Looking "Under the Hood" of ETF Liquidity Presented by QQQ™

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Since the launch of the first exchange-traded fund (ETF) in 1993, millions of investors and thousands of financial advisors have discovered the liquidity advantages of ETFs.[1] It takes just a few trades to see how easily and cost-efficiently ETF shares may be bought or sold, in large or small amounts.[2] In general, the trading process is seamless, and most investors take for granted the underlying "machinery" that makes it possible.

We believe financial professionals who want advanced ETF knowledge should take a closer look at some of the key aspects of ETF liquidity, such as:

- *the creation/redemption process*
- *indicative net asset value (iNAV) also known as indicative intraday value (IIV) of ETF shares*
- *the role of liquidity providers*
- *the impact of special market events*

When you "look under the hood" in this manner – to truly understand the mechanics of valuing and trading ETFs – you will be better equipped to communicate and coordinate ETF strategies for your clients.

This special report offers an overview of the participants, concepts and working terminology to enable liquid ETF trading. It will also help explain why some ETFs and market environments create more liquidity than others. In the final section, we will discuss a few trading strategies you might wish to implement when considering liquidity.

[1] Shares are not individually redeemable and owners of the shares may acquire those shares from the Fund and tender those shares for redemption to the Fund in Creation Unit aggregations only, typically consisting of 50,000 shares.

[2] Since ordinary brokerage commissions apply for each buy and sell transaction, frequent trading activity may increase the cost of ETFs.

"Visible liquidity" in ETFs – a review

Summarized below are the liquidity features investors have come to expect in ETFs.

- Most ETFs trade on exchanges, like stocks, continuously throughout the trading day. Traders with Internet access to a market platform can see, at any moment: 1) the highest bid price and amount of shares being bid for; 2) the lowest ask price and amount of shares being offered for sale; 3) trading volume for the day. Traders with level two quotes can see the entire order book and easily access this information.

- The difference between an ETF share's bid and ask price is the trading spread, which is one measure of liquidity. In general, the lower the bid-ask spread, the higher the liquidity. The higher the trading volume in a given ETF, the higher the liquidity may be. However, as we will show in this paper, trading spreads, volumes and posted liquidity may not always be indicative of ETF total liquidity.

- ETF trades may be placed with a market order or by using several types of orders familiar to traders. Limit orders are common and may be useful in ETF trading because they ensure that a buy trade will be executed at a price no higher than the specified price, if it is executed at all. Sell limit orders are placed to obtain a share price no less than the specified price.

- To illustrate this concept, we will discuss an illustrative only example in which an ETF is posted at a price of $45.30 bid/$45.50 ask. Keep in mind that these are only "bids and asks," not actual trade prices. No trades are associated with these prices until someone acts and makes a trade. In this case, the spread is 20 cents. An advisor who wishes to buy 500 shares for a client will pay no more than $45.50 a share (dealer asking price). By entering a limit order to buy 500 shares at $45.30, the advisor assures the client a price no higher than the limit price, if the trade is executed. Because of the limit order, there is no assurance that the trade will be executed. By attaching an "All or None (AON)" instruction to the limit order, the advisor assures that: 1) all 500 shares will be bought at $45.30 or 2) none will be bought.

Dollar cost averaging does not assure a profit and does not protect against loss in declining markets.

- The liquidity of ETFs creates another benefit that is true with heavily traded ETFs is that small quantities of shares can be bought or sold as efficiently as large quantities.[1] Each trade incurs a buy or sell brokerage charge, but otherwise the visibility to bid-ask spreads and ability to use order instructions are similar, regardless of order size. This enables ETFs to be used in strategies such as asset allocation, automatic portfolio rebalancing, dividend reinvestment, dollar cost averaging and systematic withdrawal plans.[2]

As a precursor, specialty asset classes and thinly traded over-the-counter markets have limited volume and relatively high bid-ask spreads. In these areas, we believe ETFs are augmenting liquidity and creating more cost-efficient access.

International and emerging market bonds, high-yield bonds, preferred stocks and micro-cap stocks are asset classes in which ETFs may augment liquidity and reduce spreads and trading costs, compared to buying or selling portfolios of individual securities. This is due to the unique operational structure of ETFs. Most ETFs redeem existing shares through in-kind, cash or credit transfers with institutional investors; also called authorized participants (APs). The main idea of creation or redemption is that the AP tenders shares (or units) to the fund in exchange for a creation unit, a basket of securities held in the ETF's portfolio. However, creates and redeems can also be done in cash or by exchanging a portion of the basket but not the whole basket.

The impact of turnover and trading volume on exchange-traded portfolios (ETPs)

The US has by far the most active exchange-traded portfolio trading market in the world. As of Sept. 30, 2013, a total of 1,510 ETFs and exchange-traded notes (ETNs)[3] were trading in the US market, representing total assets of $16.6 trillion.[4] The top ETP sponsors, ranked by one-year dollar volume over the one year prior to and ending on Sept. 30, 2013.

ETF Sponsor	Share Trading Volume (in millions)	Trading Volume Mkt. % of Share
State Street	7,073,787.14	47.86%
iShares	4,036,598.32	27.31%
ProShares	796,387.84	5.39%
Invesco PowerShares	711,103.36	4.81%
Vanguard	598,640.77	4.05%
Direxion Shares	474,373.74	3.21%
Van Eck	323,699.56	2.19%

Source: Bloomberg L.P., as of Sept. 30, 2013, One-year dollar volume over the one year prior to and ending on Sept. 30, 2013

On average during the past year ending Sept. 30, 2013, it took the market 24 days to turn over US exchange-traded portfolio (ETP) assets.[5]

The in-kind creation and redemption process where authorized participants trade baskets of the underlying ETF portfolio securities for shares in the fund and vice versa may be more efficient than the direct activity within a mutual fund. Within an ETF, shares and securities are exchanged with the ETF directly.[6]

[3] An exchange-traded note (ETN) is an unsecured, unsubordinated debt security that differs from other types of bonds and notes because returns are based upon the performance of a market index minus applicable fees, no period coupon payments are distributed, and no principal protections exist. ETNs are traded on major exchanges, and investors may hold the debt security until maturity.

[4] Source: Barclays Global Investors, as of Sept. 30, 2013

[5] Source: Bloomberg L.P., as of Sept. 30, 2013

[6] Invesco PowerShares does not offer tax advice. Please consult your own tax adviser for information regarding your own tax situation.

Looking under the hood

Share trading volume is one measure of ETF liquidity, but it may not always be the most accurate or reliable measure. Rigid volume-based criteria screening ETFs based on assets and average daily trading volume (ADTV) have been used as measures of liquidity but may not tell the whole story.

To learn why this may not tell the whole story, let's "look under the hood" and see several interconnected parts of the ETF trading machinery. This machinery includes the creation/redemption process, indicative net asset value (iNAV), indicative intraday value (IIV), liquidity providers and the consideration of special events.

Creation/redemption process – Typically, ETF shares are created and redeemed through in-kind transfers with APs. Creations and redemptions can also be completed in a cash transaction or by exchanging a portion of the basket. For simplicity and to discuss the process, we will assume that to create new shares, an AP transfers to the ETF a basket of securities containing the underlying holdings of the ETF. Since these securities are transferred in-kind for redemption of ETF shares, the tax code provides that capital gains are not recognized at the time of this transaction. This ability has helped to make the ETF a relatively tax-efficient structure, in most cases.[6]

To redeem shares, the process is reversed. The AP transfers shares to the ETF and receives the underlying basket of securities. Most creation/redemption activities take place at the end of the trading day, at the NAV of the ETF but the time may vary depending on market hours of the assets in the underlying basket.

With the creation/redemption process ETFs trade in an arbitrage situation in which bid-ask prices are not determined primarily by supply of and demand for ETF shares themselves or exclusively by ETF share trading volume. Instead, prices are driven by the value and liquidity of the underlying baskets of securities.

For purposes of understanding and using liquidity, there is a fundamental difference between arbitrage and auction markets. To grasp it, imagine that you must liquidate 100,000 shares of a stock and also 100,000 shares of an ETF – today. As you start putting shares of stock up for sale on the auction market, the supply-demand balance will tip toward supply. You may even start to see the price fall based on your orders, and you may have to drop your ask price gradually to sell the full block quickly.

This is not always the case in an arbitrage market. In the largest and most liquid ETFs, it may rarely be the case. If you should put 100,000 ETF shares on the market, share supply will increase. Share demand may also increase because arbitrageurs will see opportunities to profit if the price deviates from the value of the underlying basket. Market makers will take advantage of this situation, and they also may reduce any associated risks through a variety of derivatives markets, including futures and options.[7, 8]

An arbitrage trade will be profitable if an arbitrageur can buy ETF shares at one price and short the basket or alternatively short the ETF shares and buy the underlying basket securities. Since arbitrage trading is highly competitive, the spread between ETF share prices and basket prices remains fairly narrow, most of the time. The spread generally widens only when it is more difficult or inefficient for the arbitrageur to buy and deliver, or receive and liquidate, the underlying basket of securities.

Most ETFs attempt to track indexes of securities, so their holdings tend to closely mirror index components. The more visible and actively used an index is, and the more liquid its components are, the greater the liquidity in the tracking ETF's shares will be. ETFs that track well-known indexes composed of actively traded securities tend to have very high liquidity and low bid-ask spreads.[9]

Indicative net asset value (or indicative intraday value) – iNAV and IIV are terms used to describe quotes generated by computers throughout the trading day, usually every 15 seconds. These quotes, which are distributed under their own symbols, measure the last traded price of all underlying securities that compose an ETF.

If IIV falls somewhere in between the current bid-ask price of the ETF arbitrageurs may have the opportunity to make a small profit, perhaps only a penny or two, by buying ETF shares below IIV or selling ETF shares above IIV. However, in the most liquid ETFs, the ETF's bid-ask spread may only be a penny per share, which creates very narrow slivers of opportunity for professional traders. Despite limited profit potential per share, arbitrageurs can effectively "make it up on volume" in these ETFs by capturing fractions of a penny of profit on very large and frequent trades. IIV may not provide meaningful information when one or more trading markets for the underlying holdings of the ETF basket is closed.

[7] No option strategy can eliminate risk, including the possible loss of principal. Option strategies, in particular, may result in the total loss of principal in a short period of time. Please note that options are not suitable for all investors and they may carry substantial risk.

[8] **Commodities, currencies and futures generally are volatile and are not suitable for all investors.**

[9] Index returns do not represent Fund returns. An investor cannot invest directly in an index.

This may be one reason ETF share turnover tends to be so high. The huge trades earning tiny profits also help to increase liquidity in ETFs, especially those that are the most actively traded and liquid. If and when spreads widen, even slightly, arbitrage trading volume may increase to capture profits.

In some thinly-traded asset classes, many of the underlying securities held by ETFs may not trade every 15 seconds, or even every 15 minutes. Meanwhile, the ETFs themselves may keep trading, based on arbitrageurs' ability to hedge the underlying basket with highly correlation securities.

Liquidity providers – The APs and arbitrageurs who are active in the ETF industry form one type of liquidity provider, among others. For US exchange-traded ETFs, an orderly market is made by lead market makers (LMMs), formerly known as "exchange specialists." The LMM role is to quote competitive two-sided markets in securities throughout the trading day and keep bid-ask spreads narrow. In addition to having the same powerful analytical tools as arbitrageurs, LMMs have pricing power in the form of rebates from exchanges for maintaining orderly markets. They also study the consolidated electronic limit order book to evaluate overall supply-demand for shares. LMMs play a special role in setting the opening and closing prices for ETFs, to reduce the impact of order imbalances on the buy or sell side.

Additional trading liquidity is provided by specialized block trading shops known as "alternate liquidity providers." These firms specialize in liquidating or acquiring large blocks of ETF shares that do not trade in high volume or have high bid-ask spreads. Their role is to match customers with arbitrageurs and large investors willing to take the other side of the trade. The prime customers of alternate liquidity providers include institutions, discretionary asset managers and high-volume retail advisors. However, some alternate liquidity providers will work with any investor who wishes to trade blocks of about 5,000 ETF shares or more.

Special events – Some events have the potential to temporarily disrupt the ability of liquidity providers to swap ETF shares for securities, and thus maintain trading efficiency and liquidity. For example, ETF sponsors may occasionally suspend creation of new shares for a period of time, pending regulatory action or unusual supply-demand imbalances. For about eight weeks in early 2011, the Egyptian stock market was closed while the country was embroiled in a revolution. The sponsor of an ETF that specializes in the Egyptian market, Van Eck Global, suspended creation/redemption in its Egypt Index ETF (EGPT) while the market was closed. Shares of EGPT continued to trade throughout this period, although they did so without current pricing guidance and with above-average price volatility.

ETFs are not immune to unusual liquidity events in securities markets, such as the brief "Flash Crash" of May 6, 2010. ETF trades accounted for about 70% of all trades that were cancelled by the exchanges in this crash, because prices declined by more than 60%. In its report on the Flash Crash, the SEC concluded that ETFs were more affected by the sudden deterioration in overall market liquidity than many other types of securities.[10] In response to the Flash Crash, exchanges have implemented "circuit-breakers" rules designed to reduce large sudden share price changes, up or down, and they are continuing to study other measures that will increase investors' confidence and protections.

Independent research of the Flash Crash showed that normally high correlations between ETF prices and values in underlying securities baskets became decoupled in some ETFs, for a few minutes on May 6.[11]

Liquidity in foreign markets and foreign ETFs

ETFs are held by American investors who participate in the world's leading foreign stock markets. However, four factors may cause international ETFs to have different liquidity characteristics than their domestic counterparts.[12]

1. Lack of IIV pricing guidance when foreign markets are closed while US trading in ETFs is open – note that commodities markets have historically behaved in this manner.

2. Relatively low trading volume in some international ETFs.

3. Low trading volume and liquidity in the underlying securities held by the ETF.

4. Currency fluctuations and risks, which may make valuation calculations between ETF shares and underlying baskets more dynamic and complex.

[10] Source: *Findings Regarding the Market Events of May 6, 2010,* Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues, Sept. 30, 2010, sec.gov/news/studies/2012

[11] Source: Liquidity and Price Discovery in Exchange-Traded Funds, Investment Technology Group, May 2010

[12] Foreign securities have additional risks, including exchange-rate changes, decreased market liquidity, political instability and taxation by foreign governments. Investment in securities in emerging market countries involves risks not associated with investments in securities in developed countries.

We believe these liquidity limitations may be better managed by considering the following:

- Limit orders are available for buying or selling international ETFs. When the investor has a relatively long holding period and limit orders are used, most liquidity-related issues historically have not been significant.

- Some financial professionals believe it may be a good idea to buy international ETFs at times of day when markets trading the underlying holdings are open, and real-time IIVs are being published. This is not a problem for Canadian and Latin American ETFs, because their market hours largely overlap US trading. European markets overlap the morning trading session in the US. After foreign markets have closed, a foreign ETF's NAV may be the best indicator of underlying value, because it is based on the closing prices of underlying securities in local markets. NAV is calculated once per day for most ETFs.

- To trade Asian markets (which have little or no hours of overlap with US markets), ETFs that participate in American Depositary Receipts (ADRs) may offer a solution. ADRs represent shares of foreign-based firms and entitle a shareholder to all dividends and capital gains. Since ADRs trade in US markets and are denominated in US dollars, IIVs are published throughout the trading day and help to keep bid-ask spreads efficient. Market makers may also use futures markets to get access to these securities and hedge themselves.

For example, ETFs make it possible to participate in a basket of ADRs issued by companies that derive a majority of their revenue from the People's Republic of China. Other ETFs are designed to track indexes composed of ADRs for Europe, Asia, global developed markets and global emerging markets.

Example: An investor wants to obtain exposure to the largest and strongest companies in Asia. One solution is to invest in an ETF that tracks an index of ADRs. These securities trade continuously on US exchanges throughout the US trading day, with good trading volume and liquidity in the underlying holdings. Although the ETF itself may not have high trading volume, it is theoretically relatively liquid because its bid-ask prices tend to stay within a few pennies of its quoted IIV. Any trader who thinks a spread of a few pennies is high can use a limit order to buy or sell shares of the ETF.

Liquidity in fixed-income ETFs

ETFs may enable increased trading convenience, cost efficiency and liquidity for fixed income holdings and allocations.[1, 2] With one trade, a diversified portfolio of bonds can be bought or sold in large or small amounts, including structured or laddered portfolios and bond issues that may be hard to access or difficult to research.[13]

It is important to remember a key difference between stocks and bonds. Through exchanges and consolidated electronic order systems, most stocks show one bid-ask spread and transaction price at any given time. Most bonds, however, trade in over-the-counter markets (off-exchange), where dealers may quote different prices. This means that the IIVs quoted for fixed-income ETFs are only estimates of the intraday values of underlying portfolios.

At times, some sectors of the bond market can experience supply-demand imbalances that make it more difficult and costly to liquidate portfolios of individual bonds. In the 2008 financial crisis, spreads widened dramatically on many lower-grade corporate bonds. Some auction-rate markets temporarily lost bid-side participation, leaving bond holders stranded without liquidity.[11] In times of bond market stress and limited liquidity, we believe ETFs may provide more efficient trading opportunities than individual securities, in some fixed-income sectors.

Even in normal markets, high-yield bond ETFs often are observed trading at a 1% to 2% premium to NAV, which reflects the trader's cost to assemble the underlying portfolio.[11] This premium may be even higher when bond markets become more volatile, or when underlying bonds are not trading very actively.

The liquidity of fixed-income ETFs has been heavily influenced by the liquidity of the underlying securities. ETFs may make it easier for investors to gradually adjust fixed-income exposures or durations, by buying or selling small amounts of shares gradually, and by taking full advantage of limit orders.

This concept is discussed further in an illustrative example where a high-income investor wants to hold 20% to 30% of her portfolio in a liquid low-cost fund that pays largely tax-free income. Rather than purchasing a series of short-term municipal bonds or variable-rate demand obligations, the investor's advisor could use a tax-free investment to create this access. Every few weeks, the advisor may adjust the position to meet the client's liquidity needs, by buying or selling shares using limit orders.[6]

[13] Debt securities carry interest rate, credit and call risk. Interest rate risk refers to risk that bond prices generally fall as interest rates rise and vice versa. Credit risk is the risk of loss on an investment due to the deterioration of an issuer's financial health.

Liquidity in commodities, currency, precious metals and leveraged ETFs

Financial advisors should be aware of special issues that can affect liquidity in commodities, currency, precious metals and leveraged ETFs.[7, 14]

- ETFs based on diversified commodities indexes should be valued mainly by using NAV, which is published once daily and when the market closes. NAV in these ETFs may be based on the current level of the index that the ETF tracks, not the ETF's underlying investments. IIVs are estimates or approximations, based on intraday changes in the index.

  Commodities, currencies and futures generally are volatile and are not suitable for all investors.

- Accurate NAVs in futures-based commodity and currency ETFs depend on accurate settlement prices in the underlying futures contracts. At times, disruptions in futures markets including daily price limit moves may cause current settlement prices to be unavailable or not representative of daily value. In these cases, futures-based ETFs may trade at a significant premium or discount to quoted NAVs.[7]

  Contango occurs when the next-to-expire contract is trading at a *lower* price than contracts expiring in later months. Backwardation occurs when the next-to-expire contract is trading at a *higher* price than contracts expiring in later months.

- As futures contracts held by ETFs expire, NAV can be affected by the higher cost (contango) or lower cost (backwardation) of replacing ("rolling") contracts. ETF prices may anticipate these adjustments in NAV prior to contract expiration dates.[7] Contango usually creates a cost drag on ETFs and other funds that continuously roll futures contracts, as front-month contracts expire. Backwardation creates a positive increment of return. However, these conditions are not permanent, and any given futures contract can shift from contango to backwardation (and vice versa) over time.

[14] Leveraged investments are likely to be more volatile than an unleveraged investment. There is also a greater risk of loss of principal associated with a leveraged investment than with an unleveraged investment.

- Although many commodities now trade in 24-hour global electronic markets, some contracts have trading hours that do not correspond to ETF trading. This means ETF prices may not always be pegged to real-time trading values. For example, Chicago Mercantile Exchange trading in oats, rough rice, soybean and wheat futures closes at 1:15 p.m. CST. However, an ETF that tracks these contracts and other agricultural commodities will continue trading on NYSE Arca until 3 p.m. CST.

- For ETFs that hold physical bullion of precious metals, IIV is calculated based on the midpoint of the bid-offer spot price. The spot price is determined by the 24-hour Over-the-Counter (OTC) market. The ETF's NAV is calculated daily based on the total ounces of metal held by the ETF (plus any cash held, less accrued expenses), divided by shares outstanding. After trading hours, the ETF may continue to trade based on a combination of the NAV and any real-time changes in spot metal prices.

- Some leveraged and inverse ETFs enter custom swap agreements to track their benchmarks. Their share creation/redemption process is settled in cash, rather than by swapping a basket of securities.[14] Their calculations of NAV and IIV should be considered estimates, and ETF share bid-ask spreads to these calculations can be fairly wide at times.

Strategies that may maximize ETF liquidity

Best-time-of-day trading – Some professional ETF traders avoid placing orders at the open or close, due to market-making and arbitrage activities that can create inefficiencies. Right after the open, most actively traded ETFs will have: 1) a transaction price; 2) a bid-ask spread; and 3) a quoted IIV. This visibility enables traders to determine a likely entry point (for buy trades) or exit point (for sell trades), and also the most appropriate type of order to use. Although market makers bear some risk during the opening rotation of ETF pricing, they may be able to reduce this risk by hedging, which may enable them to make a more competitive market with a tighter bid-ask spread. (To do this, they may use a variety of markets, including futures and options, for hedging purposes.)

Tracking errors and trading – Some investors judge the "efficiency" of their ETFs by how well they track the benchmarks with which they are paired, using "tracking error" to measure the difference between returns of a portfolio and its benchmark index.[2] Advisors may wish to remind these investors of two points:

1. Published results of ETF performance and "tracking error" versus benchmarks usually assume a buy-and-hold investment. Historically, they do not include trading commissions and spreads incurred by individual investors. It is possible for an ETF to be a highly efficient and liquid trading vehicle and still have a high tracking error versus the benchmark. In most US equity ETFs, tracking error versus the benchmark tends to be fairly small on a day-to-day basis, due to the transparent ability to monitor IIVs and the underlying basket of index components.[15]

2. In the real world of investing, we believe trading inefficiencies do cause ETFs to lag behind benchmarks. The more often investors trade in and out, the greater these inefficiencies may be. For investors who use ETFs to achieve access to market sectors, styles or industries, buying-and-holding may be a method to reduce trading costs and reduce possible liquidity issues.[1]

Limit orders – In thinly traded ETFs, the combination of IIV and the bid-ask depth can be a guide for pricing limit orders. As an illustrative example, suppose an advisor wants to buy 1,000 shares of a laddered Treasury ETF for a client:

Bid price/depth:	$29.74 X 100 shares bid
Ask price/depth:	$29.77 X 1,400 shares offered
IIV:	$29.75

By bidding the IIV of $29.75 with a limit order, the advisor is offering what the underlying portfolio is worth at that time, and this bid could attract some of the supply being offered at $29.77. Paying one extra penny for a 1,000 share order increases the cost by just $10, and may be the key to making a timely trade that helps to fulfill a larger investment strategy.

Liquidating large positions – Because ETFs trade in arbitrage markets, not all of the potential demand for shares may be visible. At the right price, arbitrageurs have historically come off the sidelines to bid for large blocks of shares. Alternate liquidity providers assume the role of determining that price and then liquidating large blocks of shares quickly and cost efficiently. If you do not wish to use an alternate liquidity provider, large blocks can often be liquidated by using limit orders and adjusting the price as required by market trends and supply-demand. Keep in mind that in an arbitrage market, your order, as large as it may be, may have very little impact on transaction prices and bid-ask spreads.

[15] *A Better Way to Double Your Returns* by Dan Caplinger, The Motley Fool, Jan. 8, 2011, fool.com

In this theoretical situation, a financial professional wants to liquidate a 5,000-share block of a fairly liquid ETF. The advisor will place a series of four limit orders, each for 1,250 shares, and all within one penny of the current IIV. After each order is confirmed, the advisor will wait to see the next-published IIV and place the next order. Because this is an arbitrage market, these orders may have very little impact on bid-ask spreads or transaction prices. The IIV will be driven (up or down) by the value of the underlying ETF holdings, and the last order could be transacted at a price higher than the first.

The risk of stop-loss orders – The "Flash Crash" of May 6, 2010, underscored the risks of using stop-loss orders to set a floor under potential losses in any securities, including ETFs. For example, suppose an investor buys 500 shares at $50 and wants to set a loss limit equal to 10% of the purchase price. Entering a stop-loss order to sell 500 shares at $45 is one traditional way of limiting downside exposure. The order is placed as a market order as soon as the price reaches a predetermined point.

During any period of sudden liquidity disruptions (such as the Flash Crash), stop-loss orders can be triggered by brief and sharp declines. As the market declines and each "stop price" is reached, the stop-loss order turns into a market order to sell the security at that price. If the market falls low enough, most stop-loss orders could be triggered. The investor's position could be sold out near the bottom of such an event. For this reason, advisors should consider all these factors concerning stop-loss orders.

Conclusion

Over the last decade, we believe ETFs have become more liquid and more efficient trading instruments. The main reason for lower spreads may not be related to share-trading volume but rather to:

- greater participation in the market among Authorized Participants, market makers, arbitrageurs and other liquidity providers
- greater use of technology to evaluate relationships between ETF share prices and values in the underlying baskets of securities

We believe ETFs have been the beneficiary of trends and technologies that did not even exist at the formation of the industry in 1993. We believe financial advisors may potentially increase clients' performance in ETF investment strategies by understanding and implementing the strategies for maximizing liquidity described in this report. The advantage to the client may be saving on trades.

These strategies also may help advisors demonstrate advanced knowledge and skill in navigating an ETF industry that has become part of the mainstream investing community, while offering a diversity of choices for implementing traditional and alternative investment portfolios.

About risk

There are risks involved with investing in ETFs, including possible loss of money. Index-based ETFs are not actively managed. Actively managed ETFs do not necessarily seek to replicate the performance of a specified index. Both index-based and actively managed ETFs are subject to risks similar to stocks, including those related to short selling and margin maintenance. Ordinary brokerage commissions apply.

Information included in this paper is for educational purposes only and is not an investment recommendation.

ETNs are not suitable for all investors and should be utilized only by sophisticated investors who understand leverage risk and the consequences of seeking monthly leveraged investment results, and who intend to actively monitor and manage their investments. Risks of investing in ETNs include limited portfolio diversification, uncertain principal repayment, trade price fluctuations, illiquidity, leveraged losses and credit risk.

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