, market makers could have challenges hedging their exposures. In addition, some of the newer types of market makers that do not have a duty to provide liquidity could pull back (this is no different for the market overall), which could reduce liquidity further at times when it is most needed. However, exchanges are becoming innovative in trying to incent liquidity in times of big market moves.

In order to minimize these last two risks, market participants and regulators need to decide how valuable liquidity is when it is most needed and create a market structure and pricing mechanism to create this trading ecosystem versus the current construct.

Conclusion

We view the growth outlook for ETFs as attractive, given the product benefits, rate of adoption by users/channels, product innovation, regulatory changes, and new financial uses. However, we also think users need to understand the risks, particularly liquidity levels in all market backdrops, and the importance of market structure/market makers as the passive market continues to grow.

Disclosures

Important Disclosures

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ETFs are redeemable only in Creation Unit size through an Authorized Participant and may not be individually redeemed. ETFs also are redeemable on an "in-kind" basis.
The mechanism for creation and redemption of ETFs may be disrupted due to market conditions or otherwise.
The public trading price of a redeemable lot of an ETF may be different from its net asset value, and an ETF could trade at a premium or discount to its net asset value.
Investors in international securities assume currency risk.
Futures and options are not appropriate for all investors. Such securities may expire worthless. Before investing in futures or options, clients must receive the appropriate risk disclosure documents.
Commodity ETF's are subject to risks associated with concentrating their investments in hard assets (e.g., gold or oil) and can be significantly affected by events relating to these assets, including political and economic developments, inflation, and other factors.
ETFs included in this ETF Primer may not be marketed or sold in all jurisdictions.
U.S. listed, open-end ETFs must be offered under and sold only pursuant to a prospectus. U.S. listed ETFs may not be marketed or sold in a number of non-U.S. jurisdictions and may not be suitable for all investors. Clients should consider the investment objectives, risks, charges and expenses of the ETF carefully before investing. The prospectus for the ETF contains this and other information about the ETF. Clients may obtain prospectuses for the U.S. listed ETFs mentioned in this ETF Primer from the ETF distributor, their Merrill Lynch Sales Representative or the fund manager websites. The distributor for the iShares ETFs is BlackRock Investments LLC/NY, for the Global X ETFs is SEI Investments Distribution Co., for the PowerShares FTSE RAFI US 1000 ETF is Invesco Aim Distributors, for the SPDR DJIA, SPDR S&P 500, SPDR S&P Midcap 400, other Powershares and United States Oil ETFs is Alps Distributors, Inc., for the other SPDR ETFs is State Street Global Markets LLC, for the Vanguard FTSE Developed Markets ETF is Vanguard Group, for the other Vanguard ETFs is Vanguard Marketing Corporation, for the Zacks ETF is The Bank of New York Mellon, for the First Trust ETFs is First Trust Portfolios LP, for the WisdomTree ETFs is Foreside Fund Services LLC, for the Guggenheim ETFs is Guggenheim Funds Distributors, for the JPM-Alerian ETN is JP Morgan Securities Inc., for the PIMCO Total Return ETF is Pacific Investment Management, for the other PIMCO ETFs is PIMCO Investments LLC, for the Falah Russell ETF is Quasar Distributors, and for the iPATH S&P 500 VIX ETN is Barclays Capital Inc. The prospectuses contain more complete and important information about the ETFs mentioned in this ETF Primer and should be read carefully before investing.
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