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ETF Liquidity Explained

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February 17, 2010 2:45 PM | **Related ETFs:** [EFA](#) / [IWM](#) / [IWO](#) / [IUV](#) / [SPY](#)



Exchange-traded funds have enjoyed tremendous growth over the past decade, whether you measure that by daily trading volume, the number of annual new fund issuances or assets under management.

Assets under management have grown during the past decade from less than \$100 billion to nearly \$800 billion. Trading volume has soared as well: In 2009, the value of ETFs traded on U.S. exchanges surpassed \$18 trillion, and ETFs regularly accounted for 30 percent or more of all dollar volume traded on U.S. exchanges. Meanwhile, over the past four years, we have seen between 100 and 200 net new funds per year.

Despite all this growth, flaws in the understanding of how these vehicles trade—and the best manner in which to trade them—remain. A variety of heuristics exist for determining which funds can be safely traded and which are too expensive for practical trading, but nearly all of these rules of thumb are flawed at best and dead wrong at worst.

One of the most common assertions is that investors should avoid any funds with fewer than \$100 million in assets and average daily trading volume of fewer than 100,000 shares. This paper will show that there is virtually no correlation between those two factors and the true liquidity of an ETF.

For purposes of this paper, Fox River Execution defines the true liquidity of the ETF to be the combination of the ETF's average daily trading volume and the average daily trading volume of the underlying securities. The combination of these two factors explains the real-world experience of traders moving significant sums of money into and out of funds.

Most of the detailed examples reviewed in this paper involve ETFs with U.S. equity underlying securities because there are fewer variables to interfere with the precision of the calculations. However, as shown, this general framework can be used to both analyze and understand the trading patterns of ETFs based on currencies, commodities, fixed income and international equities.

Brief History Of ETF Growth

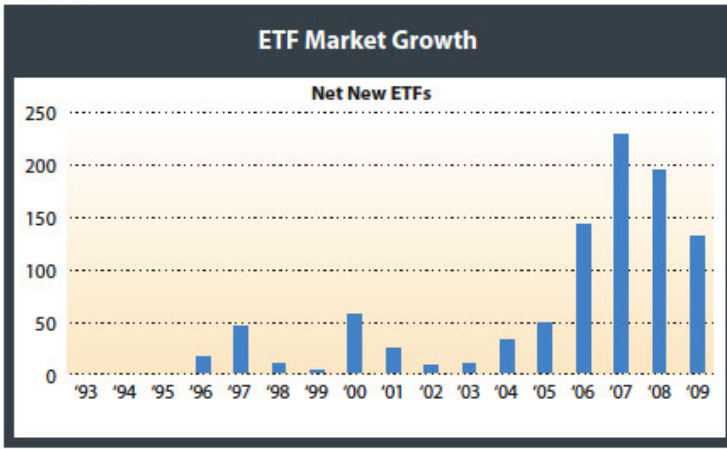
The story of the growth of the ETF market has been one of innovation meeting opportunity repeatedly, but not necessarily immediately. It often takes a high-stress period in the market for investors to realize that there are new ways to use the tools at hand.

On Jan. 29, 1993, State Street Global Advisors brought to market the first ETF—the SPDR S&P 500 (NYSE Arca: SPY)—to almost no fanfare. On its second anniversary, SPY was trading 50 percent less volume than it did in its first month of existence, and even that was not that impressive. It was not until late 1995 that it began its uninterrupted march to trading volume leadership.

One theory as to why volume was so light is that the applications State Street envisioned for the product did not resonate with investors or traders. Their sales pitch included asking S&P 500 Index fund managers to replace their 500 stocks with a single security. That was not an appealing prospect to managers, as it represented an effective outsourcing of their fund management responsibilities (with a resulting second level of fees charged to the end investor).

It was not until 1999 that the market for ETFs began to really heat up. 1999 was the year that the Nasdaq-100 QQQs became known as the proxy for technology stocks. With the Internet stock bubble at full inflation, investors could not get enough of the QQQs. For ETF issuers, an entire new market was discovered: the day trader. Issuers responded to the new demand with a then-record 57 new fund launches in 2000 (see Figure 1).

Figure 1



Source: IndexUniverse.com

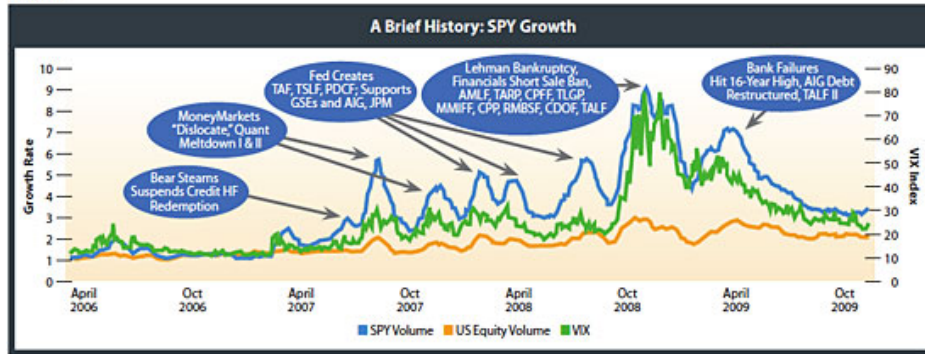
The next wave of growth centered on expanding the asset types embedded in this unique structure. The first fixed-income funds were introduced in 2002, commodities followed in 2004 and currencies in 2006. By creating an entire investment palette, once again an entire new market of ETF users was created: The registered investment adviser community soon recognized that with a full suite of products available, they could focus their pursuit of alpha at a more strategic level. Rather than picking individual securities, they could focus on sectors and asset types. The benefits of doing so were many, from greater tax efficiencies to less-specific risk and lower overall trading costs.

2006 also saw the entrance of a new innovation that has driven significant increases in ETF trading volume: The first leveraged and inverse ETFs opened the market to more aggressive risk takers. While not without some controversy, day trading as well as medium- and long-term investment in these instruments has driven big volume gains.

Beyond issuance of new products, the second driver of growth has been volatility. Invariably in times of high uncertainty and stress in the market, investors seek out what they understand most, and risk managers gravitate toward simple ways to broadly manage risk. ETFs, with their full holdings transparency and broad market coverage, fit the bill.

As a result, it is not altogether surprising that trading volume in SPY is closely correlated with the CBOE Volatility Index, better known as the VIX. This was demonstrated most recently in the credit-crisis-driven events of 2007 and 2008 (see Figure 2). Every spike in the VIX Index is almost immediately followed by a spike in SPY trading volume. It is also interesting that while overall market volume spikes, the spread between SPY volume growth and overall market growth continues to expand throughout the period. This suggests that those who find uses for ETFs in times of stress do not abandon them when the stress is relieved.

Figure 2



Sources: Bloomberg data, Federal Reserve Bank of St. Louis

Another significant contributor to ETF volume growth that is not often talked about is the options market. The CBOE lists options on 229 ETFs, which had a combined trading volume in 2009 of over 1 billion contracts. For every option contract that trades, some number of ETF shares need to trade for market makers to hedge their positions. While that volume is down 2 percent from 2008, it is a slightly deceptive statistic given that volatility in the fourth quarter of 2008 hit 80 percent and drove option usage temporarily higher. Additionally, with the recovery in the stock market in 2009, it is likely that the dollar value of options traded actually increased.

ETFs Do Not Trade Like Stocks: The Difference Between Outright And Arbitrage Markets

Q: What is your house worth?

A: What someone else will pay for it.

Q: *What is a share of IBM worth?*

A: What someone else will pay for it.

Q: *What is an ETF worth?*

A: Where someone else can hedge it.

A review of ETF sponsor Web sites yields the following quotes about the trading characteristics of ETFs: "ETFs ... combine the trading flexibility of individual stocks with the diversification benefits of mutual funds;" "with the trading flexibility and continual pricing of individual stocks and bonds;" "ETFs employ all of the same trading flexibility as stocks." Web sites that purport (are designed?) to educate ETF traders follow a similar theme: "ETFs trade like individual securities on stock exchanges;" "traded on stock exchanges, much like stocks or bonds."

These statements are correct as far as they go, but they miss a critical nuance. There are important distinctions between the way stocks trade and the way ETFs trade, derived from the fact that additional shares of stock cannot be created by market participants, while additional shares of ETFs can.

Stocks are said to trade in an outright market and ETFs are said to trade in an arbitrage or derivative market. The value of a stock is determined by the aggregate opinion of the outright value of the related company. That opinion gets expressed by the price discovery process wherein supply and demand are equated at a market-clearing price. The correct value of a stock is its current market price.

ETFs derive their value from the value of the securities that underlie them. While those underlying securities have values determined in an outright market, the ETF's value can only be expressed in relation to them. In this way there is an arbitrage that exists between the ETF and its underlying securities. Any deviation from the arbitrage-free price in the ETF represents an opportunity for guaranteed profit to those nimble enough to take advantage of the opportunity.

Therefore ETFs do not trade like stocks. They trade like the sum of the stocks that comprise them. For this reason, the average daily volume of an ETF is often a meaningless statistic, as it is the average daily volume of the underlying securities that determine the real trading characteristics of the ETF. To truly understand the liquidity of the ETF, then, it is critically important to understand that arbitrage process.

Understanding The ETF Arbitrage Process

The ETF arbitrage process is made possible by the creation/redemption process that is a basic property of the open-ended fund structure of an ETF.

For all ETFs, certain market participants called authorized participants, or APs, are able to "create" or "redeem" (destroy) shares of the fund: literally swelling or shrinking the number of shares outstanding in the market to accommodate rising or falling demand for the fund. This differs from individual stocks, where the number of shares is typically fixed, and can only be increased or decreased through direct corporate actions such as secondary offerings.

APs can create new shares of an ETF by turning in a predefined basket of securities to the ETF sponsor in exchange for an equivalent value of newly created fund shares. Alternatively, the AP can turn in ETF shares and receive the same predefined basket of securities in exchange. This creates the truest form of arbitrage because all of these transactions occur at the fund's net asset value (NAV). If at any time the fund shares are trading at a discount to the NAV, an AP need only buy the basket (at NAV) and short the fund shares (above NAV) at the same time. The AP can then exchange the basket for fund shares at the end of the day to cover its short position and lock in a guaranteed profit. The process works in reverse for redemptions.

Of course, there are costs to executing these trades (bid/ask spreads, commissions, taxes, clearing fees, market impact, etc.) that create a band around the NAV within which arbitrage is not profitable. But outside of these bands there is free money to be made, and it is made all day, every day by market participants with the infrastructure to do so.

Individual investors do not need to perform these arbitrage trades themselves to secure good executions when trading ETFs. It is only necessary to know where the arbitrage is at, how it functions and how to use this knowledge to effectively process trades in any particular ETF.

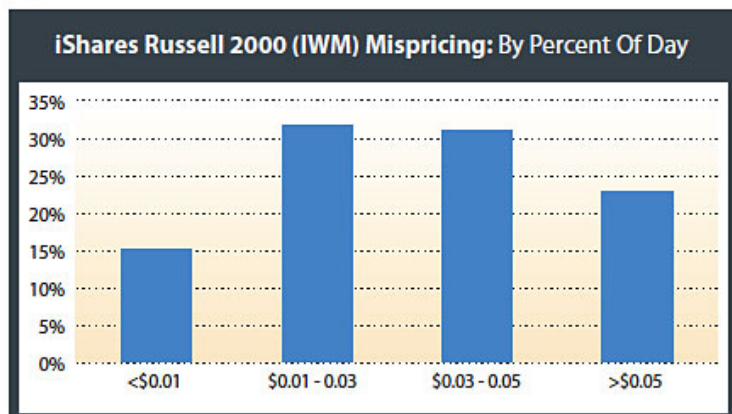
Premium Or Discount: A Critical Factor When Trading ETFs

One of the most important factors in determining what is a fair price at which to trade an ETF is the extent to which the ETF deviates from its NAV. While the arbitrage described above suggests that this should theoretically never happen, in the real world—and for a variety of reasons—it does.

During the month of December 2009, for instance, our research identified 50 U.S. equity ETFs that averaged more than 5 cents of mispricing; an additional 27 ETFs were mispriced between 3 and 5 cents per share, on average. While some of these were lightly traded vehicles, there is often no correlation between trading volume

and mispricing. A regression of AUM to premium/discount yields an R^2 of only 0.00095. For example, the iShares Russell 2000 Index Fund (NYSE Arca: IWM) is the third-most-actively traded ETF in the U.S. based on dollar volume, behind only SPY and QQQQ. Due in part to the difficulty of trading some of the small-cap stocks within it, however, it can be a problematic fund for APs to hedge. As a result, in spite of its enormous trading volume in December 2009, IWM was mispriced by at least 5 cents per share for an average of 22.6 percent of each trading day—or almost one and a half hours of each six-and-a-half-hour trading session (see Figure 3).

Figure 3



Source: Fox River Execution

Investors can gain a first-level approximation of whether an ETF is trading at a premium or discount to NAV by comparing the ETF's share price with the indicative NAV (iNAV) as published by a number of data providers. There are some weaknesses to this approach though. For one, iNAVs are only updated every 15 seconds and are based on last price rather than bids and offers in the underlying securities. As bid/ask spreads on the underlying securities become wider, and critically—if those underlying securities are not trading on a regular basis—iNAV values can move away from a more real-time view of the fair value of an ETF. This is particularly a problem as one moves down the market-cap spectrum. Specialists, APs and dedicated ETF liquidity providers will perform calculations based on the real-time bid/ask spreads of the underlying components, to create a more real-time approximation of the true value of the ETF.

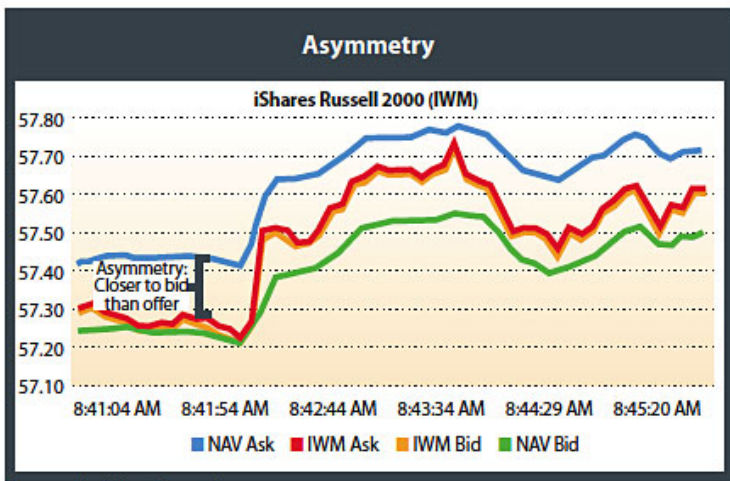
Asymmetry And Arbitrage Channels In ETF Trading

Asymmetry in the arbitrage process typically occurs when the bid-offer spread for the underlying constituents is wider than the bid offer spread for the ETF itself. When this condition exists, the ETF often fluctuates between prices that are bound by the arbitrage bands: APs are unable to directly arbitrage the ETF within this band, since the cost of assembling the underlying basket of securities is higher than the bid/ask spread of the ETF itself. Understanding when and where this can happen is important for those trading ETFs, because when there is asymmetry in the arbitrage market for a given ETF, large buy orders will have a different level of impact on the ETF market than large sell orders.

For example, in December 2009, IWM had an average bid/ask spread of \$0.010 per share. During the same period, the underlying basket of securities in IWM had a combined average bid/ask spread of \$0.122 per share. This twelvefold difference creates a vast amount of space for IWM to trade within before arbitrage becomes profitable.

Figure 4 is a 10-minute snapshot of the IWM bid/ask spread and the bid/ask spread of its NAV on December 2009.

Figure 4



Source: Fox River Execution

Investors should be able to drive most trades in ETFs within the channel suggested by the NAV bid/ask spread. But within that channel, large buy and sell orders can and will drive the price of the ETF toward the top or the bottom of the channel.

Impact In The Underlying Vs. Impact In The ETF

Pre-Trade Model Examples

When determining how difficult a stock is to trade, most traders rely on pre-trade impact cost estimate models provided by their brokers. Upon examination, these models are typically built on three factors: trade size as a percentage of average daily volume (ADV), stock intraday volatility and bid/offer spread. On deeper examination, it is really ADV that drives the calculation.

This point was driven home at the end of 2007. With the credit crisis in full bloom and restrictions in place on shorting financial shares, bid/offer spreads on stocks rose significantly while intraday volatility was at near-term highs. At the same time, volume spiked as investors fled the stock market for more certain investments. Trading stocks was clearly more difficult and more expensive than prior to the crisis.

Wider bid/ask spreads and higher volatility make securities more difficult and more costly to trade, while higher volume typically makes it easier and cheaper. With two of the three factors that pre-trade models rely on suggesting trades should cost more to execute, it came as a surprise that pre-trade cost models suggested trade costs would be lower. Clearly the models are highly dependent on ADV.

Using pre-trade cost models to either predict the expected outcome of an ETF trade or to determine which ETFs are safer to trade than others can be problematic, because the ADV of the ETF is only one part of the "true liquidity" of the ETF. Most popular trade impact models today do not take into consideration the liquidity of the underlying securities in an ETF, and therefore miss the fund's true liquidity.

Case Study: JKD

JKD is the iShares Morningstar Large Core Index ETF. The underlying stocks are 78 of the largest, most liquid in the U.S. market, including names like Johnson & Johnson, Procter & Gamble and IBM. By any objective measure, JKD's underlying stocks have a high degree of liquidity with a low degree of trading costs.

In December 2009, its ADV was 21,826 shares, or approximately \$1.4 million. Using four different pre-trade impact models, we are led to believe that the cost of quickly trading 50,000 shares (the minimum creation size) will be between 1.47 and 16.1 percent. The absurdity of these numbers illustrates the point nicely. It is ridiculous to think that the cost of trading approximately \$3 million of the world's most liquid stocks should be as high as 16 percent.

To further illustrate the point, one can feed in the basket of stocks that comprise the 50,000 shares of JKD to one of the models and find out what the true cost to the arbitrageur would be (and therefore, the true cost to all market participants). This yields a more realistic 0.016 percent.

Two conclusions can be drawn. First, mathematical models are tuned to handle "normal" settings for their inputs. They tend to break down when extreme values are used. That explains both the magnitude and the spread in the JKD impact numbers in Figure 5. When looking at a trade representing more than 2x ADV, the models move into an area which they were not built to explain.

Figure 5

| JKD Pre-Trade Impact Models | | |
|-----------------------------|------------|-------------------|
| | JKD Impact | Underlying Impact |
| Broker A | 4.57 % | |
| Broker B | 5.86 % | 0.016 % |
| Broker C | 16.10 % | |
| Non-Broker | 1.47 % | |

Source: Bloomberg

Second, empirical results are more valuable to understanding how ETFs trade when true liquidity is factored into the analysis. Using true liquidity, Fox River Execution calculates the impact to be 0.0077 percent, less than half of what even the basket model predicts.

IVV vs. SPY

Another interesting illustration is to examine the results for IVV and SPY. IVV is the iShares S&P 500 Index Fund. SPY is the SPDR Trust Series 1. Both ETFs track the performance of the S&P 500 Index.

It comes as no surprise then that their underlying baskets are virtually identical, with all of the same holdings and weightings differences that are only discernible at the hundredth of a percent level (and often at the thousandth of a percent level). The only obvious difference between these two is their trading volume: IVV traded an average of 3.4 million shares per day in December 2009, while SPY traded a whopping 131 million per day over the same period.

A simple comparison of their respective volumes would suggest that one should be cheaper to trade than the other, but given that they hold the same underlying securities, why should this necessarily be? Whether one is trading a basket of 500 stocks or a certificate representing the 500 stocks, the costs should be nearly identical. Therefore, from a cost perspective, it should not matter whether a trader is trading one certificate or another. Predictably, however, pre-trade models continued to be fooled by the volume disparity. Using the most conservative model, we get an estimated impact for 1 million shares of SPY traded with high urgency of 0.057 percent. The same size and urgency in IVV results in an estimated impact of 2.32 percent. Of course, they both taste like chicken to the arbitrage community, so the real impact of trading IVV will be identical to the impact of trading SPY. There were, in fact, three trades in IVV of greater than 1 million shares in December 2009. The average size was 2,953,000 shares and the average impact (defined as distance from the midpoint of the bid/offer spread) was 0.032 percent.

More Complex ETFs: Imperfect Hedges

So far we have only dealt with ETFs that had relatively simple-to-calculate underlying baskets. There are a multitude of ETFs that do not fall into this category. Some U.S. equity ETFs with less liquid underlyings—including virtually all fixed-income, commodity, currency and international ETFs—are more problematic to hedge and also more problematic to price. Arbitrageurs use a variety of techniques when determining how to hedge their trades. These imperfect hedges lead to wider arbitrage bands, but they do not make the ETF impossible to trade. With a greater understanding of the techniques and some robust tools for analysis, our research and market experience suggests that solid price and size discovery in less-trafficked-in ETFs is very achievable.

Optimized Baskets

Managers of small-capitalization index funds learned long ago that it is not always necessary to own every stock in the index to produce performance with little tracking error to the index. A variety of optimization techniques are employed. While the objective function has factors designed to replicate the characteristics of the broad universe, it almost always also contains a trade-cost-minimizing objective that is designed to create a replicating basket with the lowest cost of implementation and maintenance.

Arbitrageurs employ the exact same techniques when operating in the ETF market, which creates an interesting opportunity for traders. These optimized baskets are always subsets of the entire index. Because one of the optimization factors is trade cost (often represented by the width of the bid/offer spread), it is likely that the bid/offer spread of the optimized basket is narrower than the bid/offer spread of the entire universe. It is also likely that there will be some asymmetry in the spreads of the respective basket. The more optimized baskets there are and the more asymmetry there is in the baskets, the better it is for the market as a whole. This is because the best bid and the best offer are unlikely to come from the same optimized basket, making the overall market tighter than if all participants were using the same basket to hedge. This is at least part of the reason (though not all) that IWM trades with a 1 cent bid/offer spread, while the underlying basket trades with a 12 cent bid/offer spread.

Correlated Instruments

One special challenge for arbitrageurs is how to hedge ETF positions when the underlying securities held by the fund are not trading. This is not an issue for most domestic equity or fixed-income funds, but for international equity or fixed-income securities, and certain commodity markets, the underlying securities may not trade during the U.S. market day. For instance, the Asian equity and debt markets are closed during all of the U.S. trading day, and European markets only overlap U.S. market hours in the morning.

In these situations, arbitrageurs use correlated instruments to hedge their ETF trades. Correlated instruments can include futures, options, physical commodities, currencies and a vast array of fixed-income securities. [Correlated instruments can and are used to hedge domestic ETFs as well, in situations where the correlated instruments are more liquid or efficient than the underlying in the ETF itself.]

For international markets, for instance, American depository receipts (ADRs) or even domestic instruments may be used to hedge. For commodities, futures or physical assets can be used as a hedge. It is more likely that futures will be used because of their easy access, exchange listing and favorable margin requirements. Physical commodities present problems with financing, transportation and storage that are typically, but not always, avoided. For fixed-income ETFs, sometimes the most liquid ETFs are used as a correlated hedge for the least liquid instruments.

In all of the cases listed above, there is a basis risk involved in the hedge. Basis risk is when the hedge does not perform exactly the way the instrument being hedged performs. This leads to wider bid/offer spreads, but does not necessarily decrease the depth of the market or mean that large trades cannot be moved through. Often the correlated instruments are more liquid than the underlying of the ETF they are hedging, which can lead to situations where arbitrageurs are willing to make bigger (albeit wider) markets in the ETF than in the instrument the ETF tracks.

Event Risk Hedges

Many of the correlated hedges described above can also be put in the category of event risk hedges. This is particularly the case with using ADRs or domestic equities to hedge international equity ETFs. As investors have expanded their investment horizons to include international investing (whether that is non-U.S. investors investing in the U.S. or vice versa), correlations among markets around the world have grown. Most large-cap companies already have significant businesses overseas, further boosting correlations. For these reasons, domestic events and news have an impact on foreign markets just as news abroad has an impact here. In the absence of pre-market news that will affect the open of trading in the U.S., we often take our lead from the markets in Asia and Europe. If they trade higher, we tend to do likewise. When news in the U.S. creates a big impact on our markets, trading in Asia and Europe is similarly affected the next day.

Because of higher correlations across markets, the big risk when trading after markets close is news risk or event risk, since it can affect all markets. This actually makes it easier to make markets in ETFs with foreign underlying long after their markets are closed. Arbitrageurs may not be able to lay off their specific risk until some time the next day, but they can lay off their event risk immediately by using an ETF or related security that is already trading in the U.S. market. That way, if there is a significant event related to geopolitics, earnings at multinational companies, exchange rates, credit markets or any of dozens of other potential risks, the arbitrageur has at least a broad level of protection.

A secondary effect of this type of hedging activity is that seemingly unrelated ETFs can begin to exhibit correlation at the intraday level while not being highly correlated at the interday level. The MSCI EAFE Index is an index of developed markets in Europe, Australia and the Far East. In December 2009, the daily returns of this index had a correlation to the daily returns of the S&P 500 of 0.4267. Those correlations are measured based on closing prices for the indexes. The iShares MSCI EAFE Index Fund (NYSE Arca: EFA) tracks the MSCI EAFE Index. Yet its intraday correlation (as measured by one-minute returns) to the SPY was 0.8434. One possible reason for this extraordinarily high intraday correlation is when APs are hedging trades they do in EFA, they might use the SPY. This is more likely to occur when the local markets the EAFE index covers are closed. The Australia and Far East components are never open during U.S. trading hours, and Europe is only open for a small portion of the U.S. market hours (typically 15-30 percent).

The Cost Of Failing To Understand ETF Trading

The cost of failing to understand ETF trading can be large, both in terms of real and opportunity costs.

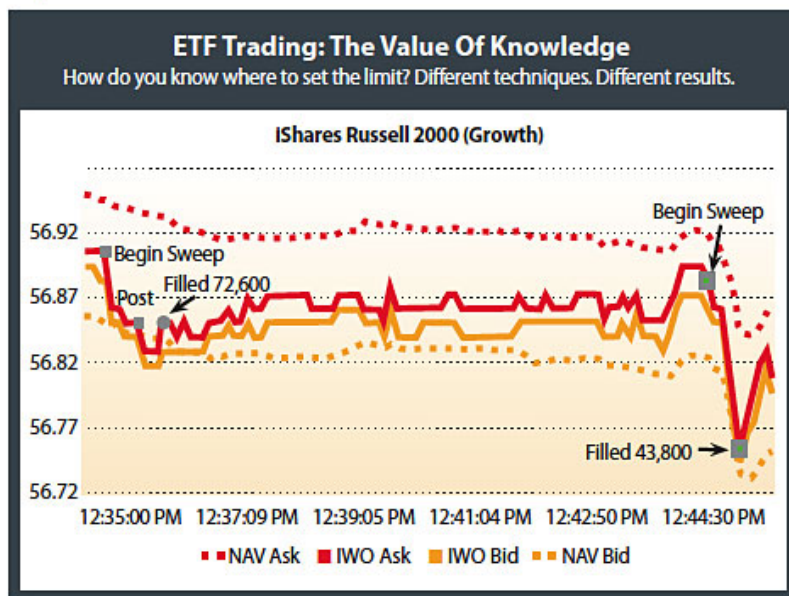
As demonstrated, pre-trade price models dramatically overestimate the impact of pushing large trades through funds like JKD or IVV. This may dissuade some investors from considering these and other small-volume ETFs, limiting their opportunity set without reason.

And for those investors who do trade ETFs, the real-life costs of failing to understand the ETF arbitrage mechanism can be large.

Figure 6 illustrates a real-life example using the iShares Russell 2000 Growth Index Fund (NYSE Arca: IWO).

Fund holds the subset of the Russell 2000 Index that contains growth stocks. It has very similar trading characteristics to the broader IWM. The graph covers one 10-minute period that contained two significant trades in IWO: one for 72,600 shares and one for 43,800 shares. The two trades were executed differently, and as a result, experienced different levels of impact on the market. But before getting into the costs, let's review some features of the graph.

Figure 6



Sources: Fox River Execution, Bloomberg

The dotted lines are the arbitrage bands as represented by the bid and offer of the NAV. At the time of this snapshot, they were approximately 10 cents apart, while the ETF itself traded between 1 and 2 cents wide.

Figure 6 shows many of the features discussed earlier. There is asymmetry in the pricing, in that more often than not, the IWO bid is closer to the NAV bid than the IWO offer is to the NAV offer. For that reason, a large sell should have less impact than a large buy: IWO does not have to travel as far to make the arbitrage profitable. Another way to express this asymmetry is to measure from the midpoint of each respective spread. Based on that measurement, IWO can actually be said to be trading at a discount to NAV during this time period, with the same logical implication that a large sell should have less impact than a large buy. Because small trades can be done at the IWO bid and offer, they will have similar impact of one-half the bid offer spread.

The first trade is for 72,600 shares and is executed over a one-minute span beginning just after 12:35:00 p.m. The trade begins with a sweep of the market, which sold all the shares on the national best bid and offer from a price of \$56.89 down to \$56.84. The remaining shares that needed to be sold were posted with a limit order of \$56.84. The price where the trade would stop sweeping the book and post the remaining shares as a limit order was chosen based on knowledge of two things: where the arbitrage was given the bid of the NAV and the likelihood that there was an optimized basket with a better bid than the NAV. The total impact on the market for this trade was 5 cents (average impact being less), with only a penny or two of reversion after the trade.

The second trade is for 43,800 and is executed over a span of seconds less than 10 minutes after the first trade. The trade began with a sweep at \$56.87 and that sweep continued until 43,800 shares were sold; the trade is completed at \$56.75. A post was never attempted for this trade. While Fox River Execution was not party to the specifics of this trade, one can imagine that the trader or algorithm executing it did not take into account the arbitrage value of the NAV when deciding fair pricing for the ETF. The total impact on the market for this trade was 12 cents, with an almost immediate reversion of 7 cents, suggesting 5 cents would have been a fair price impact.

The difference in impact between these trades of approximately 7 cents is the real cost of failing to understand how ETFs trade based on the arbitrage relationship between the ETF and its NAV. That does not adjust for the fact that it was the larger trade that experienced the smaller impact.

How To Use Information For More Effective Trading

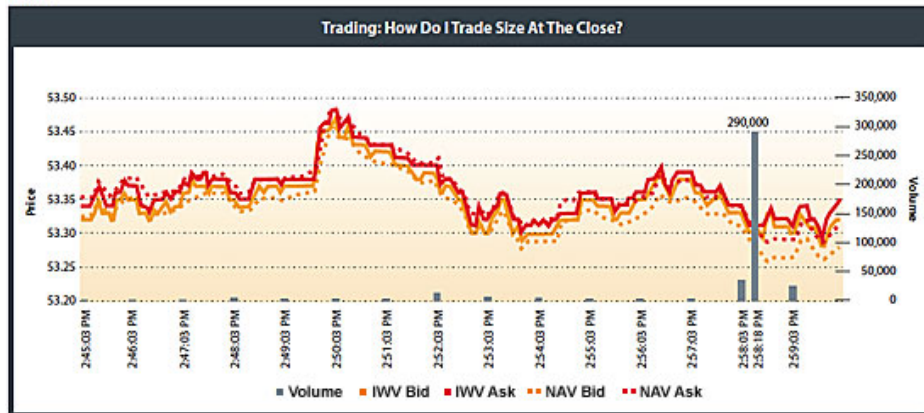
Since the first markets were formed, it has always been the more informed trader that has an advantage over the trader with less information. So it is with ETFs.

An understanding of the structure of ETF arbitrage and how it translates into prices in the market is the minimum amount of information any trader or investor should have before attempting to use ETFs in appreciable size. It has been the goal of this article to supply that level of understanding.

Beyond an understanding of the structure and market structure of ETFs, it can be very handy to have a quantitative, real-time assessment of the factors impacting pricing while trading. It is this piece that can be harder to come by. Most APs are happy to tell you where they *would* trade an ETF, but it is only a few brokers who can first tell you where they *should* trade an ETF. Knowing the “should” before finding out the “would” can lead to much more pleasant outcomes as well as minimizing instances of buyer’s remorse.

A final real-world example can drive this home. Figure 7 shows how an enormous trade can be pushed through an ETF with minimal price impact.

Figure 7



Sources: Fox River Execution, Bloomberg

The chart shows the minute-by-minute trading volume in the iShares Russell 3000 Index Fund (NYSE Arca: IYW). The fund trades throughout the day, but the size of the trades are small. Then, a trade for 290,000 shares was executed 90 seconds before the market close. This volume was equal to 48 percent of all the shares that had traded in the first 6.5 hours of the day. Yet the impact of the trade was only 2.18 cents from the midpoint of the bid/offer spread at the time the market was entered.

IYW is a relatively liquid ETF to begin with, but the same rules apply to less liquid products as well. If you know where to trade, and why, enormous positions can be moved through the market with relatively little impact.

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