



# Investing In Exchange Traded Funds<sup>1</sup>

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*This article provides an overview of Exchange Traded Funds (ETFs) and discusses their features including creation, redemption, and trading mechanism. The article further describes the 10 broader categories and 96 sub-categories of ETFs, net assets and annual issuances of ETFs and merits and demerits of investing in ETFs. As a passive but diversified investment strategy, ETFs appear to be better investment vehicles in terms of taxes, lower management fees and expenses, and portfolio risk management. The strategic investment decision in ETFs however depends on investors' objectives, attitudes towards risks, and time horizon of investment because investing in ETFs could have diverge implications especially during the formation and distribution phases of retirement or pension funds.*

**Keywords:** Exchange Traded Funds; Investments

## 1. Introduction

Exchange Traded Funds (ETFs) are essentially hybrid funds as ETFs contain certain feature of both open-end mutual funds (e.g. unlimited creation of shares) and closed-end funds (e.g. unlike mutual fund where there is a single price per day, ETF has intraday prices). ETFs are traded in a stock exchange at market-determined prices and allow investors to buy or sell shares based on the performance of an entire portfolio. ETFs are designed to replicate the holdings, performance, and yield of their underlying portfolio or index. Investors can trade ETFs through their brokerage accounts as they trade stocks of any public company.

The United States of America (USA) has the largest ETF markets in the world. According to the Investment Company Institute (ICI), between 1993 and 2013, the number of ETFs in USA increased from 1 to 1294 and their net assets increased from \$454 million to approximately \$1.7 trillion (which is equivalent to 10% of total assets managed by investment companies at 2013 year-end). Assets under management of US-based ETFs in 2013 constitute 72% of the \$2.3 trillion ETF assets worldwide. The other constituents of

ETF assets are Europe (17%), Africa and Asia Pacific (8%), and other Americas (3%).<sup>2</sup>

Market makers, broker-dealers, and specialists are the major players in the creation and redemption of ETFs; however, many individual investors hold ETFs for risk-control reasons, diversification, hedging, and short-term trading. Elton, Gruber, Comer, & Li (2002) document that individual investors, broker dealers, and institutions with less than \$100 million in assets are the predominant holders of SPDRs, the first created ETF in its history. Anson et al. (2011) documents that ETFs are better for long-term portfolio management, long or short arbitrage strategies, and short-term trading and asset allocation.

This article focuses on the wide range of investing opportunities in and with ETFs. It also describes the creation, redemptions, and trading methods of ETFs. Using most recent factual data from Morningstar Principia & ICI, the paper depicts various features and underlying dynamics of broader categories of ETFs, pros and cons of investing in ETFs and their impacts on market liquidity and volatility.

## 2. Creation, Redemption, and Trading Mechanism of ETFs

ETFs are created by authorized participants (e.g. financial institutions, and large institutional investors such as market makers or broker-dealers), in block-sized units of shares (usually a multiple of 50,000 but may sort between 25,000 and 500,000 shares) known as 'creation units or baskets'.<sup>3</sup> Creation units require a deposit with the trustee for a specified number of shares of a portfolio of securities that closely approximate the composition of the specific index that an ETF tracks. An ETF holds and invests its asset proportionately to every single security of its tracking or target index.<sup>4</sup> The creation units publicly disclose the names and quantities of securities and other assets (including cash, if any) that they hold on a daily basis. These creation units are one mechanism that helps to keep an ETF trading on the exchange at a price extremely close to the Net Asset Value (NAV) of its underlying portfolio. The authorized participants can either hold a creation unit or sell it (partially or fully) to investors on an exchange where ETFs are traded. Similarly, block-sized units of ETF shares can be redeemed for a portfolio of securities approximating the index and a specified amount of cash known as 'redemption units or baskets'. Presumably the composition of redemption units should be similar to creation units. Thus, tracking errors between the ETFs and their corresponding indexes should be small.

The price of an ETF is determined by the interaction of supply and demand forces in the stock exchanges. Because an ETF is both created from the securities of its underlying portfolio and can be redeemed into the securities of an underlying portfolio, arbitrage opportunities would occur from price discrepancies between an ETF and the underlying portfolio (Gastineau, 2004a, Engle

and Sarkar, 2006). This suggests an ETF can be sold either at a discount or a premium from fair price (or NAV) of its underlying portfolio or creation unit. To reduce pricing discrepancies and to offer continuous market liquidity, an ETF is required to disseminate mark-to-market NAV of its underlying portfolio holdings intraday. This mark-to-mark NAV is also known as 'Indicative Optimized Portfolio Value' (IOPV) which is routinely updated in every 15 to 60 seconds.<sup>5</sup>

The objective of IOPV is to disclose the relationship between the fair value of a creation unit and the actual market price of an ETF. This procedure also ensures liquidity and low tracking error of ETFs. Historical data document that tracking errors of ETFs are less than 2%, in general. However, it can be as high as more than 10% (Anson et al., 2011). Tracking error can be highly correlated with the liquidity of an ETF and its underlying securities.<sup>6</sup>

Nevertheless if an ETF share is trading at a premium to its underlying creation unit's NAV or fair value, investors can sell the expensive ETF and buy the cheaper underlying securities of its portfolio or creation unit. This will increase the demand for and price of the underlying securities of an ETF. Similarly, if an ETF share is trading at a discount to its underlying creation unit's fair value, investors can buy the cheaper ETF and sell the expensive underlying securities. This will increase the demand for and price of an ETF. Authorized participants of ETFs are also allowed to exploit any arbitrage opportunities by following the above trading strategies when ETFs are traded at a premium or discount. Thus, the dynamic market mechanisms restore the equilibrium market price of an ETF with respect to its creation or redemption units' NAV or fair price.

## 3. Advantages and Disadvantages of ETFs

Among the advantages that ETFs claim are tax efficiency, lower annual costs, transparency, buying and selling flexibility, all day tracking and trading, asset allocation, and portfolio diversification. Several of these features may be especially important to individual investors. First, ETFs claim good tax benefits because they generate few realized capital gains (Poterba and Shoven, 2002). This should arise from the low turnover of the securities that comprise the portfolio. Low turnover should occur for two reasons. First, because an ETF is not actively managed, ETFs only sell securities to reflect changes in their underlying index. Moreover, when index composition changes require portfolio changes to be made, ETF investors are not taxed due to the fact that the investor does not see a capital gain or loss. Because the creation and redemption units of ETFs

involve only *in-kind transfer* of underlying securities, it incurs no tax obligations in absence of cash transactions.<sup>7</sup> In fact, the ETF investor has a claim on the index value, but not a particular stock. However, mutual fund investors are taxed on capital gains because the fund must sell the stock once it is dropped from the index.

Exchange trading of ETFs further enhances their tax efficiency because investors who want to liquidate shares of an ETF sell them to other investors in the secondary market. Because of this structure, ETFs, unlike open-end investment companies (e.g. mutual funds), are not required to sell securities to meet redemptions. Thus, this structure eliminates the generation of trading-related capital gains that would be taxable for remaining investors.

However, individual or institutional investor selling ETF shares may have realized capital/income gains or losses as they do have for common stocks or bonds. Any realized capital gains from selling ETFs are subject to personal income tax, but the rest of ETF investors are protected from paying the taxes. Besides, most of the equity-based ETFs pay dividends and fixed-income ETFs distributes interests on a pro rata basis which are also subject to individual income tax rate. In USA, most of the short-term (long-term) capital gains associated with ETFs are taxed at a rate of 35% (15%). However, if the host countries do not have capital gains in general on investment, the investors should not observe any tax impacts on their ETF investments. To avoid current taxes generated by any cash distributions, investors may opt to reinvest in ETFs. For example, most of the retirement/pension funds are tax-exempted, as investors do not realize the distributions in cash but prefer to reinvest within the funds or fund classes. Similarly, ETFs can also be used as a tax loss harvesting, where applicable.

It should be noted many ETFs (e.g. iShares) have underlying assets and securities abroad which may generate capital gains or losses due to exchange rate fluctuations, changes in accounting and tax rules, or other economic and political reasons. Transaction taxes (both local and international taxes, if any) associated with capital gains in ETFs are usually passed along to all investors of that fund. However, tax laws, regulations, rates and their impacts may vary across the world. For example, some countries levy a tax on dividends paid to foreign investors; some have foreign withholding taxes on capital gains; some even allow to claim foreign tax credits. As such, investors should be careful in investing international ETFs due to extra layers of overseas taxes (or no taxes) and observe differential net returns on their international ETFs portfolios.

The international ETFs such as iShares are indexed to foreign equity and bond markets. This allows domestic investors to invest globally and enjoy global portfolio diversification. iShares is the largest issuer of ETFs not only in the USA but also globally. As reported earlier, international ETFs may suffer from currency risks, stale pricing due to differences in trading time zone between iShares and their underlying portfolios (Jares and Lavin, 2004), variation in tax laws in different countries, and external economic, geographical and political risks.

ETFs also claim to have significantly lower annual expense ratios than mutual funds because ETFs are passively managed.<sup>8</sup> In late January 1993, the State Street Bank & Trust Company introduced Standard & Poor's Depository Receipts (SPDRs) that track the S&P 500 index. Historically the SPDR (ticker symbol SPY) is the first ETF created and

claimed to possess lower annual expenses than index funds.<sup>9</sup> According to Morningstar's Barclays Global Investors Analysis (May 2003) most iShares ETFs have expense ratios of approximately 60 basis points whereas actively managed funds and index mutual funds have average expenses of 192 and 106 basis points, respectively. The expense ratios of broad classes of ETFs are on average less than 20 basis points whereas, index mutual funds have expense ratios as high as 300 basis points. This is due again, in part, to the lack of a need to incur management expenses or trading costs to issue or redeem shares. Due to lower expenses, ETFs should offer better net returns to shareholders.

Most of the mutual funds are actively managed. However, majority of the ETFs are passively managed. The creators of passively managed ETFs design rules to govern the portfolio holdings of underlying securities. Traditionally the ETFs do not deviate after these rules are in place which guarantees investment transparency of ETFs. As Appel (2007) points out "an ETF sponsor can update the selection of stocks in a passively managed portfolio, but only on dates that it specified in advance. Anybody who knows what the rules are can anticipate the changes that an ETF will be making to its portfolio on the dates specified for portfolio update. Because the rules for selecting a passively managed portfolio are available to everyone, it is unnecessary to hire a manager." This obviously reduces additional expenses incurred to hire fund managers.

Additionally, because ETFs are exchange traded, they can be bought and sold at intraday market prices, purchased on margin, sold short (initially even on a downtick although the SEC recently imposed uptick rule), and traded using stop and/or limit orders. More recently options and other derivatives are also issued on many ETFs. Gastineau (2004b) document that the increased uses of short selling in ETFs contribute to the trading efficiency of actively traded ETFs as well as overall market.

Unlike mutual funds, ETFs must be purchased through a broker; therefore, investors face brokerage fees either to purchase or sell ETF shares. In addition, because trading ETFs is similar to trading shares of stock, ETFs are purchased at the dealer's ask price and sold at the dealer's bid price, which is lower than the ask price. Thus, ETFs resemble "load" mutual funds because load funds must be purchased at the public offering price (which is higher than NAV) and redeemed at NAV. As such, ETFs are exposed to both explicit costs (e.g. brokerage fees and commissions) and implicit costs (i.e. bid-ask spreads).

## 4. Investment Opportunities in ETFs

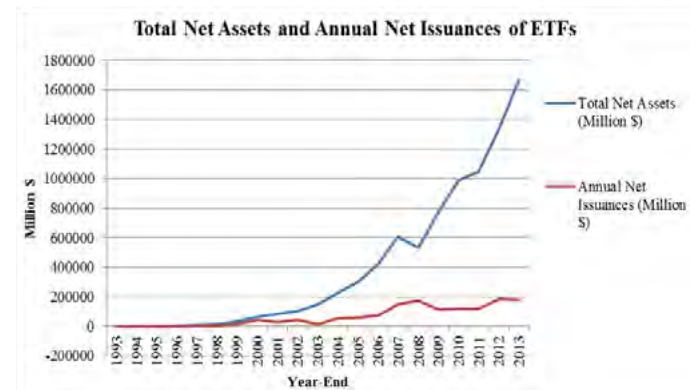
Since the advent of ETFs in 1993, the number of ETFs and their asset sizes increased significantly over time. Table 1 and Figure 1 exhibit the asset size and net issuance of ETFs (in million dollars) from 1993 to 2013. Both the asset size and net issuance of ETFs increased substantially over the last 10 years. According to 2014 ICI Fact Book (pp. 62), the net issuance essentially increased in all broader categories of equity ETFs (e.g. domestic broad-based, sector, and international). However, the demand for bond and commodity ETFs declined in 2013 due to rising long-term interest rates and falling commodity prices.

**Table 1: Number of ETFs and Total Net Assets (year-end) and Annual Net Issuances**

Year	Number of ETFs	Total Net Assets of ETFs (Millions of \$)	Annual Net Issuances of ETFs (Millions of \$)
1993	1	464	442
1994	1	424	-28
1995	2	1,052	443
1996	19	2,411	1,108
1997	19	6,707	3,466
1998	29	15,568	6,195
1999	30	33,873	11,929
2000	80	65,585	42,508
2001	102	82,993	31,012
2002	113	102,143	45,302
2003	119	150,983	15,810
2004	152	227,540	56,375
2005	204	300,820	56,729
2006	359	422,550	73,995
2007	629	608,422	150,617
2008	728	531,288	177,220
2009	797	777,128	116,469
2010	923	991,989	117,982
2011	1,134	1,048,134	117,642
2012	1,194	1,337,112	185,394
2013	1,294	1,674,616	179,885

Source: 2014 ICI Fact Book.

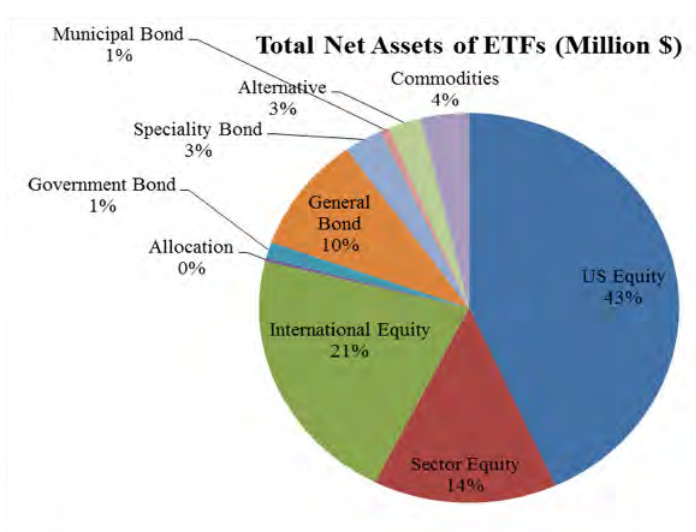
**Figure 1: Number of ETFs and Total Net Assets (year-end) and Annual Net Issuances**



In addition, Table 1 also shows the rising number of ETFs over the last 20 years. The higher demand for ETFs reflects the fact that institutional investors are increasingly using ETFs to hedge their portfolios and individual investors are also using ETFs to diversify their portfolios.

Because of investors' increased interests in ETFs, a larger variety of ETFs are recently created by the authorized participants. Table 2 exhibits 10 broader categories (and 96 sub-categories) of 1524 ETFs from Morningstar Principia database as of 2013 year-end.<sup>10</sup> The exceptionally high number of ETF sub-categories in Table 2 exhibits investors' opportunities and exposures in this market – they can invest either domestic or foreign, any sectors, commodities, bonds of any type or style, and even derivatives tied to ETFs. Out of a total of 1524 ETFs, approximately 95% are registered with and regulated by the Securities and Exchange Commission (SEC) under the Investment Company Act of 1940.<sup>11</sup>

**Figure 2: Total Net Assets of Ten Broad Categories of ETFs (As of December 31, 2013)**



**Table 2: Categories of Exchange Traded Funds (as of 31st December, 2013)**

Broad Categories	Sub-Categories (# of ETFs)	Total # of ETFs in Broad Categories	Total Net Asset (Millions of \$)
US Equity	Large Blend (69), Large Growth (27), Large Value (43), Mid-Cap Blend (25), Mid-Cap Growth (14), Mid-Cap Value (15), Small Blend (24), Small Growth (11), Small Value(14)	242	735,627
Sector Equity	Communications (8), Consumer Cyclical (19), Consumer Defensive (13), Equity Energy (43), Equity Precious Metals (10), Financial (33), Global Real Estate (11), Health (25), Industrials (20), Miscellaneous Sector (26), Natural Resources (35), Real Estate (17), Technology (31), Utilities (13)	304	240,195
International Equity	China Region (30), Diversified Emerging Market (48), Diversified Pacific/Asia Stock (4), Europe Stock (13), Foreign Large Blend (24), Foreign Large Growth (3), Foreign Large Value (16), Foreign Small/Mid Blend (7), Foreign Small/Mid Value (5), India Equity (10), Japan Stock (11), Latin America Stock (16), Miscellaneous Region (77), Pacific/Asia ex-Japan Stock (13), World Stock (18)	295	364,949
Allocation	Aggressive Allocation (3), Conservative Allocation (5), Convertibles (1), Moderate Allocation (7), Retirement Income (3), Tactical Allocation (6), Target Date 2011-2015 (1), Target Date 2016-2020 (2), Target Date 2021-2025 (1), Target Date 2026-2030 (2), Target Date 2031-2035 (1), Target Date 2036-2040 (2), Target Date 2041-2045 (1), Target Date 2046-2050 (1), World Allocation (7)	43	4,906
Government Bond	Intermeidate Governemnt (8), Long Government (10), Short Government (7)	25	22,263
General Bond	Bank Loan (4), Corporate Bond (24), Inflation-Protected Bond (11), Intermediate-Term Bond (17), Long-Term Bond (7), Preferred Stock (9), Short-Term Bond (13), Ultrashot Bond (6)	91	163,773
Speciality Bond	Emerging Market Bond (18), High Yield Bond (19), Nontraditional Bond (9), World Bond (28)	74	50,800
Municipal Bond	High Yield Muni (3), Muni California Long (3), Muni National Intermediate (7), Muni National Long (4), Muni National Short (9), Muni New York Intermediate (1), Muni New York Long (2)	29	10,696
Alternative	Bear-Market (2), Long/Short Equity (8), Managed Futures (3), Market Neutral (10), Multialternative (4), Multicurrency (10), Single Currency (17), Trading – Inverse Commodity (20), Trading – Inverse Debt (22), Trading – Inverse Equity (74), Trading – Leveraged Commodity (13), Trading – Leveraged Debt (13), Trading – Leveraged Equity (75), Trading – Miscellaneous (24), Volatility (17)	312	44,134
Commodities	Agriculture (30), Broad Basket (18), Energy (20), Industrial Metals (17), Miscellaneous (1), Precious Metals (23)	109	62,927

Source: Morningstar Principia.

It appears from Table 2 and Figure 2 that the equity-based funds constitute almost 80% of ETFs net assets. However, alternative ETFs, commodities ETFs and currency ETFs are becoming popular for cash management, risk management, domestic and international diversification, portfolio rebalancing, and hedging purposes.

Inverse (or short) ETFs and leveraged (or ultra-short) ETFs under alternative categories have been created in 2006 and are used for short-term trading and hedging because

they reorganize their prices on a daily basis to meet their prospectus investment objectives. An inverse ETF is designed to track the inverse performance of its underlying portfolio. This unique feature of inverse ETFs suggests that if the S&P500 index declines by 2%, an inverse ETF such as Proshares Ultrashrot S&P500 (ticker: SDS) should increase by 2%. This is similar to short sell the underlying investments in the index, futures, and other derivatives on which the inverse ETFs are created. However, unlike traditional short selling where the losses can be unlimited, inverse ETFs only

expose investors to limited losses which are equivalent to the purchase prices of the inverse ETFs. This trading strategy offers investors to hedge against the declining markets. Leveraged ETFs use debts, options, futures, swaps and other derivatives either to enhance (in case of long position) or slash (in case of short position) the returns of its tracking index. Leveraged ETFs can be long or short and their returns can be equivalent to predetermined multiples of the returns of their targeted indexes. Both the inverse and leveraged ETFs may be more costly and less tax efficient but are used as risk management instruments and became very popular during the bear markets of 2008-09.

Exchange Traded Notes (ETNs) or Exchange Traded Vehicles (ETVs) are known as synthetic or exotic ETFs. ETNs or ETVs are debt instruments, but their returns or payoff are usually tied to the performance of an index. However, these instruments do not directly invest in the underlying assets of the index that these are mimicking. Instead these engage in 'total return swap' with an investment bank where the bank agrees to pay the ETFs the return on the index in exchange for a fixed commission or fee. However, synthetic ETFs can be risky if an investment bank fails in a period of financial crisis like the one we recently observed. Synthetic ETFs may suffer from less transparency, higher tracking errors, credit risk, counterparty risk and collateral risks. Because of higher risks involved, institutional investors are the major players of synthetic ETFs (Bodie et al., 2014).

According to 2014 ICI Fact Book, ETFs are held by approximately 5.7 million U.S. households in 2013 year-end. The percent of above households that own ETFs in 2013 also hold equity mutual funds is 97%, bond mutual fund is 72%, individual stocks is 74%, individual bonds is 21%, fixed or variable annuities is 33%, and investment real estate is 48%. A growing number of households also use ETF as an investment vehicle in their retirement and pension funds. The percent of above households that own ETFs in 2013 also hold an Individual Retirement Accounts (IRAs) is 78% and a defined contribution retirement plan (e.g. 401k, 403b, or 457) is 77%. The above statistics indicate that households use ETFs for diversification, long-term investments, and controlling risks of their portfolios. Anson et al. (2011) also documents that ETFs are good for beta strategy but not for alpha-generating strategy because of their passive management.

Since ETFs typically have lower management fees than low-cost mutual funds containing the same basket of stocks, its better for investors to buy and hold ETFs only by paying one-time commission (many online brokerage firms offer ETFs trades for \$8-11 per trade) at the beginning or during the accumulation phase of their retirement/ pension

funds. Due to low management fees, annualized returns of ETFs are expected to be higher than their comparable mutual funds. However, during the later stages of investors life or during distribution phase, ETFs can be replaced by mutual funds to avoid continuous payment of commissions to replace ETFs for cash disbursement from retirement/pension funds (Allen et al., 2013). For infrequent trading activities in retirement/pension funds, investing in ETFs seems to be better than investing in mutual funds because of lower expenses associated with ETFs. Since retirement/pension funds are not allowed to use derivatives or short position, investors also tend to use different categories of ETFs (e.g. inverse and leveraged ETFs) to hedge their investment positions in retirement/pension funds.

The dilemma facing investors who desire to implement an S&P 500 index strategy is whether index mutual funds or ETFs (e.g. SPDRs) are the better investment vehicles. Prather et al. (2009) investigate alternative S&P 500 indexing strategies for individual investors using S&P 500 index funds and the Standard and Poor's depository receipt (SPDR). This investigation is important because while SPDRs have lower advertised annual expenses, investors in SPDRs face bid-ask spreads and commissions. However, no-load index funds can be purchased and redeemed at NAV and have no trading costs. Moreover, mutual fund trading costs are not included in published expense ratios. Thus, the answer depends largely on the magnitude of the bid-ask spreads of the SPDRs, differences in the magnitudes of expenses, commissions incurred in trading SPDRs, transaction size, and expected length of the investment. They conclude by comparing risk-adjusted returns of the alternatives to ensure that undisclosed trading costs do not alter the choice. They find that reported annual expenses are a poor proxy for the total cost of ownership in either ETFs or index mutual funds. When only the reported annual expenses of the mutual funds are considered, mutual funds dominate the ETF alternatives. However, when total annual costs are estimated, ETF dominates mutual fund alternatives. Thus, using reported expenses to make investment decision is suboptimal.

## 5. Conclusion

This article illustrates several interesting features of ETFs such as creation, redemption, and trading mechanism of ETFs; net assets and annual issuances of ETFs; and merits and demerits of investing in ETFs. As a passive but diversified investment strategy, ETFs seem to be better investment vehicles in terms of tax efficiency, lower management fees and expenses, and portfolio risk management. However,

the strategic investment decision in ETFs depends on investors' goals and objectives, attitudes towards risks, and time horizon of investment because investing in ETFs may have diverse implications especially during the formation and distribution phases of retirement or pension funds.

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**Note**

1. Part of this article is based on the author's prior research (e.g. Mazumder et al., 2008, Prather et al., 2009) on ETFs.
2. 2014 ICI Fact Book (<http://www.ici.org>), ETFGI (<http://www.etfgi.com>) and <http://www.etfdb.com>
3. An authorized participant is a dealer who has legally agreed with the ETFs sponsor or distributor to create additional fund shares by depositing baskets of securities with the fund custodian (usually banks or brokerage firms) or redeem shares of funds in exchange of similar baskets of ETF's underlying securities (Gastineau, 2004b). For example, one of the major ETF sponsors is iShares (<http://www.ishares.com>).
4. Representative sampling method may be used to create an ETF when its underlying tracking index has thousands of securities in its portfolio.
5. Regulatory details and calculation schedule of Indicative Optimized Portfolio Value can be found at: <http://www.sec.gov/Archives/edgar/data/1450011/09/000119312509118484/dex99h6.htm>.
6. During the flash crash (<http://www.sec.gov/news/studies/2010/marketevents-report.pdf>) of May 6, 2010 the Dow Jones Industrial Average declined 998.5 points in late afternoon trading session. The index recovered 600 points in the next 20 minutes. Eventually Dow declined by about 1000 points at the end of closing day. Remarkably this high volatility forced to cancel many trade orders as security prices were twisting promptly. About two-thirds of all cancelled orders were ETFs. Numerous ETFs were traded more than 75% discounts from their NAV. Roughly 20% of all ETFs were traded on that day at a price lower than 50% of their closing price (Bodie et al., 2014, Madhavan, 2012).
7. Most of the traditional ETFs should generate low or no capital gains because of physical presence of the underlying securities in creation and redemption units. However, in UK (and possibly other countries) there are 'synthetic' ETFs where the underlying securities are physically absent in their creation or redemption baskets. Synthetic ETFs may observe capital gains as actual shares may be traded to cover the long or short positions.
8. When ETFs were created in 1993, these were exempted from a number of provisions of the U.S. Investment Company Act of 1940 because ETFs are designed to passively track the performance of their respective benchmark indexes or a multiple of their inverse indexes. However, in 2008 the Security and Exchange Commission (SEC) allowed some authorized participants to create fully transparent actively managed ETFs. Actively managed ETFs are required to publicly disclose the assets and weights of portfolio holdings on a daily basis as active ETFs do not track the return of a specific index but offer a more distinct mixture of investment opportunities to meet various investment objectives of individual and institutional investors. Presumably, actively managed ETFs have higher management fees and are less tax efficient because of additional realized capital gains associated with higher portfolio rebalancing and turnover to meet the investment objectives. For details, <http://www.sec.gov/rules/proposed/2008/33-8901.pdf>
9. A competitor of the SPY is the iShares S&P500 index (ticker symbol IVV) which was introduced in May 2000. However, the SPY is more popular, has more trading volume, and a longer return history. In most of the Asian and European countries, ETFs were incepted in early 2000s.
10. There exists a discrepancy between the number of ETFs as reported by the ICI and Morningstar Principia.
11. According to ICI 2014 Fact Book, only 4% assets of the ETFs universe are not registered with or regulated by the SEC under the Investment Company Act of 1940. The unregistered ETFs assets are primarily actively managed and invested in physical commodities and currency futures and simultaneously regulated by the Commodity Futures Trading Commission (CFTC) under the Commodity Exchange Act and by the SEC under the Securities Act of 1933.

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