

EXCHANGE TRADED PRODUCTS: OVERVIEW, BENEFITS AND MYTHS

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Executive Summary

As exchange traded funds (ETFs) and other exchange traded products (ETPs) have grown tremendously over the past several years, so too has the notice of regulators, academics and investors. BlackRock, a leading investment manager and major ETF sponsor, has been an active participant in discussions related to ETFs. This *ViewPoint* represents the third in a series, which also includes “ETFs: A Call for Greater Transparency and Consistent Regulation,” published in October 2011, and “Understanding the Flash Crash: What Happened, Why ETFs Were Affected and How to Reduce the Risk of Another,” published in November 2010.

While this paper, our most comprehensive, provides an overview of the range of investment vehicles commonly referred to as ETPs, its primary focus is ETFs. We identify specific benefits of ETFs, analyze their purported shortcomings and dig into some of the common myths about ETFs, particularly index-based products. We also identify some general principles that we believe can help maximize the utility of ETFs and minimize the potential for adverse impacts on investors and the broad financial markets.

The terms ETP and ETF are commonly used to describe a number of very different investment vehicles that share one common trait — they are traded on an exchange. The majority of ETPs provide exposure to a market index and seek to mimic the performance of that index. Not all ETPs are funds. Because index-tracking ETFs are the most typical ETPs, this paper focuses primarily on those products.

While the growing impact of ETPs on markets has been the topic of healthy debate, the vast majority of empirical data and practical experience to date indicates that well-structured ETFs have extended significant benefits to investors and to the functioning



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SUMMARY OF ETF BENEFITS

VERSUS OPEN-END MUTUAL FUNDS	WHEN INDEX BASED
Enhanced liquidity	Generally low administrative expenses
High degree of transparency	Low trading overhead (costs of trading ETPs can be much lower than the costs of trading the underlying securities)
Greater tax efficiency (lower trading of underlying securities = fewer realized capital gains)	Cost-efficient, convenient access to a variety of markets
Lower vulnerability to market timing	Ability to easily replicate exposure to numerous broad benchmarks through a single vehicle
Ability to trade in and out of positions intraday	
Potential for enhanced returns through securities lending	
Less potential for inadvertent value transfer among shareholders	
Greater resilience in times of financial crises	

of markets that meaningfully outweigh any perceived or actual weaknesses. Key benefits that distinguish well-structured ETFs from open-end funds (OEFs, or mutual funds) include enhanced liquidity, a high degree of transparency, lower vulnerability to market timing and the ability to trade in and out of positions intraday. The benefits of index-based ETFs include generally low administrative expenses, low trading overhead, cost-efficient and convenient access to a variety of markets (both liquid and less liquid markets) and the ability to replicate exposure to various broad market benchmarks via a single vehicle.

Regulatory scrutiny of ETFs and other ETPs has increased as they have grown to represent a significant portion of market trading activity. In some instances, the popular perceptions of ETFs that have evolved over time differ from the empirical truths. For ease of reference, we categorize and discuss these incongruities as “myths” and offer insights that we believe speak to the realities surrounding ETFs.

MYTH 1: Trading at a Premium or Discount to NAV Is a Shortcoming of the ETF Mechanism

Reality: The fact that ETPs are designed to transact both in the primary market (creating and redeeming shares at net asset value, or NAV) and on an exchange at prices established by the secondary market is anything but a shortcoming. The existence of both a primary and secondary market increases overall pricing efficiency and enhances liquidity. In addition, the intraday trading of ETFs effectively eliminates the type of “market timing” problems that famously occurred with US OEFs in the 1990s. (Read more in Section 3.1, page 13.)

MYTH 2: Securities Lending by ETFs Presents Unique Risks

Reality: Many ETFs engage in securities lending, a practice that has drawn scrutiny due to a variety of issues, including concerns related to the investment of cash collateral. Notably,

ETFs: SEPARATING FACT FROM FICTION

MYTH	REALITY
1 Trading at a Premium or Discount to NAV Is a Shortcoming of the ETF Mechanism	The ability to trade on the primary market and on an exchange is a benefit afforded by the ETF mechanism, providing pricing efficiency and enhanced liquidity.
2 Securities Lending by ETFs Presents Unique Risks	Securities lending is an investment practice used in a wide variety of portfolios to enhance returns to investors. Securities lending by ETFs does not pose any new or unique issues or concerns.
3 Synthetic ETPs and Securities-Based ETFs Are Equivalent	The two are not created equal; synthetic ETPs introduce complexities, which BlackRock has commented on publicly.
4 Commodities ETPs Cause Commodity Price Volatility	Most commodities ETPs do not invest directly in the underlying commodity. For those that do, there is no evidence to suggest that they impact commodities prices.
5 Total Expense Ratio Is the Only Relevant Metric for Assessing an ETF	ETFs are multi-dimensional. They offer cost-value tradeoffs beyond the expense ratio alone.
6 Large Short Positions Can Bankrupt ETFs	Safeguards embedded in the ETF mechanism ensure that redemptions would fail before an ETF would suffer bankruptcy.
7 ETPs Are Prone to Price Breakdowns and Exacerbate Problems With High Frequency Trading	Since the May 6, 2010 Flash Crash that ignited this concern, many regulatory reforms have been put in place to mitigate price breakdowns and prevent similar events from occurring in the future.
8 ETFs Do Not Reliably Track Their Benchmark Indices	While some ETF managers have proved more adept at tracking a given benchmark, some ETFs will naturally track their benchmarks more tightly than others, generally due to practical considerations (e.g., availability of securities or cost efficiency). Synthetic ETFs will naturally track their benchmarks tightly, but introduce other considerations for investors.
9 ETP Flows Increase Market Correlations and Impair Price Discovery	Our research finds no evidence to support this claim and instead shows that rising correlations are tied to macro events rather than to ETP growth.
10 ETPs Lead to Investors Tracking Sub-Quality Indices	There are higher-quality indices and lesser-quality indices. Investors will ultimately choose the product they prefer based on information disclosed in the ETP prospectus.

the securities lending practices of ETFs do not create any new or special issues. When executed prudently with robust risk controls and supporting infrastructure, securities lending enhances return to ETF investors and benefits the broader markets by increasing liquidity and activity among market participants. (Read more in Section 3.2, page 15.)

MYTH 3: Synthetic ETPs and Securities-Based ETFs Are Equivalent

Reality: In fact, there are important differences. Whereas conventional index-tracking ETFs directly own the underlying securities of their benchmarks, “synthetic” ETPs rely on derivatives to track their benchmark exposures. Most commodities ETPs also rely on derivatives, as do “leveraged” or “inverse” ETPs which provide a multiple or short exposure to a benchmark. Synthetic ETPs introduce a set of complexities not present with ordinary ETFs. BlackRock sponsors a handful of synthetic ETPs in order to provide investors with exposure to markets that cannot practicably be tracked with physical securities. While synthetic ETPs that are collateralized and use multiple counterparties can be useful and appropriate investments, we have publicly questioned synthetic ETPs that are uncollateralized or use a single affiliated derivative counterparty. (Read more in Section 3.3, page 16.)

MYTH 4: Commodities ETPs Cause Commodity Price Volatility

Reality: Commodities ETPs generally do not invest directly in the underlying commodities. As such, the net impact on the pricing of the underlying commodities markets is modest at best, and relative to other investment vehicles, would be considered comparable. Those commodities ETPs that do invest directly in the underlying commodity, such as most metals-based ETPs, closely resemble conventional stock and bond ETFs. Concerns that these ETPs remove supply from the market, adversely affecting the supply/demand dynamics in the spot market, are not supported by empirical data. On the contrary, BlackRock and other commodities ETP sponsors have countered that commodities ETPs facilitate greater market liquidity and more efficient price discovery. (Read more in Section 3.4, page 17.)

MYTH 5: Total Expense Ratio Is the Only Relevant Metric for Assessing an ETF

Reality: Total expense ratio (TER) is only one factor in considering the overall value proposition of a particular ETF. TER does not factor in the potential benefits that can be achieved through securities lending, nor does it consider an individual ETF’s liquidity, transaction costs and tax efficiency. Choosing an investment based solely on TER ignores many important factors that ultimately play a central role in an ETF’s overall merit. (Read more in Section 3.5, page 17.)

MYTH 6: Large Short Positions Can Bankrupt ETFs

Reality: This concern was raised in a 2010 paper published by a large US foundation. While it provoked conversation, we believe the specific circumstances outlined in the paper cannot lead to an ETF’s bankruptcy due to specific safeguards in place that would cause redemption requests in excess of an ETF’s net assets to fail before the ETF would suffer bankruptcy. (Read more in Section 3.6, page 19.)

MYTH 7: ETFs Are Prone to Price Breakdowns and Exacerbate Problems With High Frequency Trading

Reality: This myth derives largely from the May 6, 2010 US Flash Crash, when the arbitrage mechanism of many ETFs failed for approximately 20 minutes. ETF share prices fell dramatically compared to the current prices of the underlying holdings, compromising the secondary market liquidity available to ETF holders during this period of time. Several technical enhancements (i.e., circuit breakers) and regulatory reforms have since been introduced with strong support from BlackRock and significantly reduce the possibility of a similar scenario occurring in the future. (Read more in Section 3.7, page 19.)

MYTH 8: ETFs Do Not Reliably Track Their Benchmark Indices

Reality: Many ETFs track their benchmark indices very tightly. Some do not, but this does not necessarily indicate a shortcoming of the ETF mechanism or the failure of a particular fund to meet its objective. Looser tracking most often is due to practical difficulties in replicating a benchmark (e.g., certain securities simply may not be available for purchase; others may be too costly to transact relative to their tracking benefit; or fund regulations may preclude an ETF from perfectly replicating an index). Investors in an ETF tracking a “harder-to-replicate” index are willing to accept tracking error because the ETF provides investment exposure that otherwise would be difficult to obtain. (Read more in Section 4.1, page 21.)

MYTH 9: ETF Flows Increase Market Correlations and Impair Price Discovery

Reality: Some believe large flows in ETFs and other index-tracking investment vehicles can produce uniform movement in market indices that ultimately increases correlations. This, the argument says, thereby impairs price discovery and the ability of active managers to generate alpha. Our research finds no evidence to support these assertions. Instead, our findings show that recent increases in correlations appear to be due to the macro environment and not to ETF growth. (Read more in Section 4.2, page 22.)

MYTH 10: ETPs Lead to Investors Tracking Sub-Quality Indices

Reality: Some have speculated that growth in index-tracking ETPs can lead to investors investing in lower-quality indices. In reality, the growth in the number and scope of ETPs and other index-tracking products available in the market today affords investors a wide range of opportunities from which to choose. There are ETPs that track higher-quality indices, and others that track indices of lesser quality and liquidity. A prudent ETP sponsor will exercise proper due diligence and select indices that are based on well-designed, transparent and investable methodologies from an index provider that offers quality support to users of the index. Information about underlying indices is typically disclosed in ETP prospectuses so that investors may make their choice of investment vehicle based on an understanding of the product and the related index. (Read more in Section 4.3, page 23.)

In conclusion, we find ETFs to be highly beneficial to investors and the overall financial system. ETFs add transparency, accessibility and stability to financial markets by bringing several critical elements together in a single investment vehicle. These include the ability to:

- ▶ Trade pooled vehicles on public exchanges with associated liquidity benefits.
- ▶ Provide high transparency in terms of a fund's underlying holdings.
- ▶ Create and redeem shares with physical securities, thus adding "barter" into the investment repertoire when pricing anomalies or liquidity crises arise.
- ▶ Externalize transaction costs so that shareholders are largely indifferent to the inflows and outflows of other investors.
- ▶ Track the return of a wide variety of broad market exposures.

ETFs, while not immune to the challenges of the financial markets, generally handle the intrinsic variability of liquidity better than other popular investment vehicles. They have proved to be effective as index-related products and are beginning to be successfully used for style indices as well as certain active strategies. As such, regulatory and market attention on this growing segment of the investment universe is understandable and appropriate, and we believe should focus on the following best practice standards:

- ▶ **Improve the liquidity of underlying markets** (e.g., fixed income) by standardizing issues and encouraging exchange trading where feasible.
- ▶ **Ensure ETP sponsors are judicious** in their selection of reference indices and rigorous in performing due diligence around index providers' calculations and data quality.
- ▶ **Rely on multiple firms** that create and redeem ETF shares wherever possible to diversify risk and enhance liquidity.
- ▶ **Promote transparency around the multi-dimensional value proposition** of ETF ownership rather than focusing solely on total expense ratios.
- ▶ **Use synthetic products sparingly**, primarily in cases where accessing the underlying securities is either expensive or prohibited by local law, and only when accompanied by a highly disciplined risk management process, collateralization, multiple counterparties and detailed disclosure to investors.

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ETPs: Overview, Benefits and Myths

Introduction

Exchange traded funds (ETFs) have grown substantially in size, diversity and market significance in recent years, drawing the attention of regulators, investors and academics seeking to assess and understand the implications of this growth. The effects of the broadening ETF product set have been the topic of healthy debate, inspiring many viewpoints. The vast majority of empirical data¹ and practical experience to date, however, indicates that ETFs have extended significant benefits to investors and to the functioning of markets (e.g., enhanced liquidity) that meaningfully outweigh any perceived or actual weaknesses. Like all investment instruments, ETFs may not be perfect, but we most often find them to be superior to the next best currently available investment vehicles.

This paper provides an overview of the variety of products commonly referred to as “ETFs.” Specific benefits of ETFs are identified and their purported shortcomings analyzed. Some of the common myths around the structure of ETFs and index investing are detailed from BlackRock’s perspective as a major participant in the ETF market. We identify some general principles that we believe, if applied consistently by all market participants, will help maximize the utility of ETFs and reduce the chances that their growth and evolution will result in any adverse impacts for investors and financial markets broadly.

1. Overview of ETFs and Their Behavior

The term exchange traded product (ETP) is used to describe a number of very different investment vehicles. The single characteristic shared by all products referred to as ETPs is that they are traded on an exchange. Most but not all ETPs provide exposure to a market index. This includes certain exchange traded debt instruments that are not funds at all, such as exchange traded notes (ETNs).² Other ETPs have embedded leverage or other structural characteristics that are starkly different from conventional ETFs. As used in this paper and by most market participants, the term “ETF” refers to unlevered open-end funds (OEFs) that are listed and traded on an exchange and reference published market indices.

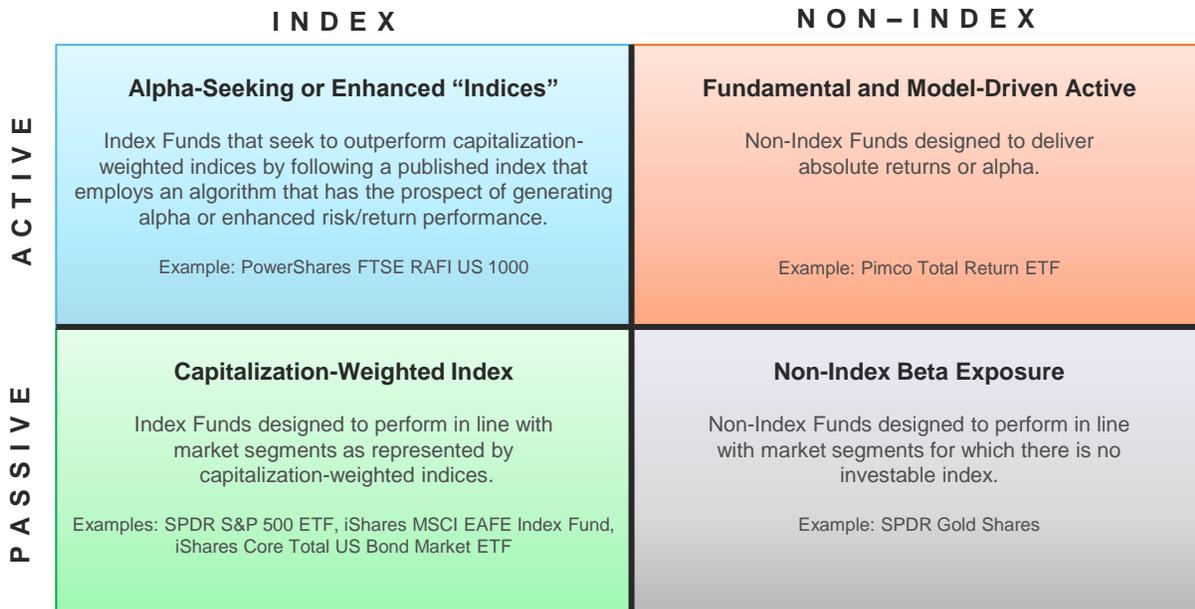
ETPs may provide exposure to stocks, bonds, commodities, currencies or a variety of long-only and long-short strategies. ETFs typically invest in a portfolio of physical securities. Index-tracking ETFs normally hold a portfolio of securities that closely resembles, but does not necessarily fully replicate, their benchmark index and use the same techniques of index management of physical securities as index-tracking

OEFs. Some ETPs, however, track an index by holding derivatives to replicate the performance of their benchmarks. These so-called “synthetic” ETFs are fairly common in some jurisdictions, including Europe, but are more restrictively regulated in others, such as the United States. In many respects, unlevered synthetic ETFs act like ETFs that hold physical securities, but may create credit exposures to derivative counterparties or other risks not presented by conventional ETFs. Synthetic ETPs, when well structured (i.e., have multiple counterparties, appropriate pricing and collateral, etc.), can be effective in providing exposures that cannot be accessed practicably with physical securities. That said, they have sometimes been created by European banks to obtain attractive funding or to create a controlled counterparty.

While ETFs typically provide exposure to an index, they can, like regular OEFs, be vehicles for providing exposure to many different types of investment strategies, including active management. ETFs that pursue traditional active management strategies are less familiar than index-tracking ETFs, but are becoming increasingly more common. Unlike most open-end and closed-end funds, ETFs generally disclose all or substantially all portfolio holdings on a contemporary basis (to facilitate secondary market trading, as discussed below). Portfolio transparency risks revealing information about changes in an ETF’s portfolio that may be market-sensitive and, therefore, raise the cost of executing future transactions. This may make it difficult to pursue certain active investment strategies, such as stock selection using small-capitalization stocks, through ETFs. Other active strategies less subject to front-running risk, such as yield curve positioning using very liquid bonds, may be pursued through ETFs with less risk of adverse consequences.

Like OEFs, most index-tracking ETFs provide exposure to standard indices that weight components based on their market capitalization. Standard indices are generally designed to be as representative of a particular market segment as possible — that is, they try to look as much as possible like the market segment as a whole and do not overweight securities with characteristics deemed particularly desirable (such as low volatility or high liquidity) that are possessed by only a portion of the securities in the market segment. Some index-tracking ETFs, however, provide exposure to benchmarks that are themselves expressions of “active” investment strategies that have been reduced to systematic rules. Such non-standard indices do not purport to look like a market segment as a whole, but instead emphasize securities within a market segment that exhibit particular characteristics sought by investors, such as low price-to-book-value ratios or high dividend yields. The rules of non-standard indices used as ETF benchmarks may be very simple (such as holding all component stocks at equal

Figure 1.1: ETF INVESTMENT UNIVERSE



weights rather than market capitalization weights to emphasize components with smaller market capitalizations) or relatively complex (such as screening and/or weighting components based on multiple investment factors like sales, cash flow and book value).³

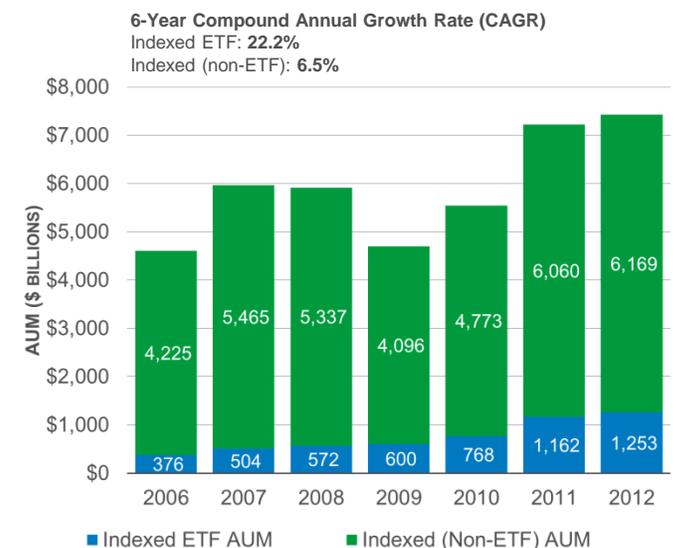
Conversely, a number of ETPs seek simply to provide exposure to an asset class, but do so in a manner that does not require an index (for example, ETPs that track the value of a currency or a metal). These ETPs physically hold the benchmark asset and do not seek to add value through any investment process. Although they are not index-based, they closely resemble index-based ETFs and can be thought of as passive investments. As shown in Figure 1.1, the variety of investment exposures available through ETFs can be viewed across two dimensions: passive versus active investing, and index versus non-index-based exposure. This distinction could potentially be further delineated in that “active” ETFs could be divided between funds that track a published alpha-seeking index and funds wherein the ETF manager explicitly implements subjective portfolio decisions. One could argue that the former is “passive” at the level of the execution, but tracks an index construction process that happens to be active.

Given that the vast majority of ETFs, approximately 95% of all global and 99% of all US ETFs⁴, are index-tracking, this paper focuses primarily on index ETFs and notes where there are structural similarities with non-ETF index investing. Total index investing (index OEFs and ETFs) has grown substantially in recent years, as illustrated in Figure 1.2. Combined assets under management (AUM) of index products (ETF and non-ETF) increased from \$4.6 trillion in

2006 to \$7.4 trillion in 2012 in the US, and from \$292 billion in 2006 to \$741 billion in Europe. ETF AUM tripled during this period from \$376 billion to \$1.25 trillion in the US, and from \$92 billion to \$367 billion in Europe.

Despite the rapid growth of index-tracking ETFs, the vast majority of assets pursuing index strategies are still overwhelmingly held in OEFs and institutional accounts.

Figure 1.2: GROWTH OF US INDEXED ASSETS



Source: BlackRock.

1.1 Trading Mechanics

ETF vehicles resemble OEFs in that ETF shares can be created or redeemed at the end of the trading day for the current per share net asset value (NAV) of the fund. Unlike OEFs, however, ETFs issue and redeem shares at NAV only in large aggregations sometimes referred to as Creation Units and only with large institutional trading firms known as Authorized Participants, Participating Dealers or similar terms. Transactions between an ETF and an Authorized Participant (AP) are typically either: 1) in-kind, with the AP providing or receiving a basket of securities identical or with risk characteristics very similar to a *pro rata* share of the ETF's holdings, or 2) for cash, with some mechanism under which transaction charges resulting from investing or raising the cash are absorbed by the AP and not the ETF (unlike OEFs) in a manner that mimics the economics of an in-kind transaction. (The use of cash is sometimes required because investments held in ETFs, such as emerging market stocks, may be subject to legal restrictions that prevent in-kind transfers.) The current fund holdings and basket of securities the ETF is willing to accept for next business day in-kind creations or redeem for next business day in-kind redemptions are published at the end of each trading day. Unlike OEFs, ETFs are also tradable intraday on an exchange by any market participant at prices established by the secondary market that may vary from NAV, similar to a closed-end fund (CEF). Those prices are, however, informed by market participants' collective estimation of the fair value of the published holdings of the ETF. Figure 1.1.1 shows trading volume for a set of representative ETFs. The volume of secondary market (exchange) trading greatly exceeds primary market (creation and redemption) activity in these and many other ETFs, which is critical to understanding their economic benefit for investors.

1.2 Arbitrage Mechanism

Like all investors, APs can buy or sell ETF shares on an exchange, but they also can purchase or redeem shares directly from the ETF at the current NAV of the ETF's

holdings. This means that, in the event the market price of the ETF's shares on the exchange drifts away from the current value of the ETF's holdings in the underlying market, an AP can profit from an arbitrage by selling the higher-priced asset while simultaneously buying the lower-priced asset. In the case of ETF shares selling "at a discount," the higher-priced asset is the underlying holdings (i.e., the ETF is trading at a price lower than the value of its underlying holdings). In the case of ETF shares selling "at a premium," the higher-priced asset is the ETF shares (i.e., the ETF is trading at a price higher than the value of its underlying holdings). The fact that ETF shares may be created or redeemed at NAV at the end of each trading day makes it relatively simple for APs to unwind a position in ETF shares when it seeks to do so. In the case of a long position in ETF shares acquired by buying shares at a discount, the AP redeems ETF shares by delivering them back to the ETF for the ETF's in-kind basket, which (together with any offsetting position that the AP used to hedge its long position in ETF shares) can then be sold. In the case of a short position in ETF shares caused by selling shares at a premium, the AP creates ETF shares by delivering the ETF's in-kind basket (which is either already held as a hedge against the short position in ETF shares, or is acquired with the proceeds of the liquidation of a derivative hedge) to the ETF in exchange for ETF shares, which are then delivered in settlement of the short position. This so-called ETF "arbitrage mechanism" typically ensures that the price of an ETF's shares on an exchange stays within a range equal to the market's estimation of the current fair value of an ETF's holdings in the underlying market, plus or minus an amount that approximates the cost of creating or redeeming shares.⁵ The arbitrage mechanism also encourages APs to provide offsetting liquidity when there is an excess of buying or selling demand for ETF shares.

1.3 The Role of APs

An AP can be any institutional trader that has the ability to settle big transactions involving large numbers of securities with an ETF and that executes an agreement with the ETF's distributor that provides terms for settling such transactions.

Figure 1.1.1: TRADING VOLUME FOR REPRESENTATIVE iSHARES ETFs

ETF Ticker	ETF Exposure	AUM (\$M)	Average Daily Volume (\$M) for Last 12 Months		Examples of Authorized Participants Executing Create/Redeem Activity in the Past 12 Months
			Primary (Create/Redeem) Market	Secondary (Exchange) Market	
EMB	USD-Denominated EM Bonds	5,837	27	101	Cantor Fitzgerald, Citigroup, Goldman Sachs, Knight Capital Americas, Bank of America Merrill Lynch, Morgan Stanley, Nomura Securities, RBC Capital Markets
LQD	US Investment Grade Corporate Bonds	23,468	45	247	Barclays, Deutsche Bank, Goldman Sachs, JP Morgan, Bank of America Merrill Lynch, Morgan Stanley, Nomura Securities, RBC Capital Markets
IWM	Small-Cap US Stocks	18,452	138	3,457	Citigroup, Knight Capital Americas, ABN AMRO Clearing Chicago LLC, Deutsche Bank, Barclays, Goldman Sachs, JP Morgan, Virtu Financial
IVV	Large-Cap US Stocks	40,117	74	541	Credit Suisse, Deutsche Bank, Morgan Stanley, SG Americas, Bank of America Merrill Lynch, Goldman Sachs, UBS Securities, BNP Paribas, Virtu Financial
IAU	Gold	8,866	43	110	ABN AMRO Clearing Chicago LLC, Credit Suisse, Goldman Sachs, JP Morgan, Bank of America Merrill Lynch, Virtu Financial

Source: BlackRock. Data as of 4/19/2013.

APs self-select — they choose to become APs because it is useful to their business, and are not appointed to act as “selling agents” for the ETF. APs are generally either trading desks of large banks or securities firms that manage their exposure to ETF shares acquired for purposes of trading with customers through creations and redemptions; firms that act as market makers in ETF shares that use creations and redemptions to manage their inventory; or clearing brokers that act as agent on behalf of market makers, arbitrageurs and other institutional traders. APs do not receive compensation from an ETF or its sponsor for acting as AP, and have no legal obligation to the ETF to create or redeem the ETF’s shares. APs create and redeem ETF shares only when it is their self-interest to do so.

2. Benefits of ETFs

2.1 Investor Economics and Convenience

ETFs afford several benefits that distinguish them from OEFs, including enhanced liquidity, a high degree of transparency, lower vulnerability to market timing, and the ability to trade in and out of positions intraday. Index products offer numerous benefits, including generally low administrative expenses, low trading overhead, cost-efficient and convenient access to a variety of both liquid and less liquid markets, and the ability to easily replicate exposure to numerous broad benchmarks through a single vehicle. The ability of market makers and other traders to net off purchases and sales intraday in the secondary market without ever trading the underlying ETF basket can result in dramatically lower costs for trading an ETF’s shares than buying or selling the underlying holdings. Further, ETFs are often more tax-efficient compared with OEFs because they trade the underlying portfolio of securities infrequently and, therefore, are less likely to realize taxable gains. Investors also have the ability to trade ETF shares as they would stocks, including the ability to use limit orders, sell short, buy on margin and sell options. ETF shares also may be loaned through securities lending activity, offering the potential for additional returns. In contrast, it is not possible to sell short, use options or lend OEF shares given the lack of a secondary market for the shares. Figures 2.1.1, 2.2.1 and 2.2.2 illustrate two of the key benefits of ETFs: 1) the ability to replicate exposure to a wide range of benchmarks, and 2) low costs in less liquid markets.

Figure 2.1.1 shows the universe of US-listed ETFs along with the number of distinct benchmarks and data on average expenses and AUM. Currently, US-listed iShares alone provide direct investor access to more than 20 equity and fixed income sectors and roughly 300 distinct benchmarks. With this range of options, investors can easily replicate exposures to a broad range of benchmarks across these markets.

Figure 2.1.1: UNIVERSE OF US-LISTED FIXED INCOME, EQUITY AND COMMODITY ETFs

		# Distinct Benchmarks	Average Expense Ratio (bps)	AUM (\$M)
Fixed Income	Broad Market	16	35	63,687
	Emerging Markets	11	53	13,417
	High Yield	16	55	32,835
	Investment Grade	32	28	60,037
	Securitized	4	23	7,029
	Municipals	29	32	13,690
	Sovereign	17	55	4,867
	US Government	55	42	58,595
Equity	Global Equity	92	65	35,750
	US Large Cap/Total Cap	130	47	383,987
	US Mid Cap	46	50	59,715
	US Small Cap	56	51	61,751
	US Sector	204	60	158,923
	US Dividend Preferred	23	41	68,358
	US Alpha Strategy	14	66	2,109
	Developed Europe	36	56	18,000
	Developed Asia Pacific	28	62	32,202
	Emerging/Frontier	158	71	155,249
	International-Other	115	52	105,418
	Commodities	126	75	91,865
	Currency	22	59	4,488
Alternatives/Asset Allocation	87	77	8,311	

Sources: Bloomberg, BlackRock. Data as of 4/19/2013.

2.2 Enhancing Liquidity

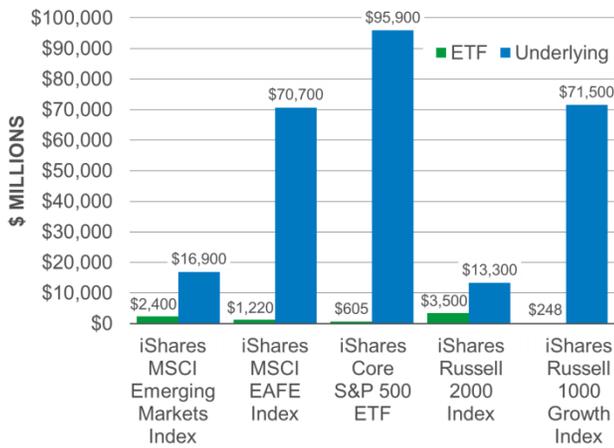
The cost of trading any security is predominantly the difference between the bid (the price offered by market makers at which investors can sell) and the ask (the price offered by market makers at which investors can buy). This is known as the spread. ETF shares have a spread, as do each of the underlying securities held by an ETF. In the period following the launch of an ETF, the spread of the ETF’s shares will typically reflect the average spreads of the ETF’s underlying holdings. This is because secondary market prices for the ETF will reflect the costs to create new shares (which would be accomplished by buying and delivering the ETF’s published in-kind basket), or to short ETF shares (which would be hedged by buying the published in-kind basket or a correlated equivalent instrument), in order to satisfy buying demand. The same effect happens, with the opposite trades, in response to selling demand. As long as the spread (i.e., the cost of buying or selling) of an ETF’s shares is no greater than the spread of its basket, purchasers of the ETF shares receive access to the underlying exposure at fair cost. In many cases, over time, the spread of an ETF’s shares will become less (often substantially less) than the spread of the basket. This is because ETF shares often develop inherent liquidity, much like stocks. As noted above, the ability of dedicated market makers and other traders to net off

purchases and sales intraday in the secondary market (without ever trading the underlying ETF basket) can result in dramatically lower costs for trading an ETF's shares than buying or selling its underlying holdings. This results in reduced transaction costs. Normal competition among market makers ultimately converts these reduced costs into narrower spreads quoted for ETF shares, and the spread compresses from the average spread of the ETF's underlying portfolio securities to a reduced level that reflects secondary market volume. It is for this reason (i.e., access to the underlying exposure at a cost substantially lower than if acquiring that exposure directly) that ETFs holding relatively less liquid portfolio securities often offer a compelling benefit to shareholders.

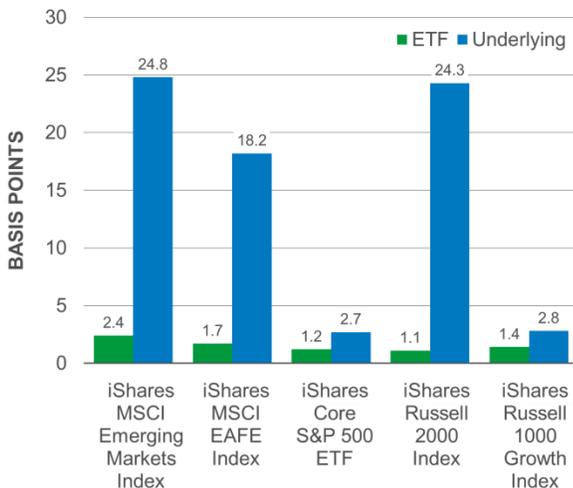
Figure 2.2.1 shows that the dollar Average Daily Volume (ADV) of the underlying basket of the top five equity iShares ETFs (by AUM) is actually much greater than the dollar ADV of the ETFs.⁶ However, in each case, the bid/ask spread for the ETFs

Figure 2.2.1: EQUITY ETFs VS. UNDERLYING MARKET LIQUIDITY

Average Daily Volume



Bid/Ask Spread



Sources: BLK, TRACE, Bloomberg as of 4/19/2013. Values are the average since 3/1/2013.

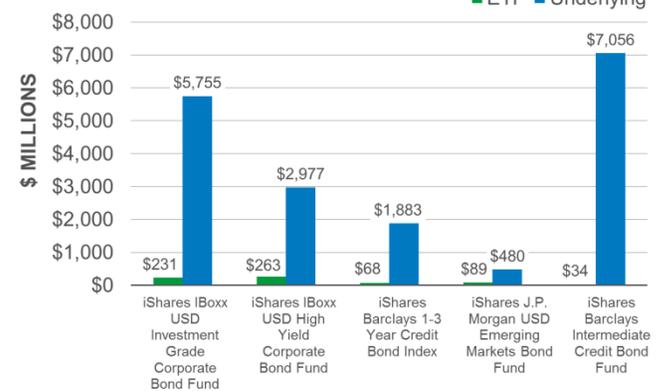
is significantly lower than the average spreads of the underlying securities, illustrating the ability of ETFs to provide access to less liquid markets at significantly lower cost.

Figure 2.2.2 shows volumes and spreads for five fixed income ETFs. The chart further illustrates that the costs of trading ETFs can be much lower than the cost of trading the corresponding basket of underlying securities, even if the secondary market liquidity is relatively low. This is because it is total liquidity (primary and secondary) that affects costs, not secondary market liquidity alone. This point is true for equities, but extends even more so to fixed income ETFs where the underlying market is generally over-the-counter (OTC) rather than on an exchange as in the case of most equities. For instance, LQD, the iShares Investment Grade Corporate Bond ETF which had 1,080 holdings as of May 1, 2013, trades at a bid/ask of 1.3 basis points versus an estimated cost of 63 basis points to purchase the underlying bonds.

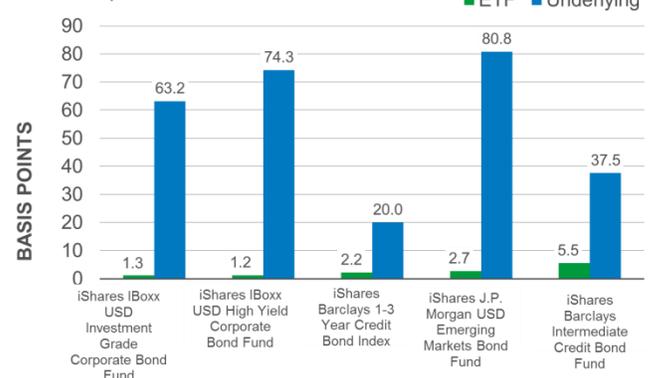
In many instances, ETFs enhance the liquidity of the underlying asset pools. Liquidity is ultimately about the ability of willing buyers and sellers to exchange assets at mutually agreeable prices. At any given point in time, this is governed

Figure 2.2.2: FIXED INCOME ETFs VS. UNDERLYING MARKET LIQUIDITY

Average Daily Volume



Bid/Ask Spread



Sources: BLK, TRACE, Bloomberg as of 4/19/2013. Values are the average since 3/1/2013.

by the specific technical conditions of a market. As such, there is no guarantee that the ETF arbitrage mechanism will always result in tighter bid/ask spreads than the market for the underlying holdings. However, ETFs focus on buying and selling the demand for **exposure to particular asset classes** (e.g., investment grade/high yield bonds, emerging markets debt, equities) in specified baskets of securities, as opposed to unique and specific instruments (e.g., AT&T INC 5.6 15-MAY-2018 IG bond). This focus on asset classes or sub-classes concentrates buying and selling demand relating to the asset class or sub-classes in the ETF shares and its underlying basket, which permits market makers to net off buying and selling demand more efficiently. Basically, when an institutional investor buys or sells a specific stock, the other side of the trade is subjected to the risk that the institutional investor is trading on information or an informed view about that stock. In contrast, when an institutional investor is making a trade in a broad basket, the risk to the other side of the trade is less, permitting the market maker to make tighter markets. Thus, in practice, there are many times when ETFs achieve a higher degree of liquidity relative to their underlying holdings and can be cheaper to trade than the underlying holdings.

The key to understanding the liquidity of ETFs is recognizing that it is multi-layered, as illustrated in Figure 2.2.3. Unlike OEFs, transactions can occur on an exchange throughout the trading day such that purchases/sales of ETFs do not necessarily require investors to interact directly with the fund. While ETFs trade intraday on organized exchanges as equities, the unique creation-redemption mechanism allows the market to adjust the supply of available shares through primary market transactions in the underlying assets beyond

The Conundrum of European ETF Liquidity

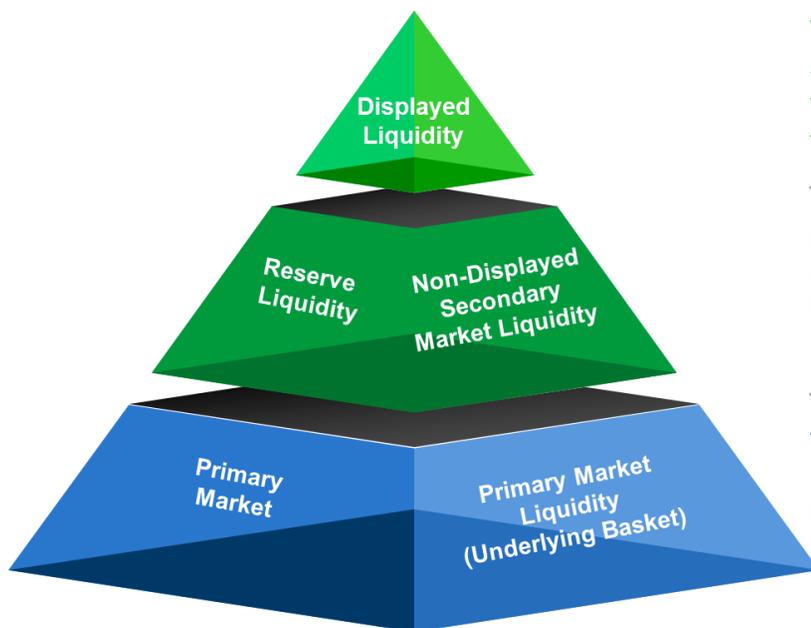
The three ETF liquidity layers apply to all ETFs, irrespective of their domicile. Nevertheless, for European ETFs, both the displayed liquidity layer and the reserve liquidity layer are currently heavily underestimated.

Displayed liquidity is fragmented across several stock exchanges. Europe boasts several major stock exchanges: London, Frankfurt, Zurich, Paris, Amsterdam and Milan. ETFs can be cross-listed on multiple exchanges, and full displayed liquidity can only be obtained by manually adding the trading done across all of them.

Reserve liquidity is not reported. In the US, trades executed on the second layer are reported on the consolidated tape required by the US National Market System. Reporting is currently not the case in Europe, where this liquidity layer is available but difficult to measure. The revised Markets in Financial Instruments Directive (so called MiFID II) will require the introduction of a consolidated tape for EU domiciled ETFs, similar to what happens in the US.

the visible secondary market. This additional element of liquidity means that **trading costs of ETFs are determined by the lower bound of execution costs in either the secondary or primary markets.** Indeed, the bid/ask spreads of ETFs are frequently well below the corresponding costs of trading the underlying basket securities for both equities and bonds, as shown in Figures 2.2.1 and 2.2.2 on page 9. A sometimes less than obvious reason for this is information asymmetry. While market makers in individual securities face adverse selection costs from trading with participants who may possess potential information advantages, these concerns are greatly mitigated in what is essentially a portfolio transaction for broad benchmark

Figure 2.2.3: ETF LIQUIDITY LAYERS



Visible “on screen” depth is one element of **secondary** market liquidity. Market makers will publicly display only a fraction of their true willingness to provide liquidity.

Reserve or contingent liquidity is an important element of **secondary** market liquidity and may be sourced through relationships with market makers.

The “true” liquidity of an ETF is limited only by the underlying basket liquidity in the **primary** market.

exposure. In the case of fixed income or thinly traded equities, the exchange trading process may confer additional risk hedging benefits relative to over-the-counter transactions in individual securities.

As an example of the resilience of the ETF market during periods of market stress, Figure 2.2.4 shows premium/discount levels and trading volume for iShares Gold Trust (IAU) during the plunge in gold prices that occurred during Friday, April 12 and Monday, April 15, 2013. Over this period of two trading days, the price of gold dropped 13% on concern that central banks would wind down bond purchase programs and worry over lower growth estimates for the Chinese economy. A 9% drop in the spot price of gold on April 15 constituted the largest daily decline in the spot gold price in 30 years. The gold market decline was followed by drops in the broader commodities and equity markets.

With the rapid drop in gold prices, trading volume reached an all-time high, but ETF market mechanisms remained stable. The secondary market price of IAU reached a discount of 3% to NAV on April 12, but reverted back to trading in its normal range within +/- 0.5% premium or discount in several days. Massive values were traded in an orderly manner with only modest market impact.

The arbitrage mechanism typically ensures that APs will provide liquidity in ETF shares when needed. In highly volatile markets, however, it is possible one or more APs may stop providing liquidity in ETF shares for internal reasons, such as hitting self-imposed risk limits. In the worst conceivable circumstance, when all APs step away, the ETF arbitrage mechanism will fail and affected ETF shares will trade like closed-end funds temporarily. This is essentially what happened during the US “Flash Crash” discussed on page 20. Generally, however, other APs will step in to accept customer orders when another AP is unavailable — as occurred during

market events in 2012, such as Hurricane Sandy, when key market participants were temporarily out of the market.

While ETFs generally enhance market liquidity, we note two best practices that can help enhance liquidity and ensure optimal functioning of ETFs:

1. Improve Liquidity of Underlying Markets: The more liquid the underlying holdings, the easier it is for APs to engage in creations/redemptions and, therefore, the better the liquidity of an ETF's shares. An ETF based on illiquid underlying instruments may provide a benefit to investors seeking access to the asset class, but it will have the potential for higher-than-usual premiums or discounts and/or trading costs. For instance, if bond market liquidity were improved by the standardization and exchange trading of corporate bond issues, corporate bond ETFs would trade with tighter premiums and discounts.

This would also result in more NAV pricing based on actual transactions for underlying fixed income securities in ETFs rather than less precise matrix pricing.

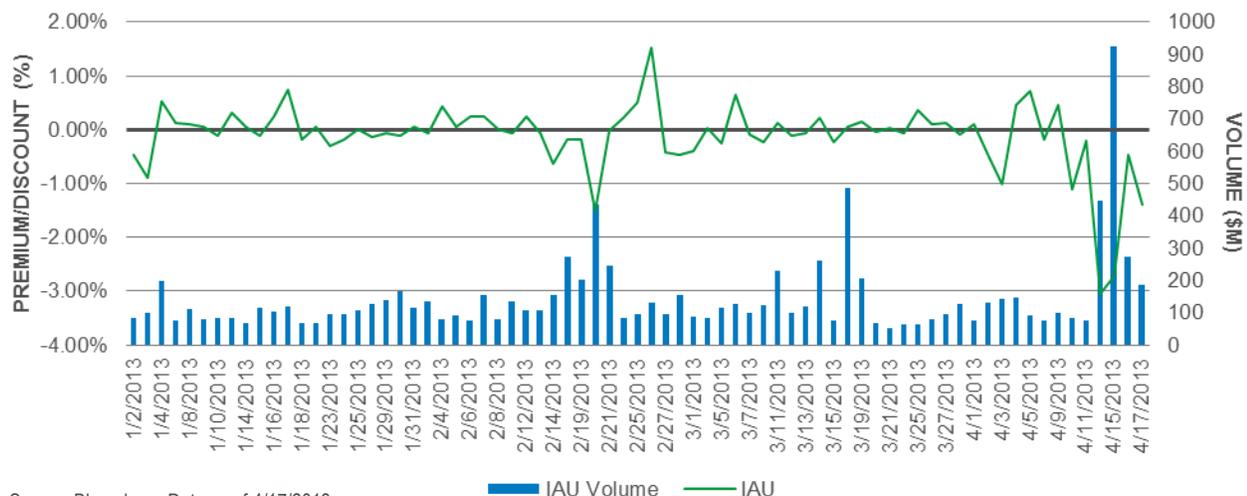
2. Encourage Multiple APs: Wherever possible, market participants should seek multiple APs or other liquidity providers for each ETF. This would aid liquidity for standard ETFs. Multiple APs are standard for the vast majority of BlackRock ETFs. This results in tighter premiums and discounts and reduces liquidity concerns in a market crisis.

2.3 Equitable Treatment of Redeeming and Remaining Shareholders

To the extent a pooled product's NAV imperfectly reflects the genuine value of its underlying holdings, redeeming shareholders receive either less or more than fair value. This, in turn, results in a benefit or dilution to remaining shareholders. The potential for this type of inadvertent value

Figure 2.2.4: GOLD ETF (IAU) BEHAVIOR YTD THROUGH APRIL 17, 2013

Premium/Discount to NAV of IAU



Source: Bloomberg. Data as of 4/17/2013.

transfer among shareholders can be more likely with OEFs than ETFs because ETF redemptions are typically made by the APs for an in-kind slice of the ETF’s portfolio (or for cash, but structured to externalize the transaction costs and mimic the economics of an in-kind transaction). Use of in-kind transactions also makes ETFs less vulnerable than OEFs to a “run on the bank” (i.e., the need to raise cash to fund significant redemptions, forcing sales of underlying holdings in a declining market at prices lower than the valuations used for the redeeming shareholders’ NAV). During extreme conditions, OEFs also can execute an in-kind exchange, but because they are not set up to do so routinely, this is a very rare occurrence. The use of in-kind transactions by OEFs can also result in a permanent negative impact on the market perception of the fund.

2.4 Systemic Stability

From a systemic perspective, physical ETFs are much more resilient than OEFs in times of financial crises. Unlike OEFs, they do not have an obligation to exchange cash for shares at (a potentially imperfect) NAV. In general, an OEF can meet this obligation only by selling some of its holdings in the then distressed marketplace, creating more downward pressure on prices of the underlying holdings.⁷ In contrast, an ETF can meet requests for redemptions by making an in-kind exchange (in effect, a barter of the ETF’s shares for a slice of the ETF’s holdings). In addition, if ETF investors need to receive cash for their ETF shares, they have the secondary market as an

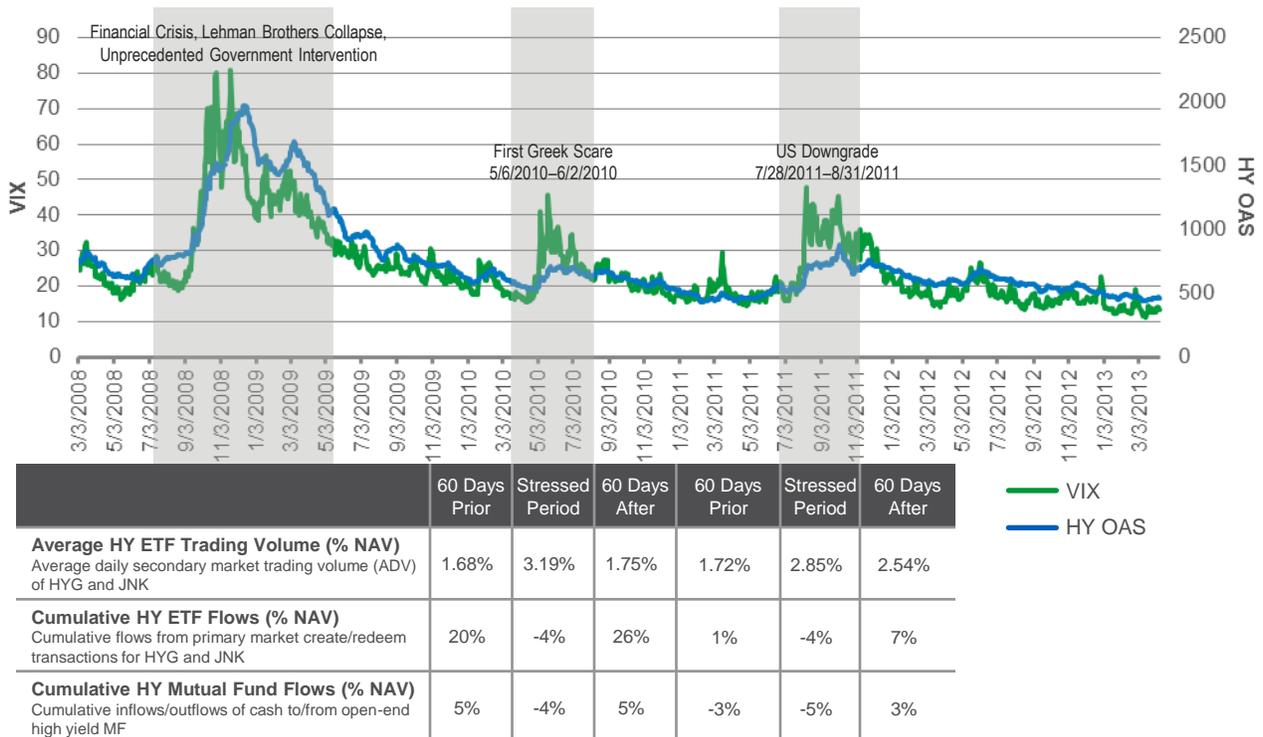
option. While the price may not be attractive and may indeed be at a discount to the current NAV, that price on the exchange is the best reflection of the cash value of the ETF shares at a given point in time and will provide liquidity.

The 2008 credit crisis illustrated that stressed markets do not always price assets at intrinsic value.⁸ ETFs with in-kind redemptions provide the least-bad way to provide liquidity fairly in times of market distress. The liquidity benefit is reflected in Figure 2.4.1, which shows the increase in trading volume occurring in high yield fixed income ETFs during two adverse market events (“First Greek Scare” and “US Sovereign Credit Downgrade”) resulting in OEF and ETF redemptions. During the First Greek Scare, average High Yield ETF trading volume nearly doubled from 1.68% to 3.19% while flows into HY ETFs and OEFs dropped by 4%.

3. Structural Characteristics of ETFs: Myths and Realities

As ETFs have grown to represent a significant proportion of market trading activity, they have come under heightened regulatory scrutiny. The result, in some cases, is a disconnect between the popular perception of ETFs and their empirical and structural realities. In this section, we explore a number of myths sometimes associated with ETFs, including those related to pricing, risks (related to securities lending and short selling, for example) and ETF behavior in stressed markets.

Figure 2.4.1: HY ETF TRADING VOLUME AND FUND REDEMPTIONS, MARCH 2008–MARCH 2013



Sources: Bloomberg, EPFR as of 3/31/2013. Chicago Board Options Exchange Volatility Index (VIX) measures the market’s expectation of volatility. High Yield Option Adjusted Spread (HY OAS) is a measure of credit and liquidity risk in the high yield bond market.

Figure 3.1.1: ETF PREMIUM/DISCOUNT LEVELS FOR MULTIPLE ASSET CLASSES

Premium/Discount (%) 1/1/2008–3/31/2013	Fixed Income					Commodities		Equity	
	EM Debt	High Yield	Investment Grade Corporate Bond	Municipal Bond	TIPS	Gold	Gold	Russell 2000	S&P 500
	EMB	HYG	LQD	MUB	TIP	GLD	IAU	IWM	SPY
Min	-9.88%	-8.41%	-10.97%	-2.40%	-2.65%	-6.15%	-5.41%	-1.53%	-2.29%
Max	13.49%	12.76%	4.24%	4.23%	3.19%	6.73%	6.66%	1.39%	2.57%
Average	0.86%	1.05%	0.64%	0.37%	0.19%	0.10%	0.08%	-0.01%	0.00%
Median	0.68%	0.83%	0.49%	0.29%	0.13%	0.10%	0.06%	-0.01%	0.00%
Std Dev	1.19%	1.60%	0.99%	0.75%	0.34%	0.89%	0.65%	0.17%	0.26%

Sources: BlackRock, Bloomberg. Data as of 3/31/2013.

3.1 MYTH 1: Trading at a Premium or Discount to NAV Is a Shortcoming of the ETF Mechanism

The fact that an ETF can trade at a premium or discount to NAV is sometimes viewed as a failure of the ETF mechanism. Our view is that the efficiency of ETF pricing is greatly enhanced by the existence of both a primary and secondary market for ETFs, which effectively maximizes their market liquidity. Asset markets are imperfect; the ETF mechanism actually facilitates the products' ability to provide liquidity at the intrinsic value of the assets.

In some cases, measuring the improved liquidity of ETFs can be challenging. Similar to closed-end funds (CEFs),⁹ but unlike OEFs, there are two types of prices for ETF shares at any given point in time: the primary market (creation and redemption) price (NAV) and the secondary market (or exchange) price. The two prices may deviate, resulting in ETF premiums or discounts. To illustrate this standard feature of the ETF operating model, Figure 3.1.1 shows premium and discount statistics across fixed income, equity and commodity ETFs from 2008 through the first quarter of 2013, a time that includes the worst period of the 2008-2009 credit crisis.

The relative ease with which ETF shares can be exchanged for the underlying securities in the basket determines how closely the ETF's share price in the secondary market will track the fair value of its underlying holdings. When this exchange is difficult (e.g., due to difficulty in locating the basket securities), ETFs tend to trade at a premium to the fair value of their underlying holdings. As seen in Figure 3.1.1, for US ETFs holding US equities, the ETF price usually tracks the NAV very closely with little premium or discount. The average premium/discount for the SPDR S&P 500 Index ETF (SPY) was 0.00% with a standard deviation of only 0.26% (with similar data for the iShares Russell 2000 Index ETF (IWM)). In US ETFs that hold non-US equities, there are market timing differentials in price, but the US closing price of the ETF is a very good predictor of the next day open in the

related non-US markets.¹⁰ The intraday trading of the ETF effectively eliminates the "market timing" problems that occurred with US OEFs in the 1990s because:

1. Unlike mutual funds, most transactions in ETF shares are conducted in the secondary market (on an exchange) and, therefore, a transaction by a shareholder seeking to market time would be at the market's best assessment of the current value of the underlying assets;
2. Intraday trading ordinarily does not involve the movement of assets in or out of the ETF that could affect other shareholders; and
3. In the case of creations or redemptions that do involve the movement of assets in or out of the ETF, the transactions are routinely effected by giving the redeeming shareholder its *pro rata* share of the fund's holdings.

Settling redemptions in-kind means there is essentially no opportunity for an AP to take advantage of any potential discrepancy in the actual value of an ETF's holdings and the nominal value of such holdings used to calculate the NAV.

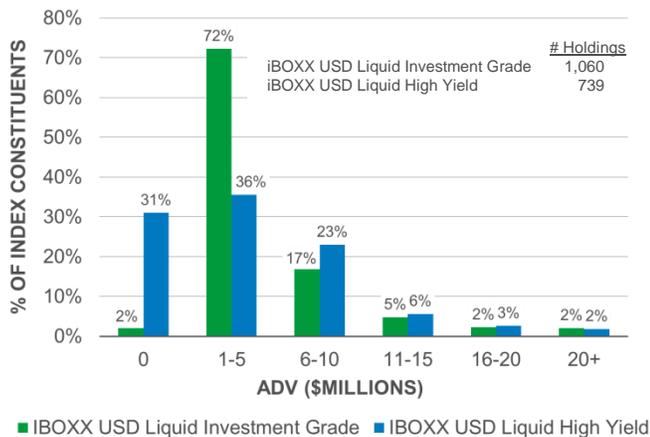
Fixed income ETFs are more likely to trade at a premium or discount than equity ETFs, due to several factors. As shown in Figure 3.1.1, most of the non-Treasury bond ETFs have an average premium of between 0.37% and 1.05%, which represents the bid/ask spread in the primary market. This is partly due to the fact that NAV is calculated off of bid prices and ETF shares may trade at ask prices or somewhere between bid and ask. As shown at the bottom of Figure 2.2.2 on page 9, the average bid/ask spread in those markets can be relatively wide, between 75 and 81 basis points, during a relatively benign period in the markets. Additionally, premiums/discounts for bond ETFs are caused by the challenges of price discovery in a primarily over-the-counter market. Given the huge number of bond issues outstanding at any time, the volume of trading in most specific bond issues

can be quite sparse. Bond ETFs often track broad bond market benchmarks that include thousands of bonds that may trade infrequently. Obtaining current prices reflecting actual transactions for this number of individual bonds is generally not possible, as many of those specific bonds did not trade on the valuation date. As such, valuing bonds for purposes of NAV requires reliance on matrix and/or model-based pricing (the latter for illiquid instruments), which results in NAVs that may be reasonably close but imperfect estimates of fair value.

The magnitude of the disparity in trading across issues in the underlying market cannot be truly understood without looking at the data. Figure 3.1.2 shows secondary market liquidity for the US investment grade and high yield bond markets as represented by the iBOXX indices. For both the investment grade and high yield “Liquid” index constituents, the chart plots the distribution of ADV of index constituents that traded for the investment grade and high yield corporate bond indices in the month of February. Note that 2% of the constituents of the investment grade index and 31% of the high yield index **did not trade at all during the month**. For those that did trade, note that a significant percentage of the bonds had ADVs of between \$1 million and \$5 million. Only 2% of the issues in each index had ADVs of \$20 million or more. To put those numbers into perspective, note that for the same month, the iShares ETF corresponding to the same liquid investment grade index (LQD) had an ADV in the primary market of \$249 million and the iShares ETF for the same high yield index (HYG) had an ADV of \$303 million.¹¹ This underscores why there can be differentials in primary and secondary market pricing and the heightened veracity that must be ascribed to the secondary market pricing, as well as the liquidity enhancement provided by ETFs.

Figure 3.1.2: FIXED INCOME SECONDARY MARKET LIQUIDITY

US Corporate Bond Secondary Market Liquidity, February 2013



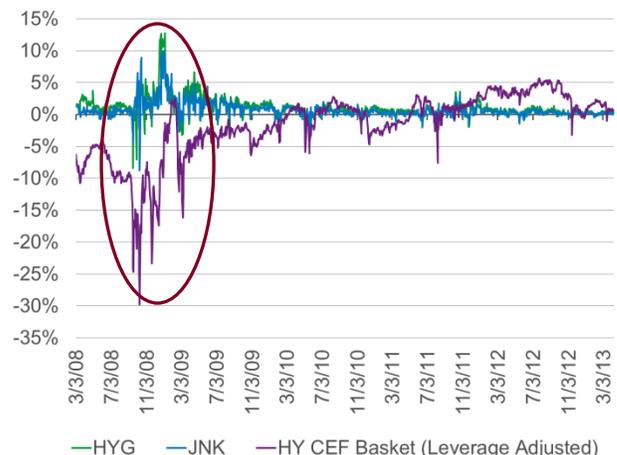
Source: TRACE as of 2/28/2013. Figure represents average ADV over days that a bond traded at least once in Feb. 2013.

As previously noted, many observers perceive premiums or discounts as a failure of the ETF arbitrage mechanism even though they are considered a routine feature of the CEF market. Premiums and discounts may arise for a variety of reasons. Transitory order imbalances in the secondary market can cause temporary price movements. Premiums or discounts may also result from the secondary market pricing the value of an ETF’s underlying holdings differently, and more accurately, than the values used by the ETF sponsor to compute NAV. Indeed, NAV is sometimes an imperfect estimate of fair value because the valuation methodologies used to compute NAV may suffer from price staleness from approved pricing vendors (e.g., thinly traded securities as shown in Figure 3.1.1), closed markets (especially international funds), and convention (e.g., bid price convention for fixed income ETFs). Either way, ETF shareholders are able to sell at an observable (market) price that they implicitly accept by placing their order, while OEF shareholders can only redeem at the next (unknown) NAV determined by the fund sponsor.

Figure 3.1.3 compares premium/discount levels for the two largest US high yield bond ETFs — the iShares iBoxx \$ High Yield Corporate Bond ETF (HYG) and SPDR Barclays High Yield Bond ETF (JNK) — with high yield closed-end fund equivalents. Outside of the 2008 crisis and early 2009 differentials, ETF prices have tracked NAVs tightly. Note that due to greater transparency to investors, the ability to be traded intraday and the ability to be arbitrated, the high yield fixed income ETFs traded much more closely to the NAV than did CEFs (leverage adjusted). This leads us to the assertion that when there was a significant deviation between market price and NAV, it may have had more to do with the NAV being computed using imperfect quotations of the value of underlying holdings rather than the exchange-determined market valuation of the ETF deviating from fair value.

Figure 3.1.3: COMPARISON OF HIGH YIELD ETF AND CLOSED-END FUND PRICING

Premium/Discount (% Unit NAV)



Sources: BlackRock, Bloomberg. Data as of 3/31/2013.

In less liquid markets, if ETFs grow quickly in size, securities favored by the ETF may develop a strong bid. Because ETFs may concentrate demand for an asset class in the particular securities needed to create new shares of the ETF, the securities in a popular ETF or its basket may trade relatively richly to similar securities not held by the ETF. This can be observed in certain types of bonds with lower levels of liquidity. More attractive pricing is accorded for large bond issues to be included in indices followed by popular ETFs. Conversely, if there were a mass set of redemptions, securities in redeem baskets would be under price pressure.

3.2 MYTH 2: Securities Lending by ETFs Presents Unique Risks

Many ETFs (like OEFs, CEFs, UCITS and other actively and passively managed portfolios) engage in securities lending. Securities lending is a well-established practice that is used to increase returns for fund investors. Securities lending occurs when a stock or bond is lent from a fund portfolio to a borrower, generally a large financial institution, for a period of time. The borrower typically will use the borrowed security (directly or indirectly by relending it) to meet a trade settlement obligation, including settlement obligations arising from short sales (a practice whereby an investor sells a security that it does not own). The borrower provides collateral worth more than the borrowed security to protect the lender in the event that the borrower does not return the borrowed security.

While securities lending has drawn scrutiny from the media and regulators in recent years, including questions regarding the investment of cash collateral, the securities lending practices of ETFs *per se* do not create any unique issues (relative to other fund lenders). In fact, standard securities lending practices entail safeguards, which (in addition to the overcollateralization requirement mentioned above) include the ability to reallocate loans among eligible funds, recall loans from borrowers to cover redemptions and the ability to charge the borrower with all costs in the event of the buy-in of the non-delivered securities. When executed by a prudent agent lender with robust risk controls and supporting infrastructure, securities lending enhances return to ETF investors and benefits the broader markets by increasing liquidity and activity among market participants.

Securities lending is a \$1.7 trillion¹² market. The percentage of securities lending out of an individual ETF is relatively small. In the US, there is a 50% aggregate statutory limit on securities lending for ETFs (though an individual security may be totally lent out consistent with the 50% aggregate statutory limit). Although not required to do so, BlackRock ETFs comply with the US rule in other regions, such as Europe and Canada. Overall, an average of less than 10% of ETF holdings are typically on loan (except for sovereign debt funds where lending may be as high as 40%).¹³ While we cannot

speaking to the entire market, BlackRock lends approximately \$43 billion in securities held by ETFs (as of June 2013). Given those numbers and BlackRock's share of the ETF market, we believe ETF-related securities lending activities represent a small component of total securities lending.

Securities lending is generally done with multiple collateralized borrowers. ETFs have the option of redeeming shares to APs in whole or, in certain cases, partly with cash. Should redemptions exceed the unloaned securities in the ETF, securities loans may be reallocated to other eligible funds at the lending agent with available inventory, or the securities may be recalled from the borrower. To illustrate, in the event of a massive redemption, BlackRock would first reallocate loans to another eligible lending fund with available inventory. Typically, the systematic reallocation of loans creates sufficient capacity within iShares ETFs to satisfy the redemption. This is a routine practice in the securities lending business. At BlackRock, greater than 99% of redemptions are covered either by available securities in the ETF or by the systematic reallocation of loans to another eligible lending fund.

If loan reallocations are not feasible, the securities are recalled from the borrower, generally on trade date (T). Per the lending agreement with the borrower, securities are contractually expected to be returned within the standard market settlement cycle for the security, typically T+3 for most equities. At BlackRock, more than 90% of recalls are returned within the standard market settlement cycle. If the shares are not returned within that standard cycle, the borrower is in technical default of the lending agreement. For US equity-based iShares that clear through Continuous Net Settlement System at NSCC (National Securities Clearing Corporation), settlement is so routine that the custodian fronts the cash to the iShares funds as if the settlement had already occurred. Any payments due from the lender to the borrower (the "rebate" rate) are reduced to zero. The fund and lending agent continue to share interest earned on the collateral, thus continuing to benefit.

The redeeming AP receives cash plus the available deliverable securities from the fund. If the AP has a contractual right to redeem fully in-kind for this particular ETF, they may choose to purchase the shares and pass on all related charges to the lending fund (this would generally be done after settlement date, not within the settlement cycle). These "buy-in" charges are routinely passed to and paid by the borrower under standard market practices. In the event that the borrower refused to pay the standard buy-in charges, because the borrower is already in technical default of the lending agreement, the lending agent would have the right to seize the borrower's collateral in order to liquidate it and purchase the securities for delivery to the AP. In the US, securities borrowers typically provide cash collateral, which

the iShares ETFs' lending agent invests into highly stable and liquid money market funds, thereby making such liquidations very easy. For non-US iShares ETFs, such as iShares ETFs organized under the laws of Ireland or Canada, collateral is typically taken in the form of eligible securities. In the event that a securities borrower did not return the securities borrowed in time to meet a large redemption (i.e., in excess of the securities not lent out), a buy-in process similar to the US allows the lending agent to pass through the charges to the borrower, and the collateral is available as a last resort.

In many cases, as a final protection to the ETF investor, lending agents may provide the portfolio lender indemnification against losses arising from the situation where the securities borrower defaults on the obligation to return the security and the collateral amount provided by the securities borrower turns out to be insufficient. For example, BlackRock provides such indemnification for iShares ETFs organized under the laws of the US, Canada, Ireland and Germany. US lending agents typically provide indemnification to publicly offered funds (both OEFs and ETFs) because it is customary and expected. In these cases, the lending agent bears the cost of making sure the portfolio lender is kept whole in the event of failure of a securities borrower to return the borrowed securities. Thus, the portfolio lender has the original collateral, the creditworthiness of the borrower and finally, the creditworthiness of the lending agent as protection when lending out securities, making the residual counterparty credit risk to the investor close to negligible. BlackRock does not provide indemnification in all jurisdictions and, specifically, in cases where a BlackRock entity does not act as an ETF's securities lending agent. For example, Brazil permits lending only to a single central clearinghouse with negligible default risk; thus, while the local iShares ETFs act as a lender, BlackRock does not act as lending agent because securities lending in Brazil requires a significantly lower degree of risk oversight and, thus, indemnification is not provided.

3.3 Myth 3: Synthetic ETPs and Securities-Based ETFs Are Equivalent

As previously noted, the term "ETF" can be used to describe a number of exchange traded vehicles that provide index exposure, but which are not regulated funds at all in the traditional sense. "ETF" is also used to describe certain vehicles that do not resemble "plain vanilla" ETFs, which simply hold an unlevered basket of stocks or bonds highly correlated with a benchmark index. These include "synthetic" ETPs, which rely on derivatives to track a benchmark; certain commodities ETPs that also rely on derivatives; and "leveraged" or "inverse" ETPs that provide a multiple or short exposure to a benchmark. Synthetic ETPs compete with securities-based ETFs and in some cases provide similar benchmark exposure, but they have different features and structural risks than securities-based ETFs.

Synthetic ETPs generate their returns from swaps, futures or indexed notes. Swap-based ETPs are the most common form of synthetic ETP. They track an index by swapping the returns of a physical portfolio through a total return swap to obtain the desired index return. The physical portfolio does not necessarily track the benchmark index, or even hold securities related to the index. Therefore, the returns produced by the ETF are dependent on the total return swap. Total return swaps pose risk to the swap counterparties, which differentiates these ETFs from those that hold unlevered baskets of stocks or bonds highly correlated with a benchmark index. Synthetic ETPs, when well structured (i.e., have multiple counterparties, appropriate pricing and collateral, etc.), can be useful and appropriate investments that are effective in providing exposures that cannot be accessed practicably with physical securities. Certain synthetic ETPs, however, are structured using only a **single counterparty affiliated with the fund manager**, which potentially creates conflicts of interest between the ETP and the counterparty. For example, a low-cost S&P 500 ETP can enter into a total return swap on its entire NAV with an affiliated bank (which swaps the total return on the invested portfolio with the return on the S&P 500 Index). However, the actual portfolio allocation (given the swap) and related investment strategy results in a markedly different risk profile. If the swap counterparty (i.e., the affiliated bank) delivers the S&P 500 Index return, the investor will not receive any benefit, but if the swap counterparty defaults, the investor will face unexpected credit exposure. To the extent the credit quality of the underlying counterparty fluctuates, returns to investors inclusive of the secondary market price of the ETP might fluctuate due to the issuer's credit risk. Basically, this structure may provide benefit to the affiliated bank, including an inexpensive source of funding. This may also create a potential conflict of interest between the ETP and the affiliated bank. This type of ETP is most common in Europe.

Both global regulators and market participants have expressed concern about this type and related ETF structures. They cite the need to highlight differences between conventional and more complex investment strategies that may involve derivatives, with one of the major concerns about the latter being the potential conflicts of interest.¹⁴ As noted by BlackRock, "potential conflicts of interest arise when a synthetic ETF provider enters into a derivative agreement with its investment banking parent because the costs it pays for the swap could be non-competitive and beneficial to the bank."¹⁵ BlackRock sponsors a handful of synthetic ETPs (mostly in Europe and Hong Kong) that typically are collateralized and use multiple counterparties, but has publicly questioned synthetic ETPs that are uncollateralized or use a single affiliated derivative counterparty.

Leveraged and inverse ETFs are swap-based. They have unique structural features that allow them to track their

benchmarks to a fixed ratio only when measured in short time periods, typically one day, but cause their performance to deviate from the benchmark when measured over longer periods. Amid certain market conditions, the difference between an investor's expectations for returns equal to the literal investment objective (e.g., 3X the return of gold or the inverse of the return of a bond index) and the actual returns over a period of weeks or months can be extreme. Regulators in the US, where these types of investment vehicles are most common, have questioned whether they are suitable investments for most ordinary investors.¹⁶ Leveraged and inverse exposures are stringently regulated by the UCITS Directive in Europe and, accordingly, exchange-traded leveraged and inverse exposure in Europe is typically offered in ETN form.

ETNs are not ETFs or funds at all. Rather, they are debt securities structured to mimic some of the features of ETFs, such as a mechanism for new issuance and redemption at frequent intervals. ETNs, unlike securities-based ETFs, involve the risk that the issuer of the note will remain solvent and make payments in accordance with the note's terms. In addition, ETNs involve other risks not presented by ETFs. ETNs typically pay according to a variable formula that may be based on an index or has rules that resemble those of an index. The issuer of the ETN may hedge its obligations under the ETN by holding investments correlated with the obligations. Notably, however, the ETN investors have no claim on such investments, which are proprietary investments of the note issuer, and there is no requirement that such investments have a value equal to the issuer's obligations under the note. Consequently, there is no true "arbitrage mechanism" on ETNs, and they often trade at premiums or discounts that would be unusually large for an ETF.¹⁷

3.4 MYTH 4: Commodities ETPs Cause Commodity Price Volatility

Commodities ETPs generally do not invest directly in the underlying commodities because the cost of storing most physical commodities is uneconomical. Instead, they invest through derivatives, typically exchange traded futures. The prices of commodities futures contracts incorporate both expectations about future prices and costs of holding an underlying commodity until a specified delivery date. They do not track closely with the spot price of a commodity. Many commodities futures are typically in "contango," meaning the price of a futures contract is higher than the spot price and futures for later settlement are generally more expensive than futures for sooner settlement. This pricing pattern is typical for non-perishable commodities (e.g., metals, oil) that require tying up capital and incurring storage costs in order to make physical settlement at a future date.

Other commodities futures are typically in "backwardation," meaning the price of a futures contract is lower than the spot price and futures for later settlement are generally less

expensive than futures for sooner settlement. An ETP that "rolls" (or is benchmarked to an index that rolls) from an expiring futures contract to the next contract benefits from backwardation, because the amount of money realized from the sale of the expiring contract buys more exposure to the commodity at a later settlement date, but suffers from contango, because the amount of money realized from the sale of the expiring contract buys less exposure to the commodity at a later settlement date. An ETP providing exposure to a commodity through futures contracts perpetually in contango loses money on each roll, which over time may materially detract from the ETP's returns.¹⁸ Futures markets can switch unpredictably between backwardation and contango, which can increase price volatility for the ETP. Because of futures price volatility and lack of strong correlation with the spot price, investors in a futures-based commodities ETP expecting the ETP to track the spot price may be surprised and disappointed.

Some commodities ETPs, such as SPDR Gold Shares (GLD) and other metals-based ETPs, do invest directly in the underlying commodity and, therefore, closely resemble "plain vanilla" stock and bond ETFs structurally. A number of critics have, therefore, raised concerns that these ETPs remove supply from the market, adversely affecting the supply-and-demand dynamics in the spot market for the underlying metal in a manner potentially leading to shortages, increased commodity prices and lost economic activity. BlackRock and other commodities ETP sponsors have countered that commodities ETPs facilitate greater market liquidity and more efficient price discovery. Moreover, much of the supply of metal deposited in-kind into physical metal ETPs is frequently already held for trading purposes by metals dealers and does not represent new incremental demand. To the extent any portion does represent new incremental demand, the price dynamics of the underlying markets are too complex to draw easy conclusions about any effect on the spot prices of commodities, and the empirical evidence does not support claims that commodities ETPs inevitably result in commodities spot price increases.¹⁹

These issues were recently raised and debated as part of a regulatory review process relating to the potential launch of two physical copper ETPs in the United States.²⁰ The staff of the US Securities and Exchange Commission (SEC) studied the issue and found no basis for the claim that the proposed ETPs would distort underlying market dynamics.²¹

3.5 MYTH 5: Total Expense Ratio Is the Only Relevant Metric for Assessing an ETF

The tendency to focus exclusively on total expense ratio (TER) as a performance metric ignores the multi-dimensional nature of ETFs. Explicit costs charged against NAV are but one variable in the overall value proposition of a particular ETF. In fact, several factors deserve special consideration.

First, an ETF investor's costs are typically lower than those associated with the average mutual fund.²² This is because ETFs tend to have lower management fees, administrative expenses and trading costs.

Second, performance as measured by NAV returns relative to the fund's stated benchmark can reflect a variety of factors. Some ETFs benefit from securities lending that can significantly offset the stated expense ratio, a fact that is not well recognized. The TER also may not recognize certain costs. For example, some ETFs (especially synthetic ETPs) may incur costs related to swap spreads, fees, etc. that may not be reported as a management fee but will detract from fund performance. These cost elements are a source of "tracking difference." As noted earlier, not all indices are investable and there may be sensible reasons for a fund's performance to depart from the stated benchmark, including liquidity and tax efficiency trade-offs. While index investing is sometimes referred to and viewed as "passive" from the perspective of a fund investor, executing these strategies at the highest level of efficiency and accuracy presents an ongoing challenge to the fund manager. There are better and worse ways to execute trades. Likewise, there are better and worse ways of choosing securities and constructing portfolios when managing against non-replicable indices. We believe more reliable outcomes are achieved with the oversight of experienced professionals and the application of sophisticated investment analytics and technology. (Note that this discussion emphasizes measuring return performance using NAV returns [i.e., not on market prices] as these reflect the true fund management as opposed to market dynamics that can drive premiums and discounts.)

Third, an ETF's liquidity is an important element of performance. To be an ETF investor requires making a trade.

Investors often do not recognize that seemingly low-cost ETFs, as measured by expense ratios, could be more costly to own once transaction costs are correctly factored into the equation. Transaction costs for smaller trades are best captured round-trip (i.e., factoring in the sum of all costs associated with a buy and sell). Figure 3.5.1 shows that even in a relatively narrow focus category (i.e., US high yield ETFs), there is considerable variation in the round-trip bid/offer spread — ranging from 1.2 to 213.0 basis points, with the average being 29.2 basis points. These cost differences are material, especially for fund investors who turn over their positions with relatively greater frequency.

Finally, in assessing the true value proposition of an ETF, tax efficiency is relevant for virtually all investors. The fraction of capital gains distributions varies widely across ETFs. Managers seek to employ such tax-efficient strategies as triggering the realization of capital losses to offset taxable gains in the portfolios, and other tactics designed to mitigate further realization of gains. Other important considerations include the size of capital gains distributions and the breakdown between short- and long-term gains, the tax treatment of income distributions (e.g., qualified dividends), and the potential use of foreign tax credits from taxes applied to fund earnings outside the United States in the case of US ETFs. Managers that pay attention to these details can add significant value — data that is not captured in TER.

The essential point is that an ETF's true value cannot be captured in TER alone. We encourage industry leaders, academics and regulators to promote an understanding of the multi-dimensional value proposition of ETF ownership rather than focusing exclusively on total expense ratios as the measure of an ETF's merit.

Figure 3.5.1: DISTRIBUTION OF BID-ASK SPREAD FOR US HIGH YIELD ETFs

Fund Name	Ticker	Bid/Ask Spread	Dollar ADV	Average AUM
iShares iBoxx \$ High Yield Corp Bond	HYG	1.2	285,513,189	15,728,531,084
SPDR Barclays Capital High Yield Bond	JNK	2.4	221,814,533	11,677,309,440
PIMCO 0-5 Year High Yield Corp Bond	HYS	3.3	51,101,370	1,768,229,702
SPDR Barclays Short Term High Yield Bond	SJNK	4.0	12,122,427	1,186,723,357
Peritus High Yield	HYLD	6.2	4,352,255	226,656,444
PowerShares High Yield Corporate Bond	PHB	6.2	7,164,950	794,409,300
Guggenheim BulletShares 2015 High Yield Corporate Bond	BSJF	7.3	3,726,651	384,223,607
Guggenheim BulletShares 2014 High Yield Corporate Bond	BSJE	7.6	2,422,894	274,201,495
Guggenheim BulletShares 2016 High Yield Corporate Bond	BSJG	9.8	1,609,651	117,690,760
Guggenheim BulletShares 2013 High Yield Corporate Bond	BSJD	13.3	1,761,649	205,689,491
Guggenheim BulletShares 2018 High Yield Corporate Bond	BSJI	13.6	848,656	48,791,591
Guggenheim BulletShares 2017 High Yield Corporate Bond	BSJH	13.8	869,274	56,425,644
iShares B - Ca Rated Corporate Bond	QLTC	58.0	119,111	10,571,455
iShares Baa - Ba Rated Corp Bond	QLTB	78.2	132,949	15,889,636
Fallen Angel High Yield Bond	ANGL	213.0	116,457	10,907,843
Average		29.2	39,578,401	2,167,083,390

Source: BlackRock. The spread is time-weighted based on tick data for all 24 US high yield ETFs traded in the US in the month of April 2013.

3.6 MYTH 6: Large Short Positions Can Bankrupt ETFs

The Kauffman Foundation, one of the largest foundations in the United States, published a widely disseminated paper in 2010 expressing concerns about the potential implications associated with the shorting of ETFs.²³ The short selling of an ETF results in the creation of long and synthetic long positions held by those who purchased from the short sellers. The paper noted that these long positions, in total, could be greater than the actual number of outstanding ETF shares. Should a scenario then occur whereby all investors move to redeem their shares at the same time, the paper hypothesized this could theoretically bankrupt an ETF, as redemptions would exceed the available assets to be redeemed.

In reality, the specific circumstances proposed by the Kauffman Foundation cannot lead to an ETF's bankruptcy. ETFs only release redemption proceeds against delivery of the ETF shares to be redeemed, a practice known as a Delivery vs. Payment (DVP) settlement. Any "redemption" by a party that does not have ETF shares to deliver in settlement (because they have lent them to a short seller or otherwise) will fail. The settlement period for a redemption is three days. On the third day, ETF shares that are to be cancelled by the ETF must be delivered before the ETF can release any assets as redemption proceeds.

Notably, the failure of a large number of redemptions could potentially cause a "short squeeze" as persons wishing to redeem seek shares (by purchasing ETF shares in the market or recalling loaned ETF shares). The more likely result, however, is that the redemptions would fail as redeeming shareholders realized they could not make DVP delivery to settle and the cost of obtaining shares to settle redemptions would be expensive. The failure of redemptions would not affect the ETF other than to create accounting entries that are later cancelled. No real costs would be incurred.

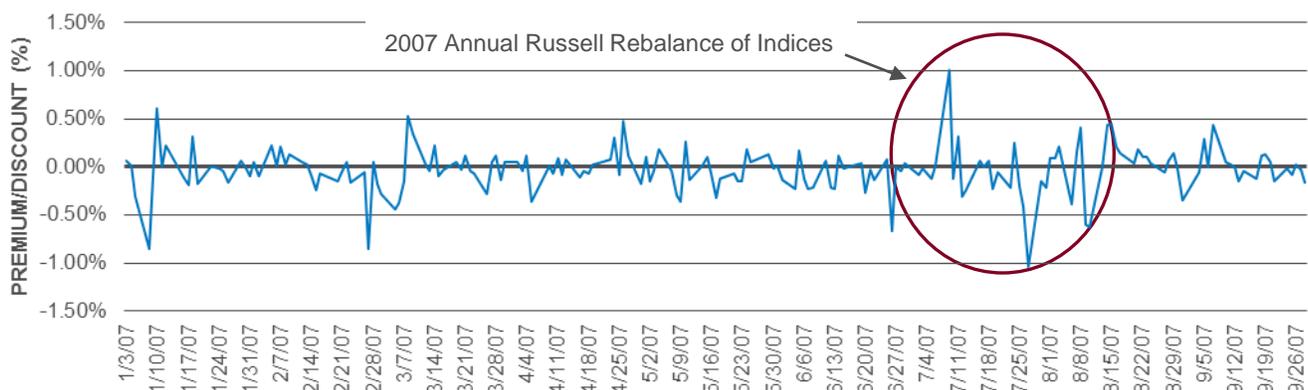
A large rebalancing of the Russell indices in July 2007 provides a notable case in point. The rebalance caused massive redemptions from the US iShares Russell 2000 Index ETF (IWM) from APs that wanted to handle the rebalancing trades themselves rather than rely on the ETF to match the index precisely at moments that created hedge risk for other positions held by the APs. Redemptions from IWM essentially equaled the ETF's assets, but were then reversed within a few days. Figure 3.6.1 shows premium/discount levels of IWM from January 2007 through September 2007. Despite the massive redemptions, at the extremes, the index only moved +/-1% relative to NAV at the time of the rebalance before returning to normal ranges.

While the high level of redemptions relative to available assets did not result in harm to IWM or its shareholders, BlackRock (the ETF's manager) subsequently put in place additional controls to ensure redemption orders are not accepted by the ETF unless the redeeming AP certifies at the time it enters the redemption order that it has access to ETF shares to deliver upon settlement of the redemption. This control prevents redemption orders that would ultimately fail due to inability to deliver ETF shares in settlement.

3.7 MYTH 7: ETPs Are Prone to Price Breakdowns and Exacerbate Problems With High Frequency Trading

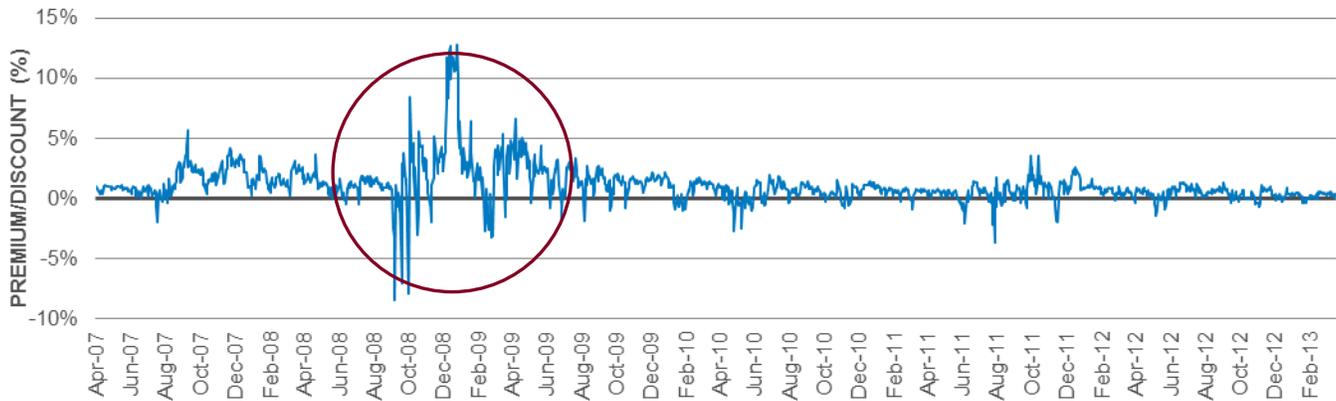
There have been examples during periods of market distress where fixed income ETFs traded at meaningful discounts (5% to 8% below NAV). This occurred in late 2008 when bonds were trading very infrequently, resulting in delayed updates to valuations supplied by pricing vendors used to calculate NAV. The discounts were also due in part to the demand to sell bond exposure — a tendency that was exhibited primarily through ETFs, then the most liquid vehicles given that the underlying bonds were often not trading at all. Figure 3.7.1 illustrates the price discounts seen in the iShares High Yield ETF (HYG) during this period, as well as more muted ETF

Figure 3.6.1: PREMIUMS AND DISCOUNTS TO NAV OF iSHARES RUSSELL 2000 ETF (IWM)



Source: Bloomberg, BlackRock. Data as of 3/31/2013.

Figure 3.7.1: PREMIUMS AND DISCOUNTS TO NAV OF iSHARES HIGH YIELD CORPORATE BOND ETF (HYG)



Sources: Bloomberg, BlackRock. Data as of 3/31/2013.

price fluctuation over a longer time horizon (2007-2013) where prices moved higher or lower due to supply/demand and market technicals and thus deviated slightly from NAV.

ETFs can have a concentration of exposure in a small number of the most liquid bonds in a relatively illiquid bond segment. This can potentially lead to those bonds trading at a larger premium to less liquid comparable issues when the demand for ETFs is high. Should market sentiment reverse, that liquidity premium might collapse precipitously, creating the potential for pricing disruptions outside of the ETF market.

There has been at least one occasion (the US “Flash Crash” on May 6, 2010) when the arbitrage mechanism of many ETFs failed dramatically for approximately 20 minutes. ETF share prices fell dramatically compared to the current prices of underlying holdings. This meant the secondary market liquidity on exchanges available to ETF holders effectively failed for this period of time.

In theory, natural arbitrage should render it impossible for ETF share prices to deviate materially from the fair value of the ETF’s underlying holdings. However, when the US equity market sold off on May 6, 2010, some ETFs traded at huge discounts to the current prices of underlying holdings (ETF values traded in cents versus dollars for the underlying portfolios). Notably, this dramatic market sell-off also severely affected the share prices of many non-ETFs, but disproportionately affected US ETFs holding US equities.²⁴ Figure 3.7.2 shows the intraday price discounts in the iShares Core S&P 500 ETF that occurred during the Flash Crash relative to the discounts of the underlying shares before subsequently reverting to normal.

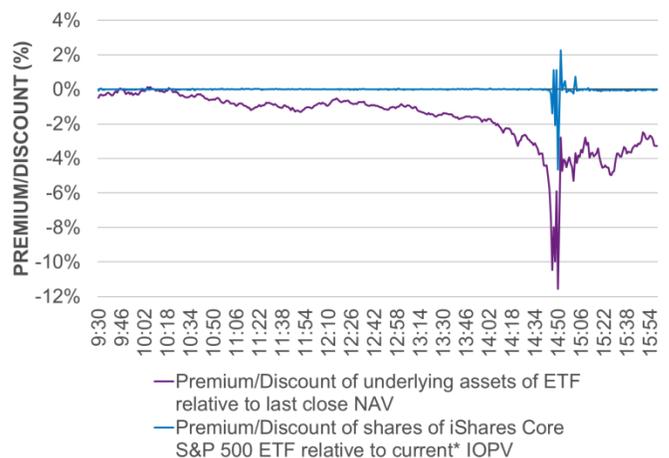
A number of factors caused these disruptions in the ETF market:²⁵

1. The sudden sharp decline in equity prices made it difficult to value ETFs that tracked benchmarks holding the falling stocks.

2. Vague and inconsistent trade cancellation rules frequently applied following sharp sell-offs caused market makers to avoid trading rather than engage in arbitrage trades where one side or the other might later be cancelled.
3. Normal order routing among US exchanges broke down, leaving some orders to sell at “market” to be executed in trading venues without significant two-way order books.
4. Additional market selling due to the triggering of stop loss (sell) orders caused further declines in stock and ETF prices and related price dislocations.

Figure 3.7.2: FLASH CRASH ETF PRICING BEHAVIOR, MARKET OPEN TO CLOSE ON MAY 6, 2010

Intraday Premium/Discount to iShares Core S&P 500 ETF (IVV)



Source: Onetick. Data as of 4/19/2013.

*IOPV (indicative optimized portfolio value) represents the intraday estimated fair value of an ETF based on the last traded prices of the underlying portfolio securities. IOPV calculations are updated every 15 seconds to reflect the most current prices in the underlying securities for an applicable fund.

Post the Flash Crash, several regulatory reforms recommended by BlackRock²⁶ and other market participants were implemented with the objective of reducing the possibility of a similar event occurring in the future. The US SEC extended circuit breakers previously applied to individual stocks and indices to a set of heavily traded ETFs. Exchanges modified trade cancellation rules, introducing price bands and triggers that would result in automatic cancellation of trades.

Prior to the Flash Crash, there was no guidance around minimum quoting standards by market makers, which frequently submitted “stub quotes” (orders to buy-sell a security at substantial distances from the National Bid/Best Offer [NBBO]) when they did not wish to trade but needed to post a quote under existing exchange rules. Such stub quotes were actionable and executed against “market” orders during the crash when all other quotes were exhausted, leading to extreme price moves. Subsequently, the SEC eliminated stub quotes and implemented new rules forcing market makers to maintain continuous two-side quotations defined within a prescribed percentage of the NBBO. All of these measures have helped reduce, but did not eliminate, the potential for issues similar to those seen on May 6, 2010.

4. Index Investing Myths and Realities

Having addressed many of the myths related to the unique structural characteristics of ETFs, we now move on to discuss those myths that have more to do with index investing, recognizing that most ETFs currently are index or passive products. Many of these issues are not necessarily relevant to ETFs defined as “active” in the traditional sense applied in the asset management industry.

4.1 MYTH 8: ETFs Do Not Reliably Track Their Benchmark Indices

Many ETFs track their benchmark indices very tightly. Some ETFs do not. Critics believe an ETF that does not track its benchmark very tightly is failing to meet its objective. There are a number of reasons why an ETF may not tightly track its benchmark, but in most cases, failure to track tightly results from practical difficulties in replicating the benchmark through a physical portfolio. Of note, investors in the ETF are often willing to accept the mistracking because the ETF provides investment exposure that would otherwise be difficult to obtain.

Most index ETFs do not fully replicate their benchmarks in the sense that their holdings match completely with the components of the index. Instead, they will hold a basket of securities designed to closely correlate with the return characteristics of the benchmark. They also may include a small percentage of “off-benchmark” holdings, such as cash, new issues and futures. This is because many benchmark indices comprise thousands of securities, including many that have small weightings and may be expensive or impossible to buy or sell. This was demonstrated in Figure 3.1.1 (see page 13) for bond portfolios, but is also true in varying degrees for

certain equity indices. As a result, the performance of an ETF may not match that of its benchmark exactly, but will effectively match the return of the specified market exposure. The disparity in ETF and benchmark performance is known as “performance deviation” or sometimes “tracking difference.” (The term “tracking error” is also sometimes used, but as explained below, in many contexts that are an incorrect usage.) Some benchmark indices are harder to match with correlated physical securities than others, based largely on the number of investment factors that need to be correlated and the availability of index components that can be assembled to match those investment factors. OEFs and other index-tracking investment vehicles face similar issues, but ETFs are more commonly offered on some of the harder-to-match benchmark indices.

In some cases, legal and regulatory constraints may prohibit an ETF from literally replicating its index. For example, there are cases in which one stock may represent 40% of an index’s weight, although US ETFs are subject to a tax diversification rule that prohibits the largest holding from exceeding 25% of assets and requires that those holdings that are each greater than 5% of assets be limited to a collective sum below 50%. European ETFs are subject to a UCITS rule that prevents an ETF from investing more than 5% of its assets in securities issued by a single issuer. This limit can be increased to 10% provided that where the 5% limit is exceeded, the total exposure to these issuers does not exceed 40% of the fund’s assets. An ETF may switch indices (subject to regulatory or shareholder approvals, if applicable) when its existing benchmark can no longer be tracked in a satisfactory manner due to changes in the composition of the benchmark over time.

ETFs are sometimes managed against “capped” indices (where available), which limit the maximum weights of the largest holdings. For example, the Belgium IMI Uncapped Index has a large concentrated position that exceeds regulatory rules. The MSCI Belgium IMI 25/50 Index was created to reduce concentration risk to comply with these rules. As shown in Figure 4.1.1, which compares active risk and performance of the capped versus uncapped indices, the capped index appropriately reduces the perceived risk and in this example outperforms the one-year active performance compared to the uncapped index.

Figure 4.1.1: BELGIUM IMI INDEX UNCAPPED VS. MSCI BELGIUM IMI 25/50 INDEX

	Uncapped Index	Capped Index
Ex-Post Active Risk		
1Y (ann.)	7.16%	1.79%
3Y (ann.)	5.05%	1.65%
Active Performance		
1Y	-5.16%	1.61%

Source: BlackRock. Data as of 3/31/2013.

Finally, some ETFs may exhibit significant performance deviation from their benchmark indices because the ETF manager makes choices that allow for greater tracking error in an effort to achieve other goals, such as enhanced liquidity of the ETF's shares. There are times when illiquid securities included in a benchmark index but excluded from an ETF's portfolio do not perform in tandem with other components of the index; if the ETF is systematically underweighted to the differently performing illiquid securities, the ETF's performance will reflect its liquidity bias.

While many people use the terms interchangeably, "tracking error" and "tracking difference" (or "performance difference") have slightly different meanings. The choice to look at one measure rather than the other can confuse investors. Recent European Securities and Markets Authority (ESMA) guidelines center on this very topic. "Tracking error" is the annualized realized volatility of the difference between the periodic return of the portfolio less the periodic return of the benchmark. Tracking error literally measures the consistency with which an ETF follows its benchmark on a daily basis, whereas "tracking difference" measures the actual under- or outperformance of a benchmark over a stated period of time. Tracking error is a useful measure primarily to investors using an ETF to hedge other positions (in which case it provides information about the likely degree of daily hedge difference). Tracking error does not, however, provide useful information about whether the long-term performance of an ETF has matched its benchmark closely. A physically based ETF may have high daily tracking error for technical reasons (for example, use of different valuation sources, or different valuation timing, than used to calculate the benchmark index), but still have very low long-term tracking difference because the daily valuation differences net out over longer periods. In addition, standard calculations of tracking error ignore significant contributors to ETF performance, such as securities lending income.

Tracking difference, in contrast, is the difference between the NAV return of the ETF and the benchmark return, which captures all income and costs that affect the ETF's NAV.

4.2 MYTH 9: ETP Flows Increase Market Correlations and Impair Price Discovery

Evidence suggests that large flows in passive index-tracking investment vehicles such as ETFs can result in temporary "uniform" movement in index prices. The resulting demand/supply shock may create price moves for the ETFs' holdings that do not accurately reflect the risk characteristics of the market. These flows, it has been said, may potentially lower the level of cross-sectional volatility. This assertion, while it has gained some attention, may lack empirical validity and remains the subject of academic debate.²⁷

There is also popular perception that the growth in passive index investing (both by ETFs and non-ETF index funds) has had detrimental effects on the market prices of the underlying

securities. In particular, there is concern that ETF trading substitutes for and takes away from volume and liquidity in the underlying securities and increases the co-movement in their returns. This, the argument says, impairs price discovery and the ability of active managers to generate alpha.

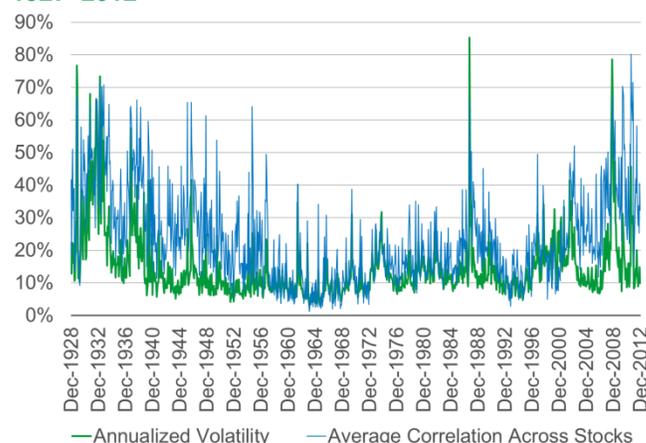
Research conducted by BlackRock finds no evidence to support these perceptions. Volume changes in ETFs and their underlying securities are positively, not negatively, correlated, showing no substitution effects. Furthermore, our research indicates that the rise in cross-stock correlations is due to the macro environment, not ETF growth.

Effect on Price Discovery: First, we would note that while cross-stock correlations are currently high, they are not at unprecedented levels relative to history. Second, asset classes such as currencies also show an increase in correlation despite limited ETF penetration. This is more consistent with the hypothesis that the driver of higher correlations is the macro environment, and not growth in ETFs. This is demonstrated empirically below with two examples: US equity returns and currency returns.

US Equity Return Example

For US equities, BlackRock examined daily returns for the top 200 US stocks from 1927 to 1958, and used the S&P 500 thereafter. For each stock in each month, we computed the average cross-stock correlation in returns. We also computed the standard deviation (or volatility) of returns by month. The results (displayed in Figure 4.2.1) show annualized volatility based on daily equity returns computed month by month, as the green line. The corresponding monthly correlation among the stocks (also based on daily returns in the month) is shown in blue. Two points are clear: 1) Correlations were very high in the past, well before the growth of index and ETF investing, and 2) Correlations and volatility are clearly related, a fact confirmed in our research — macro uncertainty drives overall factor volatility and, hence, correlation.

Figure 4.2.1: CORRELATIONS AND VOLATILITY, 1927–2012



Source: BlackRock based on CRSP data Jan. 1927–Dec. 2012.

Currency Return Example

For currencies, BlackRock computed monthly return correlations among nine developed market currencies relative to the USD from January 1999 to February 2013. Returns were estimated daily for the computation of each month's correlation matrix. The proportion of total variance explained by the first principal component was then computed as an estimate of co-movement. As shown in Figure 4.2.2, there was a significant rise in the common factor component of currency returns over the period. As the size of currency-related ETFs is insignificant to the overall currency market, this supports the view that the macro environment and high common risk factors lead to increased correlations, not ETFs.

Effect on Trading Volumes: Common stock and ETF volumes are positively correlated, and we find no evidence of substitution. In the current environment, we would expect individual security volumes to rise as investors regain confidence and deploy their cash. Figure 4.2.3 compares US equity and ETF volumes over an eight-year period ending March 31, 2013, and clearly demonstrates the high degree of correlation between volumes for the respective products.

Ultimately, concerns that the growth of ETFs has had a negative impact on the underlying markets are not supported by the data. Our research reveals that the correlation among stocks is not at unprecedented levels and that correlation is unlikely to be related to ETF asset growth when controlling for other factors. More telling, co-movement relative to the dollar has also increased for currencies, an asset class with minimal ETF penetration. These results are consistent with the notion that the observed increase in correlations is better explained by the macro environment and not related to ETF growth. It is

Figure 4.2.2: CURRENCY RETURNS AND VARIANCE EXPLAINED BY COMMON RISK FACTOR



Source: BlackRock Data as of 3/31/2013.

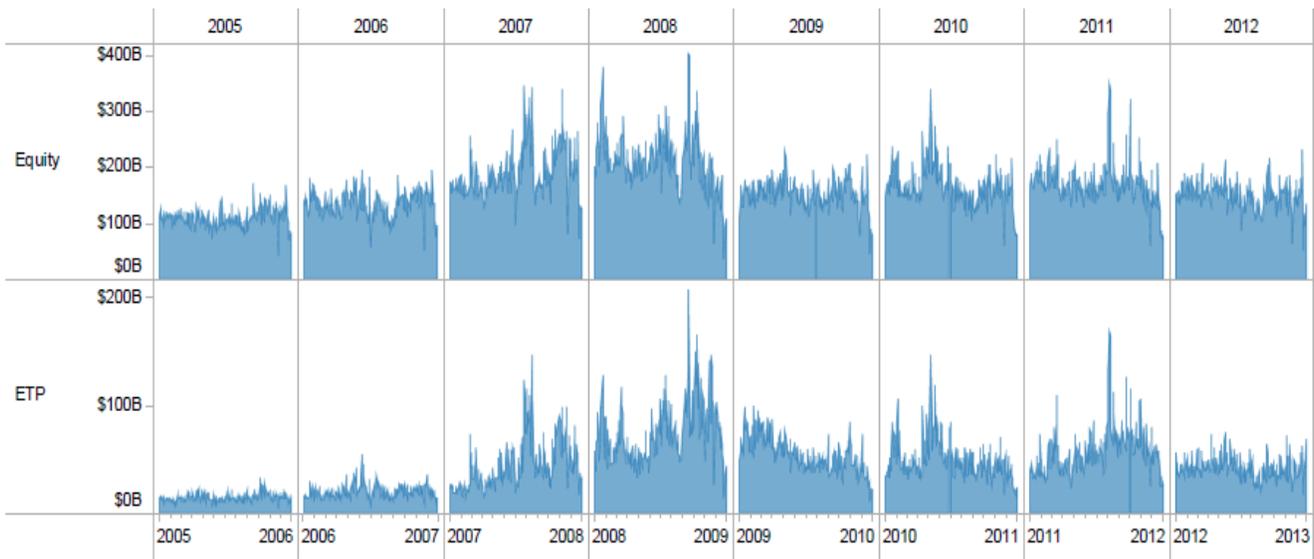
Based on principal components analysis of monthly correlations among nine developed market currencies. Returns are estimated daily for the computation of each month's correlation matrix. Shown in the figure is the proportion of total variance explained by the first principal component for that month.

also worth noting that at any correlation level, active managers (defined as those who deviate from the cap-weighted distribution of holdings in the universe) must, by definition, have average performance equal to the benchmark return less fees. As such, correlation really is not linked to the success of active management. Finally, there is no evidence that trading in ETFs has a negative impact on liquidity, as measured by volumes.

4.3 MYTH 10: ETPs Lead to Investors Tracking Sub-Quality Indices

It has been alleged that ETFs can result in investors tracking lower-quality indices. We would counter that the accusation is not one to be focused on ETFs, but the indices which they

Figure 4.2.3: US EQUITY AND ETF VOLUMES, JANUARY 2005–MARCH 2013



Source: NYSE TAQ, BlackRock Data as of 3/31/2013.

track. The reality is that there are many market indices available, some of higher quality and others of lower quality. An ETF will track the characteristics of an index, whatever its quality. However, investors ultimately benefit from ample choice and may have investment objectives that warrant tracking of a lower-quality, less-liquid index.

Recently, index-based ETFs and OEFs have been subject to increased regulatory scrutiny around liquidity, index selection, due diligence and index construction/calculations. In particular, regulators have asked how sponsors of index-tracking funds select indices and ensure that they effectively track exposure to the targeted country or sector. European regulators have recently published detailed guidelines seeking to address these concerns.

Ultimately, and whether or not there are regulatory guidelines, the onus is upon the ETF sponsor to select indices that are based on well-designed, transparent and investable methodologies from an index provider that offers quality support to its index users. Information about underlying indices is typically provided in ETF prospectuses for investor consideration. ETF sponsors should be prepared to execute effective due diligence in the selection and oversight of ETF indices. Likewise, sponsors must be judicious when constructing ETFs and design products in a way that allows end investors to efficiently achieve their desired exposure. In order to do so, ETF sponsors should consider the impact of each ETF on secondary market trading as well as the liquidity and investability of the published indices.

Sometimes an ETF provider must use an index that can only be tracked imperfectly in order to provide investors with a desired exposure. For example, BlackRock manages a synthetic ETF that invests in structured notes (P-Notes) that provide exposure to Chinese A shares. In China, the locally traded A shares cannot be held directly by foreign investors other than certain qualified foreign institutional investors (QFIIs) that have licenses to own prescribed amounts. Because the fund cannot invest in A shares directly, it invests in collateralized P-Notes whose returns are linked to A shares issued by a variety of counterparties. This results in the P-Shares with counterparty exposure to non-Chinese financial institutions being coupled with the exposure to the broader Chinese economy through the A shares. The press published negative reports in 2010 about the fund's sometimes large premiums and discounts.²⁸ This particular fund design results in a more complex and less perfect arbitrage mechanism and, as a result, the performance of the ETF's shares may not always tightly track movements in the underlying Chinese A shares market. While the fund's design is not theoretically optimal, it has been the best available vehicle for non-Chinese investors seeking highly liquid exposure to the Chinese A shares market given the significant regulatory constraints applicable to direct investment.

Conclusion

ETFs are highly additive to investors and the overall financial system, an assertion that we base on our own experience as a major market participant, as well as the supporting data detailed in this paper. ETFs add transparency, accessibility and stability to financial markets by bringing several critical elements together in a single investment vehicle. These include the ability to:

- ▶ Trade pooled vehicles on public exchanges with significant associated liquidity benefits.
- ▶ Provide high transparency in terms of a fund's underlying holdings.
- ▶ Create and redeem shares with physical securities, thus adding "barter" into the investment repertoire when pricing anomalies arise.
- ▶ Externalize transaction costs so that shareholders are largely indifferent to the inflows and outflows of other investors.
- ▶ Track the return of a wide variety of broad market exposures.

ETFs are not immune to the challenges of the financial markets, but, we believe, they generally handle the intrinsic variability of liquidity better than other popular investment vehicles. Furthermore, having already proved to be effective as index-related products, ETFs are beginning to be successfully used for style indices and certain active strategies. As such, regulatory and market attention on this growing segment of the investment universe is understandable and appropriate, but needs to be proportionate, and we believe should focus on the following best practice standards:

- ▶ **Improve the liquidity of underlying markets** (e.g., fixed income) by standardizing issues and encouraging exchange trading where feasible.
- ▶ **Ensure ETP sponsors are judicious** in their selection of reference indices and rigorous in performing due diligence around index providers' calculations and data quality.
- ▶ **Rely on multiple APs** wherever possible to diversify risk and enhance liquidity.
- ▶ **Promote transparency around the multi-dimensional value proposition** of ETF ownership rather than focusing solely on total expense ratios.
- ▶ **Use synthetic products sparingly**, primarily in cases where accessing the underlying securities is either expensive or prohibited by local law, and only when accompanied by a highly disciplined risk management process, collateralization, multiple counterparties and detailed disclosure to investors.

Notes

1. In many cases, data for iShares, the family of ETFs managed by BlackRock, are used in this paper due to the ease of availability to the authors as well as regulatory and other considerations. However, the topics in this paper are meant to incorporate the broader universe of ETF products.
2. An ETN is senior, unsecured and uncollateralized debt that trades on an exchange and has features that resemble those of certain ETFs but may pay returns based on an investment formula that cannot be replicated physically. ETNs, unlike non-synthetic ETFs, involve the risk that the issuer of the note will remain solvent and make payments in accordance with the note's terms.
3. See, e.g., Ground Rules for the Management of the FTSE RAFI Index Series at http://www.ftse.com/Indices/FTSE_RAFI_Index_Series/Downloads/FTSE_RAFI_Index_Series_Rules.pdf.
4. Source: *2012 ETF Review and 2013 Outlook*, Deutsche Bank, January 2013.
5. Academic research indicates the applicable premiums or discounts for US ETFs that invest in US stocks "are generally small and highly transient," while the premiums or discounts of US ETFs that invest in non-US stocks are "larger and more persistent," but nonetheless still performing according to expectations. See "Premiums-Discounts and Exchange Traded Funds," Robert Engle and Debojyoti Sarkar, *The Journal of Derivatives*, Summer 2006. The evidence from academic studies indicates that new price information is generally first reflected in the prices for ETF shares, so that when premiums or discounts occur, it is often the ETF shares that reflect all current information while the prices of underlying holdings lag. See "Basket Securities, Price Formation and Informational Efficiency," Lei Yu, Department of Finance, Mendoza College of Business, University of Notre Dame, November 2003 (revised March 25, 2005). Price discrepancies do not persist because the "arbitrage mechanism" of ETFs transmits price discovery information to the underlying stocks. See "Intraday Price Formation in US Equity Index Markets," Joel Hasbrouck, *The Journal of Finance*, December 2003. ETFs, therefore, play an important role in markets' price discovery mechanics.
6. Average Daily Volume means the average amount of individual securities traded in a day or over a specified amount of time. Trading activity relates to the liquidity of a security—when ADV is high, the security can be easily traded and has high liquidity. As a result, ADV can have an effect on the price of the security. If trading volume is not very high, the security will tend to be less expensive because people are not as willing to buy it.
7. Ramaswamy, Srichander. 2010. "Market structures and systemic risks of exchange-traded funds." Bank of International Settlements, BIS Working Paper No. 343.
8. See Golub, B. and Crum, C. "Risk Management Lessons Worth Remembering From the Credit Crisis of 2007-2009," *Journal of Portfolio Management*, Vol. 36, No. 3, Spring 2010.
9. Closed-end funds are pooled investment vehicles that are not continuously offered—that is, do not issue or redeem shares. Shares of CEFs are traded intraday on the secondary market, like ETFs, and nearly always trade at a premium or discount to NAV. CEFs may issue debt and/or preferred shares to leverage their net assets, which can increase distributions but can also increase the volatility of NAV.
10. See Madhavan, A. "Fair Value Adjusted Indexes —Constructing Better Investor Benchmarks," *Journal of Indexes*, Spring 2013.
11. Source: Bloomberg, "Value Traded" for LQD and HYG, 2/1/2013–3/1/2013.
12. Source: Markit website as of 12/31/2012.
13. BlackRock Data from GLM—Global Loan Management System.
14. Amery, Paul. "EU Regulators Consider Ban on Retail Purchases of Synthetic ETFs," June 24, 2011. Published by IndexUniverse.com; Flood, Chris, "UK Regulator Declares ETF Concerns, April 1, 2012. Published by *Financial Times*; Mackinlay, Rob, "Synthetic ETFs Spell Danger," June 24, 2011. Published by Citywire Financial Publications; and Ramaswamy, Srichander, BIS Working Paper No. 343, "Market Structures and Systemic Risks of Exchange-Traded Funds," April 2011.
15. For further details, refer to "ETFs: A Call for Greater Transparency and Consistent Regulations," BlackRock *ViewPoint*, October 2011.
16. See Financial Industry Regulatory Authority (FINRA) Investor Alert, "Leveraged and Inverse ETFs: Specialized Products With Extra Risks for Buy-and-Hold Investors," at <http://www.finra.org/investors/protectyourself/investoralerts/mutualfunds/p119778>.
17. See Bloomberg, "JPMorgan's Cap on Largest US ETN May Cause Premiums," June 21, 2012, at <http://www.bloomberg.com/news/2012-06-18/jpmorgan-s-size-cap-on-largest-u-s-etn-may-cause-price-premiums.html>; ETF Trends, "ETFs Trading at Big Premiums and Discounts," March 27, 2012, at <http://www.etftrends.com/2012/03/etfs-trading-at-big-premiums-and-discounts/>; and Tom Lydon, "Focus Turns to Natural Gas ETN Premium After TVIX Crash," March 23, 2012 at <http://finance.yahoo.com/news/focus-turns-natural-gas-etn-152723751.html>.
18. See "Backwardation and Contango: Futures traders and commodity ETF investors who do not understand the difference can and will get burned," at <http://nastrading.com/backwardation-and-contango-futures-traders-and-commodity-etf-investors-who-do-not-understand-the-difference-can-and-will-get-burned/>; and "Got a Commodity ETF? Watch Out For Contango!," at <http://www.investopedia.com/stock-analysis-2013/got-a-commodity-etf-watch-out-for-contango-ung-blind-qld0214.aspx>.
19. See letter dated September 12, 2012, from Ira P. Shapiro and Deepa Damre, BlackRock, to Elizabeth M. Murphy, Secretary, US Securities and Exchange Commission, at <http://www.sec.gov/comments/sr-nysearca-2012-66/nysearca201266-3.pdf>.
20. See comments filed with the US Securities and Exchange Commission in connection with the Proposed Rule Changes to List and Trade Shares of the JPM XF Physical Copper Trust (SR-NYSEArca-2012-28) and the iShares Copper Trust (SR-NYSEArca-2012-66), at <http://www.sec.gov/comments/sr-nysearca-2012-28/nysearca201228.shtml> and <http://www.sec.gov/comments/sr-nysearca-2012-66/nysearca201266.shtml>.
21. See memorandum dated November 6, 2012, from the SEC Division of Risk, Strategy and Financial Innovation Re: Proposed Rule Change by NYSE Arca, Inc. to List and Trade Shares of the JPM XF Physical Copper Trust and the iShares Copper Trust, at <http://www.sec.gov/comments/sr-nysearca-2012-28/nysearca201228-19.pdf>.
22. The Investment Company Institute (http://www.ici.org/pressroom/news/13_news_trends_expenses) reports that in 2012 the average equity fund investor paid 77 basis points in fees.
23. "Choking the Recovery: Why New Growth Companies Aren't Going Public and Unrecognized Risk of Future Market Disruptions," Harold Bradley and Robert E. Litan, November 8, 2010.
24. Some, but only a few, US ETFs holding fixed income securities and non-US equities also experienced wide price deviations.
25. For additional details, refer to "Understanding the Flash Crash: What Happened, Why ETFs Were Affected, and How to Reduce the Risk of Another," BlackRock *ViewPoint*, November 2010.
26. For further details, refer to "Revisiting the Flash Crash: A Year Has Passed, What Has Changed?," BlackRock *ViewPoint*, May 2011. Letter dated June 2, 2010, from Ira P. Shapiro, Managing Director, BlackRock, to Elizabeth M. Murphy, Secretary, Securities and Exchange Commission, commenting on SRO Single Stock Circuit Breaker Proposals (available at <http://www.sec.gov/comments/sr-nysearca-2010-41/nysearca201041-6.pdf>).
27. David B. Mazza, *The Journal of Index Investing*, Summer 2012, Vol. 3, No. 1, p. 45; and A. Staer, "ETF Flows and Underlying Returns: The Case of ETFs," working paper 2013.
28. Chen, Oswald. "A-Share ETFs Could Pose a Risk Similar to Lehman Minibonds," *China Daily* (HK Edition), September 23, 2010.

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