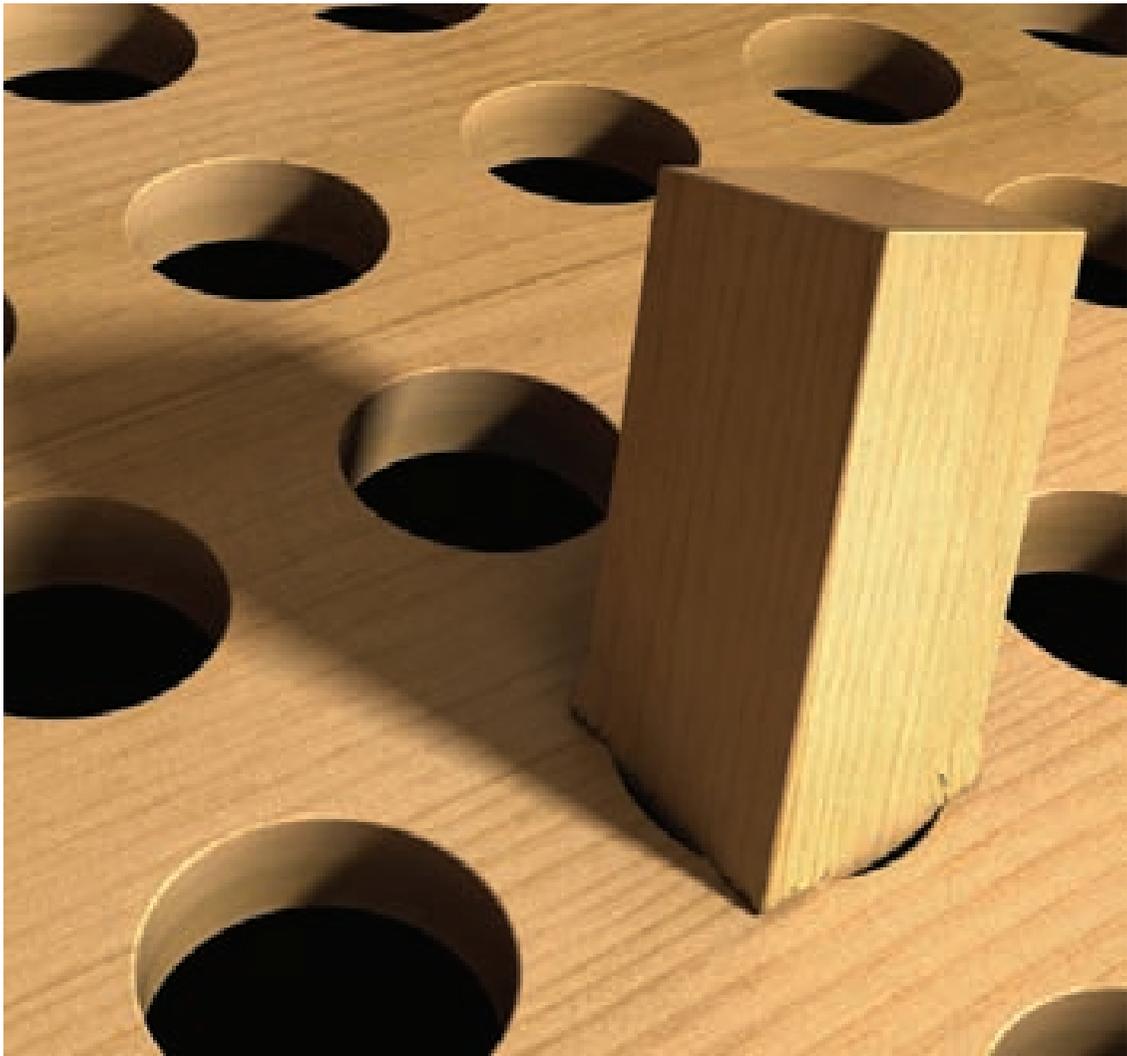


# Why ETFs And 401(k)s Will Never Match

Why prudently selected index mutual funds are  
a better choice than ETFs for most 401(k)s

By David Blanchett and Gregory Kasten



Exchange-traded funds, long known as a low-cost method of investing for individual investors, are receiving increasing media exposure as a potential solution to reduce 401(k) plan fees. In fact, ETFs have been touted by at least one firm as the “low-cost solution for 401(k)s.” The reason for the increased media exposure for ETFs is relatively straightforward: On average, ETFs cost less (i.e., have lower expense ratios) than actively managed mutual funds. However, comparing passively managed ETFs with actively managed mutual funds ignores the fact that there are already passive index mutual funds that are being used in retirement plans today.

Similar to ETFs, index mutual funds are less expensive than actively managed mutual funds. Therefore, the real debate regarding the potential benefits of ETFs in 401(k)s is not whether ETFs create cost savings versus actively managed mutual funds, but whether ETFs create additional cost savings when compared with traditional index mutual funds.

Unlike traditional mutual funds, though, ETFs are not “401(k)-ready,” and a variety of costs must be incurred (both explicit and implicit) in order to make ETFs available in a 401(k) plan. This paper will explore the benefits and costs associated with using ETFs in 401(k)s and will provide guidance on whether ETFs represent a better indexing option than traditional index mutual funds.

## An Overview Of ETFs

While ETFs were first introduced in the 1990s, the ability to trade a whole stock basket in a single transaction dates further back. Major U.S. brokerage firms provided such program trading facilities as early as the late 1970s, particularly for the S&P 500 Index. With the introduction of index futures contracts, program trading became more popular. As such, the interest in developing a suitable instrument that would allow index components to be negotiated in a single trade increased. This led to the introduction of the exchange-traded fund. The first ETF introduced was the Toronto Index Participation (TIPS) in Canada, which was followed three years later by the Standard & Poor’s 500 Depository Receipts (SPDRs) in the U.S. [Deville 2006].

The ETF marketplace experienced its first effective boom in March 1999, with the launch of the NASDAQ-100 Index Tracking Stock, popularly known as Cubes or Qubes (in reference to its initial ticker, QQQ [which has since changed to QQQQ]). In its second year of trading, QQQ had an average daily volume of 70 million shares, which was approximately 4 percent of the trading volume of the NASDAQ at the time. Since then, ETF growth in the U.S. has been considerable: Assets under management rose 27 percent in 2001, 23 percent in 2002, 48 percent in 2003, 50 percent in 2004 and 31 percent in 2005 (source: Investment Company Institute). Growth in 2006 hit 35.8 percent, according to Morgan Stanley, and 42.7 percent in 2007.

One reason for the rising popularity of ETFs among individual investors is the increased tax efficiency of ETFs relative to traditional index funds. The ability of ETFs to utilize in-kind redemptions enables an ETF to transfer its underlying holdings with the biggest unrealized gains, thereby limiting the ETF’s potential for capital gains distributions. However, tax considerations are not pertinent to qualified retirement plans (e.g., a 401(k) plan), since they are tax-deferred savings vehicles [Deville 2006].

Internally, ETFs are more complex entities than mutual

funds. Technically, ETFs are a class of mutual fund since they fall under the same rules as traditional mutual funds, but they have a different structure and therefore the SEC has imposed different requirements on them. Currently, there are three key legal structures for ETFs (source: <http://www.etfguide.com/exchangetradedfunds.htm>):

1. **Open-end index fund:** This type of ETF structure reinvests dividends the date of receipt and pays them out via a quarterly cash distribution. This ETF design is also permitted to use derivatives, loan securities and is registered under the Investment Company Act of 1940. ETFs that utilize this legal structure include iShares and the Select Sector SPDRs.
2. **Unit Investment Trust:** This type of ETF structure does not reinvest dividends in the fund and pays them out via a quarterly cash distribution. In order to comply with diversification rules, this ETF design will sometimes deviate from the exact composition of a benchmark index. This type of fund is registered under the Investment Company Act of 1940. The Diamonds, Cubes and SPDR follow this format.
3. **Grantor Trust:** This type of ETF structure distributes dividends directly to shareholders and allows investors to retain their voting rights on the underlying securities within the fund. The original fund components of the index remain fixed and this legal structure is not registered under the Investment Company Act of 1940. Merrill Lynch’s HOLDRs follow this format.

Although the SEC states that an ETF is “a type of investment company whose investment objective is to achieve the same return as a particular market index,” ETF strategies have been moving away from traditional indexing strategies. Originally, ETFs were based on plain-vanilla index methodologies, such as the S&P 500; however, most of the new ETFs introduced today comprise more specialized and esoteric investing strategies. Actively managed ETFs, something the SEC has an outstanding concept release on (IC-25258), are likely to be a growth area for the ETF marketplace in the future (source: <http://www.sec.gov/rules/concept/ic-25258.htm#seciii>). Indeed, some active ETFs with transparent portfolios have already launched. However, there are a number of obstacles, such as arbitrage and transparency, that will need to be addressed before actively managed ETFs become widespread.

## Getting ETFs In 401(k)s

Although ETFs have been around for over a decade, only recently have they been considered as potential investments for the mass 401(k) public. While ETFs have long been available through 401(k) self-directed brokerage accounts (along with other investments like individual securities), ETFs have not been available to plan participants as part of the core investment lineup. There are a variety of reasons for this, but transactions costs (the costs incurred buying and selling ETFs on the open market, such as commissions) and fractional share issues (since ETFs can only be purchased in whole share amounts) have been two of the largest obstacles.

There are two primary transaction costs associated with purchasing an ETF, since, unlike mutual funds, ETFs are purchased on

the open market. The first cost is the bid/ask spread (or spread) and the second is commissions. The “bid” price is the price at which you can sell an ETF, while the “ask” (or offer) price is the price at which you can purchase an ETF. The bid price is typically lower than the ask price, which creates the spread. For example, if we assume the ask (or purchase) price of ETF ABC was \$50.10 and the bid price for ETF ABC was \$50.00, if an investor were to instantly purchase and sell ETF ABC, ignoring commissions and any market movement, he or she would lose \$0.10, which represents the spread. While the actual bid/ask spread is going to vary by ETF, the average 30-day bid/ask spread for Vanguard’s 33 ETFs (as of 11/02/07, data obtained from Vanguard’s Web site) was .08% (or 8 basis points), or 4 bps for each buy or sell transaction. The spread is an important consideration in ETF investing because it represents a cost that reduces long-term performance.

The second transaction cost associated with purchasing an ETF is the commission. A commission must be paid each time an ETF is bought or sold. Unlike the spread, which is typically a constant percentage of the underlying ETF (e.g., 4 bps each way), commissions typically vary based upon the size of the transaction. Commissions are incurred each time an ETF is bought or sold, so higher levels of trading activity increase the total commissions paid. One method that minimizes the per-participant cost of trading ETFs has been the introduction of pooled accounts, where buy and sell orders are submitted in blocks. By pooling ETFs into single orders, it is possible to trade less frequently and therefore pay less in commissions. While the spread still exists with pooled accounts, pooling also alleviates the issues associated with fractional shares, which will be discussed next.

A key problem with ETFs is that they cannot be purchased in fractional shares. This is especially important for 401(k)s since participants do not typically defer the exact cost of the ETF (which is especially difficult given the fact the price of an ETF is always changing). While mutual funds can be bought and sold in fractional shares (e.g., 5.673 shares), ETFs can only be purchased in whole share amounts. By pooling ETFs into a common fund (or trust), it is possible to overcome this problem by allowing participants to buy units or shares of an overall pool that purchases the underlying ETFs. The two primary methods of pooling ETFs for use in 401(k) plans are at the plan level or in an aggregate account (such as a collective investment fund, or CIF).

If an ETF is pooled at the plan level, the pooled account is not required to have the same type of oversight (i.e., audit requirements) associated with mutual funds or CIFs (which will be discussed next). Pooling at the plan level is less costly than a CIF and allows a plan sponsor to introduce ETFs in a relatively cost-effective manner. CIFs are currently the most popular method of using ETFs in 401(k)s because they allow for greater economies of scale than pooling at the plan level. A CIF is a bank-administered trust that holds commingled assets that meet specific criteria established by 12 CFR 9.18. Unlike a mutual fund, a CIF can only be used in retirement plans (i.e., not taxable accounts or IRAs). CIFs are created by banks that act as a fiduciary for the CIF and hold the legal title to the fund’s assets. Participants in a CIF are the beneficial owners of the fund’s assets. While each participant owns an undivided interest in the aggregate assets of a CIF, a participant does not directly own any specific asset held by a CIF [Collective Investment Funds: Comptroller’s Handbook].

## The Costs Of Pooling

There are a variety of additional expenses associated with running a pooled account, both explicit and implicit. The explicit costs of pooled accounts include the costs of unitization, audit requirements, commissions, the bid/ask spread and other miscellaneous administrative expenses. The implicit costs of pooled accounts relate primarily to the impact of cash drag, which negatively impacts the performance of the pooled account.

The two types of transactions costs incurred by an ETF investor are the bid/ask spread and commissions. As discussed earlier, the average bid/ask spread for the Vanguard ETFs is 8 bps (or 4 bps each buy or sell). This 4 bps “fee” will be incurred each time an ETF is bought or sold. Commissions, similar to the bid/ask spread, are a cost paid each time an ETF is bought or sold, since unlike mutual funds, ETFs cannot be redeemed at NAV and must be purchased on the open market. While trade aggregation (through pooling) decreases commissions, even a commission as low as \$.02 per share will reduce the net performance of an ETF-pooled account over time. Again, while these transaction costs may appear to be minor, the bid/ask spread and commissions represent a definite cost that must be considered when addressing the relative benefits of ETFs versus mutual funds for 401(k)s.

The costs associated with pooling vary between plan-level pooling and aggregate pooling (e.g., using a CIF). The costs associated with pooling ETFs at the plan level vary by provider; however, a reasonable current estimate would be \$500 per plan ETF (e.g., if a plan wanted an all-ETF investment lineup consisting of 12 ETFs, the total cost would be \$6,000). While additional expenses, such as an audit, are not necessary for plan-level pooling, such oversight is likely necessary to ensure that the unitization is being properly handled, especially for larger plans. Additional administrative and operational costs beyond the basic pooling fee may also be incurred.

The costs for pooling an ETF at the aggregate, or CIF level, are also going to vary by provider. The unitization costs associated with a CIF are typically not going to be much lower than 3 bps and can easily exceed 10 bps based on the size of the unitized account. A CIF must be audited at least once each 12-month period (in accordance with 12 CFR 9.18(b)(6)), which will typically cost at least \$5,000. However, as the assets increase, so do the fees associated with the audit, since the risk of the auditor increases along with the assets. While an audit fee of \$5,000 may seem insignificant, it represents a cost of 10 bps on a \$5 million account, 1 bp on a \$50 million account and 0.1 bp on a \$500 million account. Every basis point is important when comparing the relative benefits of ETFs and indexed mutual funds, since the overall cost differences between the strategies are already relatively small.

The implicit costs associated with pooled accounts relate primarily to cash drag. Cash drag relates to the need for any pooled account, including mutual funds, to have funds available in order to meet the cash flow (i.e., redemption) needs of its investors. While cash drag is also a consideration for mutual funds, it is less so because the impact of cash drag is typically inversely related to pooled assets. The larger the account, the lower level of cash that must typically be held, and therefore the less the impact of cash drag on performance. Since mutual

Figure 1

| Large-Cap Comparison |       |                                |              |                    |                       |               |                  |                |
|----------------------|-------|--------------------------------|--------------|--------------------|-----------------------|---------------|------------------|----------------|
| Ticker               | Type* | Investment Name                | Category     | Minimum Investment | Net Assets (Billions) | Expense Ratio | Bid/Ask Spread** | Inception Date |
| VUG                  | ETF   | Vanguard Growth ETF            | Large Growth | n/a                | \$2.57                | 0.11%         | 0.05%            | 01/26/04       |
| VIGRX                | MF    | Vanguard Growth Index Inv      | Large Growth | n/a                | \$6.92                | 0.22%         | n/a              | 11/02/92       |
| VIGSX                | MF    | Vanguard Growth Index Signal   | Large Growth | \$1M               | \$0.06                | 0.11%         | n/a              | 06/04/07       |
| VIGIX                | MF    | Vanguard Growth Index Instl    | Large Growth | \$5M               | \$2.87                | 0.08%         | n/a              | 05/14/98       |
| VV                   | ETF   | Vanguard Large Cap ETF         | Large Blend  | n/a                | \$0.95                | 0.07%         | 0.06%            | 01/27/04       |
| VLACX                | MF    | Vanguard Large Cap Index Inv   | Large Blend  | n/a                | \$0.32                | 0.20%         | n/a              | 01/30/04       |
| VLCAX                | MF    | Vanguard Large Cap Index Adm   | Large Blend  | \$100,000          | \$0.23                | 0.12%         | n/a              | 02/02/04       |
| VLISX                | MF    | Vanguard Large Cap Index Instl | Large Blend  | \$1M               | \$0.10                | 0.08%         | n/a              | 01/30/04       |
| VTV                  | ETF   | Vanguard Value ETF             | Large Value  | n/a                | \$2.24                | 0.11%         | 0.06%            | 01/26/04       |
| VIVAX                | MF    | Vanguard Value Index Inv       | Large Value  | n/a                | \$4.55                | 0.21%         | n/a              | 11/02/92       |
| VVISX                | MF    | Vanguard Value Index Signal    | Large Value  | \$1M               | \$0.15                | 0.11%         | n/a              | 06/04/07       |
| VIVIX                | MF    | Vanguard Value Index Instl     | Large Value  | \$5M               | \$2.91                | 0.08%         | n/a              | 07/02/98       |

Source: Vanguard. Data as 11/02/07. \*MF = Mutual Fund, ETF = Exchange-Traded Fund. \*\*30-Day Average.

Figure 2

| Mid-Cap Comparison |       |                                  |                |                    |                       |               |                  |                |
|--------------------|-------|----------------------------------|----------------|--------------------|-----------------------|---------------|------------------|----------------|
| Ticker             | Type* | Investment Name                  | Category       | Minimum Investment | Net Assets (Billions) | Expense Ratio | Bid/Ask Spread** | Inception Date |
| VOT                | ETF   | Vanguard Mid Cap Growth ETF      | Mid-Cap Growth | n/a                | \$0.15                | 0.13%         | 0.08%            | 08/17/06       |
| VMGRX              | MF    | Vanguard Mid Cap Growth          | Mid-Cap Growth | n/a                | \$1.09                | 0.47%         | n/a              | 12/31/97       |
| VO                 | ETF   | Vanguard Mid Cap ETF             | Mid-Cap Blend  | n/a                | \$1.19                | 0.13%         | 0.06%            | 01/26/04       |
| VIMSX              | MF    | Vanguard Mid Cap Index Inv       | Mid-Cap Blend  | n/a                | \$8.50                | 0.22%         | n/a              | 05/21/98       |
| VMISX              | MF    | Vanguard Mid Cap Index Signal    | Mid-Cap Blend  | \$1M               | \$0.48                | 0.13%         | n/a              | 03/30/07       |
| VMCIX              | MF    | Vanguard Mid Cap Index Instl     | Mid-Cap Blend  | \$5M               | \$5.83                | 0.08%         | n/a              | 05/21/98       |
| VOE                | ETF   | Vanguard Mid Cap Value ETF       | Mid-Cap Value  | n/a                | \$0.20                | 0.13%         | 0.09%            | 08/17/06       |
| VMVIX              | MF    | Vanguard Mid Cap Value Index Inv | Mid-Cap Value  | n/a                | \$0.20                | 0.26%         | n/a              | 08/24/06       |

Source: Vanguard. Data as 11/02/07. \*MF = Mutual Fund, ETF = Exchange-Traded Fund. \*\*30-Day Average.

Figure 3

| Small-Cap Comparison |       |                                       |              |                    |                     |               |                  |                |
|----------------------|-------|---------------------------------------|--------------|--------------------|---------------------|---------------|------------------|----------------|
| Ticker               | Type* | Investment Name                       | Category     | Minimum Investment | Net Assets Billions | Expense Ratio | Bid/Ask Spread** | Inception Date |
| VBK                  | ETF   | Vanguard Small Cap Growth ETF         | Small Growth | n/a                | \$0.78              | 0.12%         | 0.09%            | 01/26/04       |
| VISGX                | MF    | Vanguard Small Cap Growth Index Inv   | Small Growth | n/a                | \$2.64              | 0.23%         | n/a              | 05/21/98       |
| VSGIX                | MF    | Vanguard Small Cap Growth Index Instl | Small Growth | \$5M               | \$0.67              | 0.08%         | n/a              | 05/24/00       |
| VB                   | ETF   | Vanguard Small Cap ETF                | Small Blend  | n/a                | \$0.98              | 0.10%         | 0.08%            | 01/26/04       |
| NAESX                | MF    | Vanguard Small Cap Index Inv          | Small Blend  | n/a                | \$0.07              | 0.23%         | n/a              | 10/03/60       |
| VSISX                | MF    | Vanguard Small Cap Index Signal       | Small Blend  | \$1M               | \$0.42              | 0.13%         | n/a              | 12/15/06       |
| VSCIX                | MF    | Vanguard Small Cap Index Instl        | Small Blend  | \$5M               | \$3.55              | 0.08%         | n/a              | 07/07/97       |
| VBR                  | ETF   | Vanguard Small Cap Value ETF          | Small Value  | n/a                | \$0.77              | 0.12%         | 0.08%            | 01/26/04       |
| VISVX                | MF    | Vanguard Small Cap Value Index Inv    | Small Value  | n/a                | \$4.18              | 0.23%         | n/a              | 05/21/98       |
| VSIIX                | MF    | Vanguard Small Cap Value Index Instl  | Small Value  | \$5M               | \$0.53              | 0.08%         | n/a              | 12/07/99       |

Source: Vanguard. Data as 11/02/07. \*MF = Mutual Fund, ETF = Exchange-Traded Fund. \*\*30-Day Average.

funds are investments that can be used in a variety of settings (e.g., foundations, individual accounts, IRAs, etc.), they have a much larger potential asset base than CIFs, which can only be used in retirement plans. Also, mutual funds are established savings vehicles that are relatively easy for participants to research (should they choose to do so); since CIFs are not publicly traded, it is more difficult to obtain information on them.

As an example of the impact of cash drag, if you assume a 4 percent cash return and a 10 percent market return, for each 1 percent cash position, the return of the CIF would be decreased by 6 bps. Therefore, a 2 percent cash position would lead to 12 bps of underperformance. If the market return increases to 15 percent and the cash return stays at 4 percent, the impact of cash drag increases to 11 bps for each 1 percent of cash in the account.

So what are the total costs of pooling likely to be? Well, the costs are going to vary based upon a variety of factors, but based on conservative assumptions, it's going to cost at least 4 bps to purchase an ETF (assuming 3 bps for the bid/ask spread and 1 bp for commissions), and 10 bps for the ongoing management of an ETF (assuming 5 bps for the overall pooling/unitization and 5 bps of cash drag). While 4 bps and 10 bps for trading and ongoing management, respectively, may seem small, the overall cost differences between index mutual funds and ETFs for a number of scenarios are actually even smaller.

### **ETFs vs. Mutual Funds: An Investment Comparison**

There are both qualitative (i.e., investment availability) and quantitative (i.e., cost) issues that need to be addressed when determining whether to include ETFs in 401(k)s. While the primary interest in ETFs is cost-related, there are a number of popular index methodologies that are difficult (if not impossible) to obtain at a similar cost (or at all) using traditional mutual funds. As an example, if a plan sponsor wanted to use the Russell index methodology in a 401(k), it would be impossible to select mutual funds for each of the nine domestic style boxes with mutual funds. However, a number of ETFs currently exist that follow the Russell methodology (see Appendix I). As another example, it would also be difficult to utilize the Standard & Poor's indexing methodology through mutual funds as well. While there are a large number of S&P 500 (i.e., domestic large-blend) mutual funds, there are only a few mutual funds that cover the other blend categories, and few, if any, for the remaining value and growth styles (see Appendix I).

While each index methodology has its unique advantages, the primary concern of most index investors is gaining a specific market exposure for the lowest total cost. The author likens the different index methodologies to different ways to cut a pie, where in the aggregate, each methodology does a more than adequate job of representing the return of that market exposure. While there have been noted differences in the performance of indexes [Israelsen 2006], there is no discernable optimal indexed methodology. Therefore, when selecting an ETF (or mutual fund) index tracking investment, the key selection criteria is through which methodology the market exposure can be obtained at the lowest cost, or for the lowest expense ratio.

As shown in Appendix I, the Vanguard ETFs (which are based on MSCI's index methodology) are less expensive

for each of the nine style boxes compared with the respective iShares ETFs (both Russell and S&P methodologies). Therefore, a 401(k) plan sponsor looking to select an ETF in order to obtain market exposure to each of these nine domestic asset categories would likely select the Vanguard ETFs, since they are the low-cost option. Fortunately, unlike the Russell and S&P methodologies (both offered through iShares), Vanguard operates mutual funds with the exact same indexing methodology as the ETFs (MSCI), which allows for a relatively easy apples-to-apples comparison between mutual fund and ETF investing strategies. Figures 1, 2 and 3 include a comparison of the Vanguard ETFs for large-cap, mid-cap and small-cap domestic styles to their respective index mutual funds.

As shown in Figures 1, 2 and 3, the relative cost benefit of ETFs depends on the asset size of the investment. The average Investor-share-class Vanguard mutual fund (i.e., no minimum required) costs 14 bps more than its respective ETF, with a median excess cost of 11 bps. [Note: Expense ratios on Vanguard ETFs and mutual funds have been lowered since this analysis was conducted, but the spreads remain similar.]

The average excess cost of the Vanguard Signal share-class mutual funds (which are replacing the Admiral-share classes in retirement plans) is only 2 bps compared with its respective ETF, with a median excess cost of 0 bps. The average and median of the Vanguard Institutional-share class mutual funds, though, is actually 2 bps less expensive than its respective ETF.

Based on the differences in expense ratios, the benefits of ETFs clearly depend upon the level of plan assets. A pooled ETF arrangement would make sense for smaller plans that would have to use the Investor-share classes if the total costs of pooling the ETF (both implicit and explicit) are less than 14 bps. For larger plans that could use Signal-share classes, if the total costs of pooling are less than 2 bps, it could make sense. If the plan is very large (assets of \$200+ million) and could use the Institutional-share classes, ETFs are never likely to make sense since the Institutional-share classes were less expensive than their respective ETFs.

In the aggregate, since the expense ratio differences between the ETF and mutual fund strategies were so small (at most, 14 bps for Investor-share classes), it is unlikely that any material benefits are going to be obtained from unitizing an ETF, once considering all the costs (both explicit and implicit). In fact, it appears that once all the costs are considered, in order to make ETFs 401(k)-ready, it is highly likely that any type of pooled ETF arrangement would end up costing more than a mutual fund approach, which can be had for a lot less effort.

Worth noting, though, is that if it were possible to create a pooled, unitized account that could be offered to the masses using ETFs that was cheaper than a mutual fund, mutual fund companies would likely be taking this route. Therefore, the idea that creating these large pooled ETF accounts that can somehow be cheaper than a large pooled mutual fund is somewhat faulty reasoning from the start. Even though a small price discrepancy between an ETF and mutual fund may exist, there are likely reasons for this, especially when they are being offered by the same sponsoring organization. Take for example Vanguard, the company whose investments were

used as the case study for this paper. Vanguard offers both mutual funds and ETFs that are based on the same underlying index methodology (MSCI), and in fact, are share classes of the same funds. The ETFs are typically less expensive than their respective Investor-share class mutual funds. These differences reflect the different record-keeping and administrative costs associated with the two strategies. While it's certainly possible that someone could do it cheaper than the 800-pound gorilla (Vanguard has over \$1 trillion of assets under management), these authors would be highly skeptical of such a claim after all the costs are considered.

### **A Word On Revenue Share**

A common criticism of mutual funds is the payments (known as revenue sharing) made to retirement plan providers. These types of payments can come in a variety of forms (12(b)-1s, subtransfer agent fees, investment manager rebates, etc., and exist for a variety of purposes, such as a method to pay for distribution (12(b)-1s) and record keeping (subtransfer agent fees). It is important to note, though, that despite the negative press associated with revenue share, revenue share dollars are not necessarily a bad thing. From a practical perspective, if a retirement plan provider is going to charge 1 percent for its services, the nature of its compensation (e.g., through revenue share generated from a higher expense ratio or from an explicit fee billed to clients) is not going to change the total net cost billed to the plan.

If the revenue share monies from mutual funds are returned to the plan to offset fees (based upon the Frost Model, or DOL Advisory Opinion 97-15A), revenue share can actually decrease the total net cost of the mutual fund. In some cases, this can make an index mutual fund that has a higher expense ratio than an ETF actually be less expensive than the ETF. For example, say a mutual fund has an expense ratio of 15 bps and the ETF has an expense ratio of 10 bps. Ignoring the costs associated with pooling, the ETF is clearly less expensive; however, if the mutual fund offers 10 bps of revenue share that is returned to the plan to offset expenses, the net cost of the mutual fund would actually be 5 bps. Therefore, for this example, the mutual fund is actually net cheaper than the ETF, even though it has a higher expense ratio. While a mutual fund with a net expense ratio of 5 bps may seem too good to be true, we are aware of at least two different mutual fund organizations that have index funds available with net costs *lower* than 5 bps.

### **Beware of Backtesting**

Something to be aware of with ETFs, which isn't an issue for other investments, is that ETFs can use "backtested" or hypothetical returns. This is because ETFs are passive strategies and the hypothetical performance represents the performance of the underlying strategy the ETF is following. Therefore, it is possible for a new ETF to show five- or 10-year performance history in its marketing materials, despite the fact it's brand new, although noting the fact the returns are "hypothetical" somewhere in the small print. This creates the "what might have happened had you bought into this strategy 10 years ago" situation, which is also something known as hindsight bias.

As an example of the potential problems associated with ETFs using hypothetical performance, let's assume that stocks with names that begin with the letters G, W and K dramatically outperformed all other stocks over the last 10 years. An astute analyst may contrive some reason for this to have occurred, and why it is likely to continue to occur, and then create an ETF that follows such a strategy. The marketing materials would show strong relative performance against similar indexed or active strategies despite the fact few people (if any) would have been likely to invest in this strategy 10 years ago.

While the previous example may seem extreme, ETF strategies are becoming increasingly esoteric. Therefore, it is important to ensure that the underlying methodology is sound when selecting an ETF, not just the hypothetical historical performance.

### **Living On The Wild Side**

An additional appeal of ETFs is the ability to gain more specialized investment exposures to such sectors as Technology and/or Energy, or to single countries (e.g., China) and/or more-focused (e.g., high-dividend funds) investing strategies. While there are mutual funds available with similar specialized investment exposures, the low costs of the ETFs coupled with a few vocal participants may entice a plan fiduciary to include these specialized ETFs, along with the plain-vanilla ETFs, in 401(k) plan investment lineups. ETFs are indexes after all, and you can't go wrong buying an index, right? Well, not exactly. Just because an investment follows a passive investing strategy doesn't mean it's a prudent investment for a 401(k) plan. The prudence requirement under ERISA §404(a)(1)(b) states that a fiduciary:

*discharge his duties with respect to a plan solely in the interest of the participants and beneficiaries with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims.*

When selecting investments for a 401(k) plan, a plan fiduciary must consider the nature of the workforce and whether or not participants have the education, experience and ability to make intelligent investment decisions [Reish et al. 2001]. Selecting an ETF because it has great recent performance (e.g., Technology in the 1990s or Emerging Markets today) doesn't mean it belongs in a 401(k) and is necessarily a prudent investment. A number of studies have shown that participants are poor investors and are ill-suited to make proper investment decisions (see for example [Hancock 2006], [Kasten 2005] and [Munnell et al. 2006]).

An example of a "specialized" investment abused by 401(k) plan participants is investment in their employer's company stock. A Hewitt Associates study of 401(k) plan participants found that more than 27 percent of the nearly 1.5 million employees surveyed who could invest in company stock had 50 percent or more of their 401(k) plan assets invested in those shares. A participant who invests more than half of his or her account balance in his or her employer's stock is not only violating some of the basic tenets of investing, but also common sense as well (i.e., don't put all your eggs in one basket).

Overall, including specialized investments in a 401(k) is a lose-lose situation for a plan fiduciary. A participant (and his or

her attorney) is only likely to sue if the investment returns poorly and if that participant loses money, yet the plan fiduciary receives little benefit if things go right. While a plan fiduciary may think that ERISA §404(c) provides a defense for imprudent investing at the participant level, §404(c) does not provide protection with respect to the overall prudence of an investment. For those readers not familiar with §404(c), it offers a plan sponsor and its fiduciaries a defense for losses or lack of gains realized by participants who exercise independent discretionary investment control over their individual account balances (for additional information on §404(c), see “ERISA §404(c) Best Practices: Myths versus Facts” by David J. Witz). A plan can be §404(c)-compliant, yet still have investments that are deemed imprudent under §404(a).

## Conclusion

Given current technology, the cost savings from ETFs in 401(k) plans appear to be minimal. While the expense ratios for ETFs may be less than their respective indexed mutual fund peers, this

lower cost is materially eroded by the explicit and implicit costs associated with making the ETFs “401(k)-ready.” In fact, it is likely that an ETF 401(k) strategy would end up being more expensive than a mutual fund strategy after all the costs are considered.

Minimizing plan expenses is an important consideration for a plan sponsor and plan fiduciaries, but it doesn’t take ETFs for this to happen. Plan sponsors can select index mutual funds as low-cost investment solutions for participants in an attempt to minimize overall plan fees. It’s important to remember that the purpose of a retirement plan is to help employees and participants retire, not to necessarily have funds that outperform their peers. While a discussion of the benefits of active versus passive management is beyond the scope of this paper, it is always important to note that index investing is a much easier strategy to defend (in court) and to monitor than a strategy that involves trying to find next year’s top active manager (and rarely succeeding).

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## Appendix I – ETFs For The MSCI, S&P And Russell Indexes

| Ticker | Type* | Investment Name                      | Morningstar Category | Net Assets (\$B) | Expense Ratio | Inception Date | Benchmark Index                         |
|--------|-------|--------------------------------------|----------------------|------------------|---------------|----------------|---|
| VUG    | ETF   | Vanguard Growth ETF                  | Large Growth         | \$2.57           | 0.11%         | 01/26/04       | MSCI US Prime Market Growth Index       |
| IVW    | MF    | iShares S&P 500 Growth Index         | Large Growth         | \$5.24           | 0.18%         | 05/22/00       | S&P 500/Citigroup Growth                |
| IWF    | MF    | iShares Russell 1000 Growth Index    | Large Growth         | \$11.53          | 0.20%         | 05/22/00       | Russell 1000 Growth Index               |
| VV     | ETF   | Vanguard Large Cap ETF               | Large Blend          | \$0.95           | 0.07%         | 01/27/04       | MSCI US Prime Market 750 Index          |
| IVV    | MF    | iShares S&P 500 Index                | Large Blend          | \$17.32          | 0.09%         | 05/15/00       | S&P 500 Index                           |
| IWB    | MF    | iShares Russell 1000 Index           | Large Blend          | \$3.62           | 0.15%         | 05/15/00       | Russell 1000 Index                      |
| VTV    | ETF   | Vanguard Value ETF                   | Large Value          | \$2.24           | 0.11%         | 01/26/04       | MSCI US Prime Market Value Index        |
| IVE    | MF    | iShares S&P 500 Value Index          | Large Value          | \$4.39           | 0.18%         | 05/22/00       | S&P 500/Citigroup Value                 |
| IWD    | MF    | iShares Russell 1000 Value Index     | Large Value          | \$9.88           | 0.20%         | 05/22/00       | Russell 1000 Value Index                |
| VOT    | ETF   | Vanguard Mid-Cap Growth ETF          | Mid-Cap Growth       | \$0.15           | 0.13%         | 08/17/06       | MSCI US Mid Cap Growth Index            |
| IWP    | MF    | iShares Russell Midcap Growth Index  | Mid-Cap Growth       | \$2.77           | 0.25%         | 07/17/01       | Russell Midcap Growth Index             |
| IJK    | MF    | iShares S&P MidCap 400 Growth Index  | Mid-Cap Growth       | \$2.05           | 0.25%         | 07/24/00       | S&P MidCap 400/Citigroup Growth Index   |
| VO     | ETF   | Vanguard Mid Cap ETF                 | Mid-Cap Blend        | \$1.19           | 0.13%         | 01/26/04       | MSCI US Mid Cap 450 Index               |
| IJH    | MF    | iShares S&P MidCap 400 Index         | Mid-Cap Blend        | \$4.90           | 0.20%         | 05/22/00       | S&P MidCap 400 Index                    |
| IWR    | MF    | iShares Russell Midcap Index         | Mid-Cap Blend        | \$3.79           | 0.20%         | 07/17/01       | Russell Midcap Index                    |
| VOE    | ETF   | Vanguard Mid-Cap Value ETF           | Mid-Cap Value        | \$0.20           | 0.13%         | 08/17/06       | MSCI US Mid Cap Value Index             |
| IWS    | MF    | iShares Russell Midcap Value Index   | Mid-Cap Value        | \$3.65           | 0.25%         | 07/17/01       | Russell Midcap Value                    |
| IJJ    | MF    | iShares S&P MidCap 400 Value Index   | Mid-Cap Value        | \$2.67           | 0.25%         | 07/24/00       | S&P MidCap 400/BARRA Value Index        |
| VBK    | ETF   | Vanguard Small Cap Growth ETF        | Small Growth         | \$0.78           | 0.12%         | 01/26/04       | MSCI US Small Cap Growth Index          |
| IWO    | MF    | iShares Russell 2000 Growth Index    | Small Growth         | \$2.96           | 0.25%         | 07/24/00       | Russell 2000 Growth Index               |
| IJT    | MF    | iShares S&P SmallCap 600 Growth      | Small Growth         | \$1.49           | 0.25%         | 07/24/00       | S&P SmallCap 600/Citigroup Growth Index |
| VB     | ETF   | Vanguard Small Cap ETF               | Small Blend          | \$0.98           | 0.10%         | 01/26/04       | MSCI US Small Cap 1750 Index            |
| IWM    | MF    | iShares Russell 2000 Index           | Small Blend          | \$11.31          | 0.20%         | 05/22/00       | Russell 2000 Index                      |
| IJR    | MF    | iShares S&P SmallCap 600 Index       | Small Blend          | \$4.94           | 0.20%         | 05/22/00       | S&P SmallCap 600 Index                  |
| VBR    | ETF   | Vanguard Small Cap Value ETF         | Small Value          | \$0.77           | 0.12%         | 01/26/04       | MSCI US Small Cap Value Index           |
| IWN    | MF    | iShares Russell 2000 Value Index     | Small Value          | \$4.17           | 0.25%         | 07/24/00       | Russell 2000 Value Index                |
| IJS    | MF    | iShares S&P SmallCap 600 Value Index | Small Value          | \$1.81           | 0.25%         | 07/24/00       | S&P SmallCap 600/Citigroup Value Index  |

Source: Vanguard. Data as 11/02/07. \*MF = Mutual Fund, ETF = Exchange-Traded Fund. \*\*30-Day Average.