



C A M B R I D G E A S S O C I A T E S L L C

U.S. MARKET COMMENTARY

SHOULD EXCHANGE-TRADED FUNDS BE PART OF YOUR TOOLBOX?

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Should Exchange-Traded Funds be Part of Your Toolbox?

Assets in U.S.-listed exchange-traded funds (ETFs) have grown nearly five-fold from the end of 2000, to \$409 billion as of mid-November, according to Morgan Stanley (Table A). At the end of 2000, ETFs represented less than 2% of the equity mutual fund universe by assets, compared to about 7% today. ETFs that own U.S. equities have seen an inflow of \$37.7 billion during 2005 and the first nine months of this year, just shy of the \$44.7 billion that flowed into comparable mutual funds (Table B). The universe of ETFs has roughly doubled in size since the last time we wrote about them in November 2004.¹

The range of asset classes and specialized strategies covered by ETFs has also expanded at a mind-numbing pace. Over the past year, sponsors have introduced leveraged and short-biased equity ETFs; dividend-weighted products; niche, sub-sector ETFs focused on water and on nanotechnology; strategies targeting under-researched firms or those with insider share purchases; a brace of commodities ETFs; and eight currency ETFs (including a carry-trade strategy).

Popularity, though, does not always translate into utility. The appeal of ETFs to hedge funds and many types of individual investors is undeniable. However, for institutional investors with long investment time frames, ETFs are only occasionally the best choice in implementing an investment strategy. ETFs are vehicles to access varieties of beta exposure, and investors desiring that beta typically have several other vehicles to choose from, including commingled index funds, indexed separate accounts, futures, and swaps.

ETF Investment Characteristics are Improving

Examples of investment situations in which ETFs are worth considering are outlined below. However, first it is helpful to review some of the characteristics of the ETF market that have improved their utility for institutional investors.

Lower Transaction Costs: Transaction costs have come down significantly. The primary reason for declining transaction costs is the shrinking bid-asked spread (Table C). In January 2001, the average weighted bid-asked spread on the iShares Russell 2000® Value ETF was a veritable chasm at 75 basis points (bps), according to a Cambridge Associates report, and even the iShare S&P 500 ETF was 8 bps.² Contrast that with a spread of 3 bps and 2 bps, respectively as of September 2006.³ The iShares Russell Microcap™ ETF has a spread of just 11 bps, very likely smaller than the spread of the underlying shares.

Higher Liquidity: ETFs' trading volumes have increased (Table D), but trading volume is not necessarily the primary determinant of ETF liquidity for an institutional investor. Because ETF shares can be created or redeemed by an "authorized participant" such as a large brokerage firm, and not just traded in the

¹ See our November 2004 Global Market Commentary: *Global ETFs are Thriving, But Are They Cost-Effective?*

² See our September 2001 report *Exchange-Traded Funds: Versatility at a Price*.

³ Current spreads are according to Barclays Global Investors. Spread data available from Bloomberg for a sample of ETFs does not appear to be reliable.

secondary market, the liquidity of an ETF is primarily a function of the liquidity of its underlying stocks. If an investor wishes to purchase an amount of ETF shares that is a significant fraction of that ETF's average daily trading volume, the brokerage firm can create new shares of the ETF for the investor by purchasing the basket of liquid underlying stocks, rather than buying existing ETF shares in the thinly traded secondary market. The trade is not likely to have much market impact provided the size of the purchase is a small fraction of the trading volume for *the underlying stocks*, even if it is a large fraction or a multiple of the trading volume of the ETF shares in the secondary market. Not every ETF is liquid, of course, but the important point is that if the ETF offers the exposure the investor seeks, and with a reasonable expense ratio and expected tracking error, low trading volume is not necessarily a reason to eliminate that vehicle from consideration.

Narrowing Premia/Discounts: ETF pricing continues to diverge significantly from the value of underlying securities, even though the range of premia/discounts is constrained by an arbitrage mechanism that is largely a function of the liquidity of the underlying securities (Table E). However, this range has narrowed somewhat in recent years for ETFs that own domestic securities.⁴ Prior to executing a trade, brokerage firms can check to ensure that an ETF is not currently trading at a substantial premium to the value of its underlying securities. In addition, brokers will typically agree to deliver the shares at the day's closing NAV for the ETF, or at the day's volume-weighted average price.

Lower Expense Ratios: Another favorable development is the lowering of some expense ratios and the introduction of new ETFs with low expense ratios. Beginning in 2004, Vanguard Group began to introduce ETF share classes of some of their existing index funds as a way to siphon off those shareholders that traded the funds frequently, creating excess transaction costs for the funds. In many cases, the Vanguard ETF offers the lowest expense ratio for the asset class or market segment (the expense ratio of the Vanguard Small Growth ETF at 12 bps is about half that of the iShares Russell 2000®, for example). Investors face three tradeoffs for these low costs, however: (1) unlike iShares, many of the Vanguard U.S. ETFs track relatively obscure MSCI U.S. indices, which have favorable characteristics, but differ from more commonly recognized benchmarks; (2) the Vanguard ETFs generally have lower trading volumes, which can be overcome via share creation, but their bid-asked spreads are somewhat larger than those of iShares in many cases; and (3) there may be less demand on the part of hedge funds to borrow the Vanguard ETFs for short-selling purposes. Why would an institution care about borrowing interest? Securities lending income can be very substantial for investors holding certain ETFs.

ETF Utility for Institutional Investors is Limited, but Expanding

In what circumstances might ETFs be attractive options for institutional investors? These instances are limited, but worth discussing.

⁴ Market prices for ETFs that own European and Asian local equities may differ from their net asset value (NAV), yet not open an arbitrage opportunity, since the NAV is established using "stale" closing prices for the underlying stocks on exchanges that have closed hours before the New York exchanges.

Securities Lending Income: In certain asset classes (currently, emerging markets and U.S. small caps), the securities lending income from holding and lending the ETF can more than compensate for the incremental costs of owning the ETF rather than a commingled fund. ETFs are popular with hedge funds, many of which use short positions in ETFs (typically to partially or fully hedge individual long positions). Those ETFs that are difficult to borrow can command significant lending income. The iShare MSCI Emerging Markets has generated about 200 bps in gross lending income on average over the past 18 months, and currently is generating about 375 bps in income (of which the custodian might keep 30% to 50%). The iShare Russell 2000® is currently generating about 95 bps in gross income. Income from securities lending is a function of conditions today, and future lending income may dry up or move to other asset classes as the ETF landscape and market conditions evolve. The most heavily traded individual ETFs in a given asset class are likely to generate more lending income than their competitors,⁵ and some custodians are likely to have more success lending ETFs than others, depending on the strength of their relationships with prime brokers that consistently need to source ETFs. For those institutions that would prefer not to lend their ETF shares, another option would be to negotiate with a broker to construct a total-return swap or a note based on the return of the underlying index.⁶ Investors using an ETF will experience some tracking error (since ETFs in less-liquid asset classes sometimes employ sampling or optimization).⁷

Short Time Horizon: For an institution that has decided to add or increase exposure to emerging markets and is evaluating managers, a short-term position in an institutional mutual fund or similar vehicle may have disadvantages relative to ETFs. Vanguard, for example, charges investors a fee of 50 bps when investors purchase shares in their emerging markets index fund, and an additional 50 bps when they sell it (the index fund's expense ratio is 25 bps, compared to 30 bps for the ETF). Some other Vanguard index funds charge a 1% fee if the fund is redeemed less than a year after purchase⁸ (and many index funds do not welcome investments that are expected to be redeemed within a year). An ETF is likely to be attractive compared to a traditional index fund if the position is redeemed just a few months after purchase, if the fund assesses entry or exit fees. As the length of the position increases, the fund's relative appeal grows.

Manager Transitions Utilizing Separate Accounts: ETFs may also be useful in manager transitions where investors use separate accounts and have not identified replacement managers at the time of the transition. Full-service brokers can take a terminated manager's portfolio and use the overlapping securities to create ETF shares (the shares from the terminated manager's portfolio that do not overlap with

⁵ While 189 ETFs are available for lending globally, according to Julian Pittam of Performance Explorer as cited in *International Securities Finance*, 57% of lending activity is concentrated in just five ETFs.

⁶ In a competitive market, the funding costs for such a swap will incorporate a portion of the projected lending income (since the broker will hold the ETF and lend it out for the duration of the swap). This would add leverage to the portfolio, however. Additionally, an investor entering into a swap contract would also need to execute an ISDA (a master agreement created by the International Swaps and Derivatives Association, Inc.) with each counterparty, and multiple ISDAs might be required as part of the competitive bidding process—a significant logistical challenge for investors who do not already have over-the-counter derivatives portfolio.

⁷ See Table F. The iShare MSCI Emerging Markets employs optimization and owns 275 securities, compared to nearly 850 in its benchmark index. Its tracking error has been much larger than that of most other ETFs. The ETF's sponsor, Barclays Global Investors, is attempting to reduce the tracking error, but the tracking error is likely to remain high relative to ETFs in many other asset classes.

⁸ The fee is paid to the fund itself rather than to Vanguard Group; its intent is to limit the impact of the additional trading on the fund's other shareholders.

the ETF reference index are sold to purchase missing shares, in order to complete the ETF's underlying portfolio). The reverse happens once a replacement manager is selected.⁹ Investors may choose to merely hold a basket of stocks instead of the actual ETF (particularly if the time horizon is short), but the ETF has the advantage of being rebalanced, while over time, a basket of stocks will begin to deviate modestly from an index (as securities enter and leave the index, but not the static basket of stocks).

Only Other Alternative is Retail Mutual Fund: ETFs can be helpful for institutions with a relatively modest asset base as they implement passive exposure to certain sub-asset classes. For example, an institution looking to add a 5% REIT allocation to their \$75 million portfolio might not be able to meet the minimum investment requirement for less expensive institutional index funds. There are several ETFs providing REIT exposure, however, including a Vanguard ETF that charges only 12 bps per year. Trading volume may be thin for some of these ETFs, but remember that the liquidity of the underlying shares is more important than that of the ETF shares.

Hedging Exposures: ETFs could be beneficial as a way to gain short exposure to an asset class. This may be useful for investors who wish to trim their overexposure to an asset class or market sector (such as small-capitalization value shares or energy shares) without disrupting the current manager structure.¹⁰

Equitizing Cash: Finally, ETFs can also be useful for equitizing cash (such as the proceeds from a venture capital share distribution that has been sold), particularly if there is no liquid futures contract for the asset class (the availability and liquidity of futures contracts is limited for some style indices and for the MSCI EAFE Index), if the investor does not already have a swap portfolio,¹¹ and if the likely holding period is relatively short.

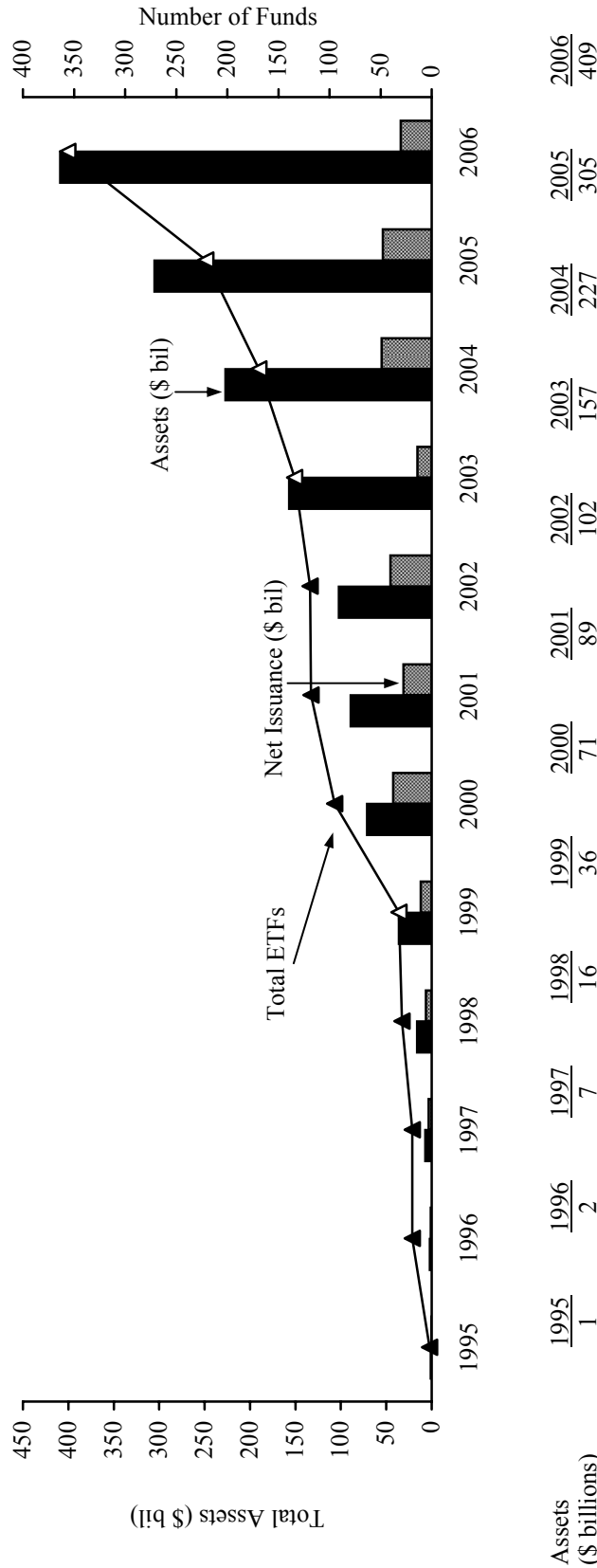
ETFs have seen incredible growth in assets and trading volume. Their utility to long-term institutional investors has also grown, albeit more slowly. Investors selecting among passive investment approaches will benefit from examining the variety of available vehicles that could provide the desired exposure (often including ETFs, institutional index funds, futures, and swaps), keeping in mind their total cost (transaction and management costs), the potential for securities lending income, and sources of potential tracking error.

⁹ This strategy can be particularly useful when moving assets to a manager that is typically slow to put new investments to work in the portfolio, holding significant cash positions at times. An investor can ask the manager to treat the ETF as available cash, purchasing securities for the portfolio as they become attractive. In this way the investor retains full market exposure, while the manager may invest inflows at a measured pace, rather than be pressured to add to existing portfolio positions pro rata.

¹⁰ This strategy has complexities and risks that go beyond the scope of this brief paper. Margin requirements may limit the extent to which the undesirable beta can be replaced with desired beta, and futures or swaps may be more cost-effective in this role.

¹¹ An investor with an existing swaps portfolio has already completed much of the necessary legal groundwork, executing ISDA Master Agreements as described in a previous footnote, so additional swap contracts will not be logistically difficult.

Table A
U.S.-LISTED EXCHANGE-TRADED FUND GROWTH
1995-2006
(\$ Billions)



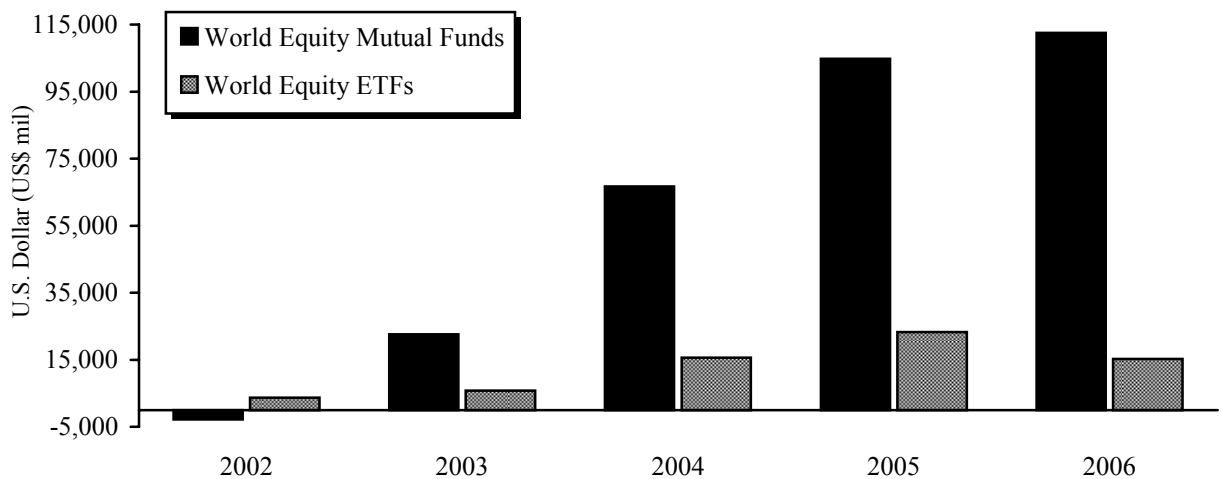
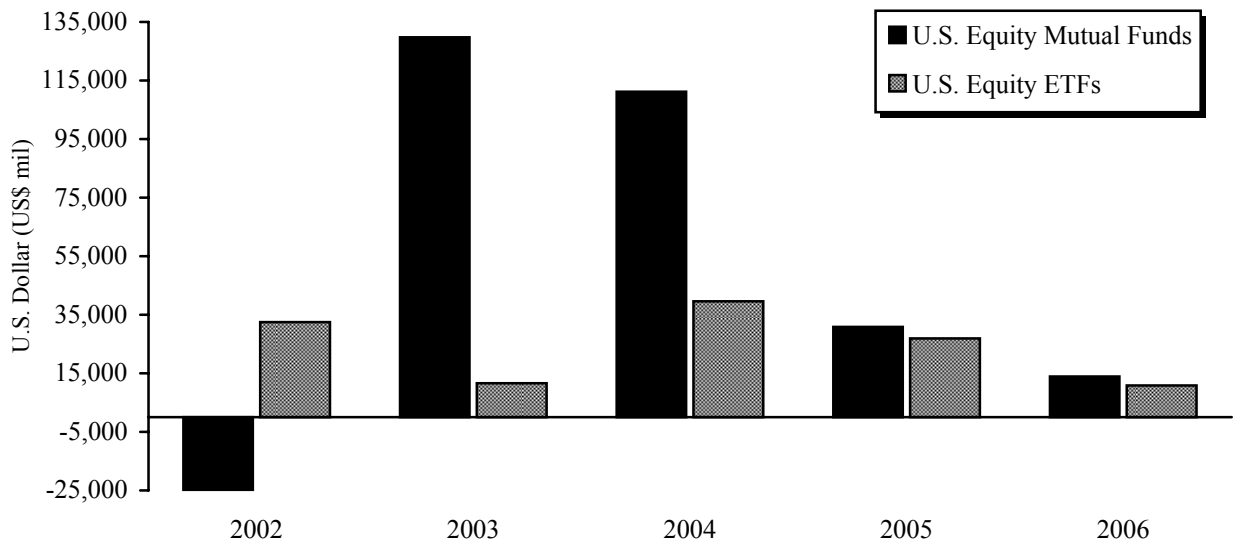
Source: Investment Company Institute and Morgan Stanley Capital International. MSCI data provided "as is" without any expressed or implied warranties.

Notes: Total exchange-traded funds and assets data for 2006 are year-to-date through November 9, 2006. Net issuance data for 2006 are year-to-date through September 30, 2006. Net issuance data exclude trust-issued receipts, such as Holding Company Depository Receipts (HOLDRs), because they are not issued by registered investment companies.

Table B

NET CASH FLOW FOR MUTUAL FUNDS AND EXCHANGE-TRADED FUNDS

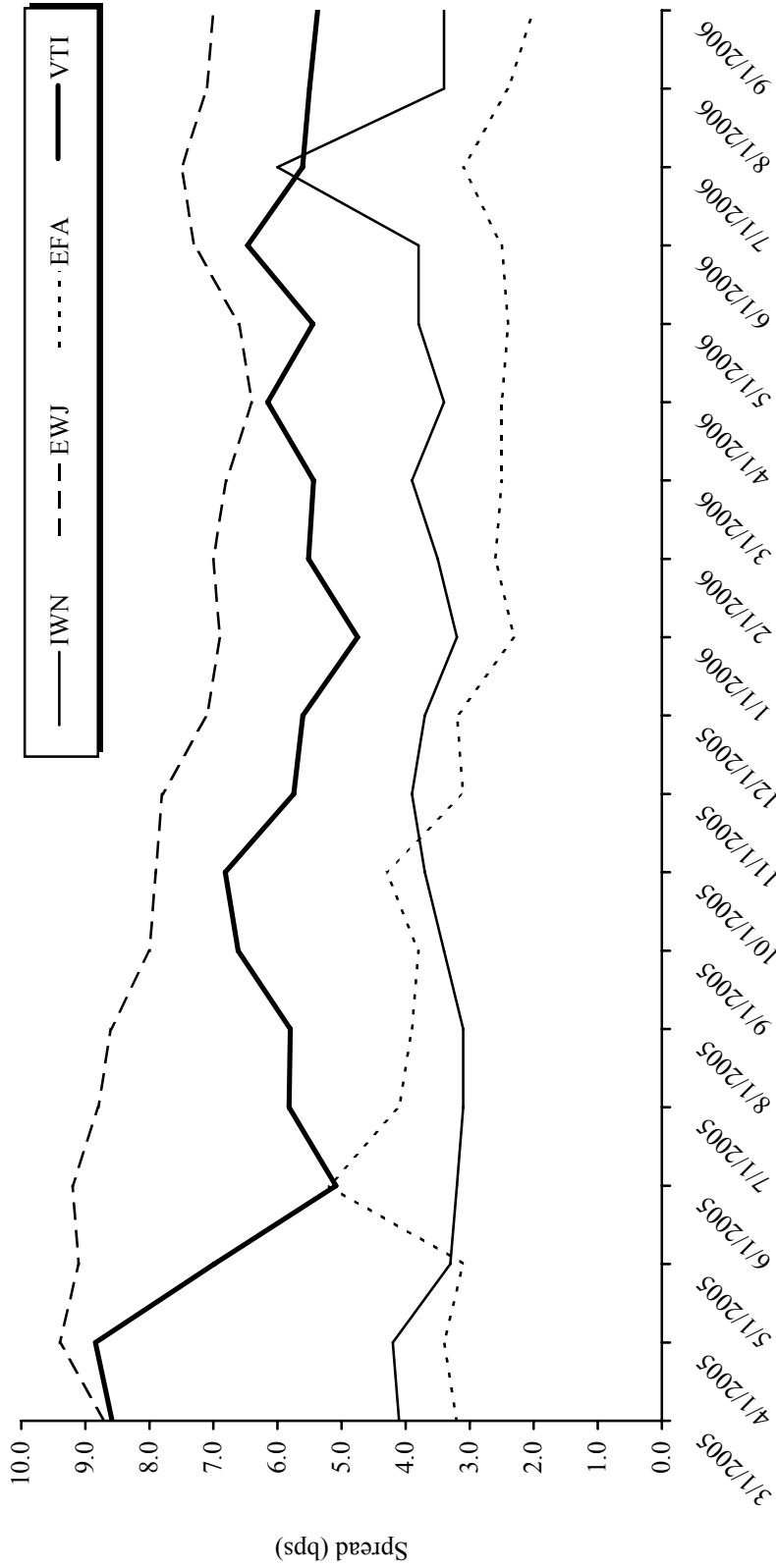
January 1, 2002 - September 30, 2006



Sources: Investment Company Institute and Morgan Stanley Capital International. MSCI data provided "as is" without any expressed or implied warranties.

Notes: Represents net flows into U.S.-registered mutual funds and U.S.-registered exchange-traded funds (ETFs). U.S. ETF net cash flow data are based on inflows and outflows from broad market, large-cap, mid-cap, small-cap, micro-cap, custom, dividend income, and sector and industry funds. Global ETF net cash flow data are based on inflows and outflows from global and international funds.

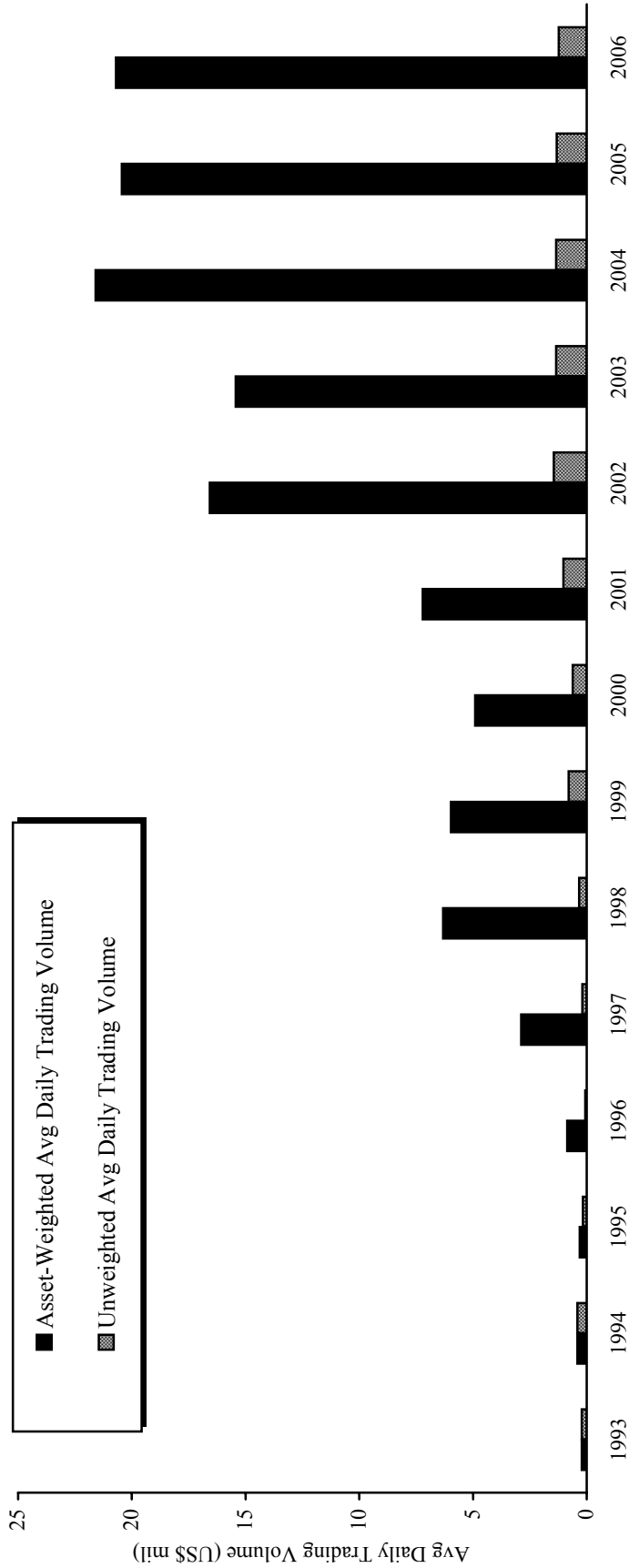
Table C
BID/ASK SPREADS FOR SELECTED EXCHANGE-TRADED FUNDS
March 1, 2005 - September 1, 2006



Sources: Barclays Global Investors and The Vanguard Group, Inc.

Notes: Graph data represents volume-weighted average bid-ask spreads for various exchange-traded funds (ETFs). IWJ, EWJ, EFA, and VTI represent the iShares Russell 2000® Value ETF, the iShares MSCI Japan ETF, the iShares MSCI EAFE ETF, and the Vanguard Total Market ETF, respectively.

Table D
AVERAGE DAILY TRADING VOLUME FOR U.S.-LISTED EXCHANGE-TRADED FUNDS
1993-2006



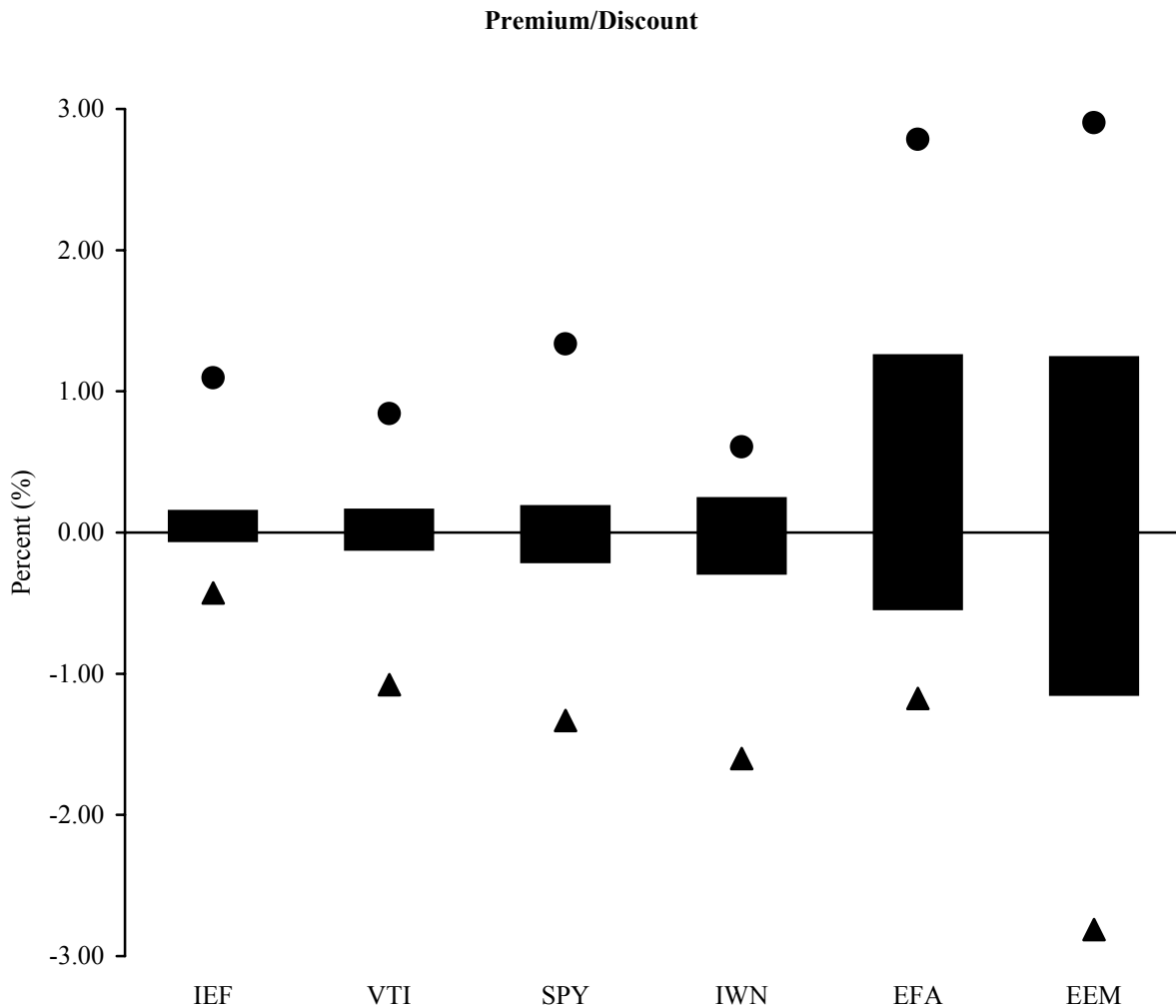
Source: State Street Global Advisors.

Notes: The asset-weighted average adjusts each exchange-traded fund's (ETF) trading volume by the fraction of total ETF assets that it represents. For example, an ETF that includes 13% of the total ETF universe's assets is given a 13% weighting in the asset-weighted calculation methodology. The unweighted average simply divides the total trading volume of the ETF universe by the number of ETFs in that universe. The asset-weighted and unweighted average daily trading volume data are based on 250 trading days per year and 187.5 trading days year-to-date through 2006. Asset data are year-to-date through October 31, 2006 while volume data are year-to-date through September 30, 2006.

Table E

**DISTRIBUTION OF DAILY PREMIUM/DISCOUNT TO NET ASSET VALUE FOR
SELECTED EXCHANGE-TRADED FUNDS**

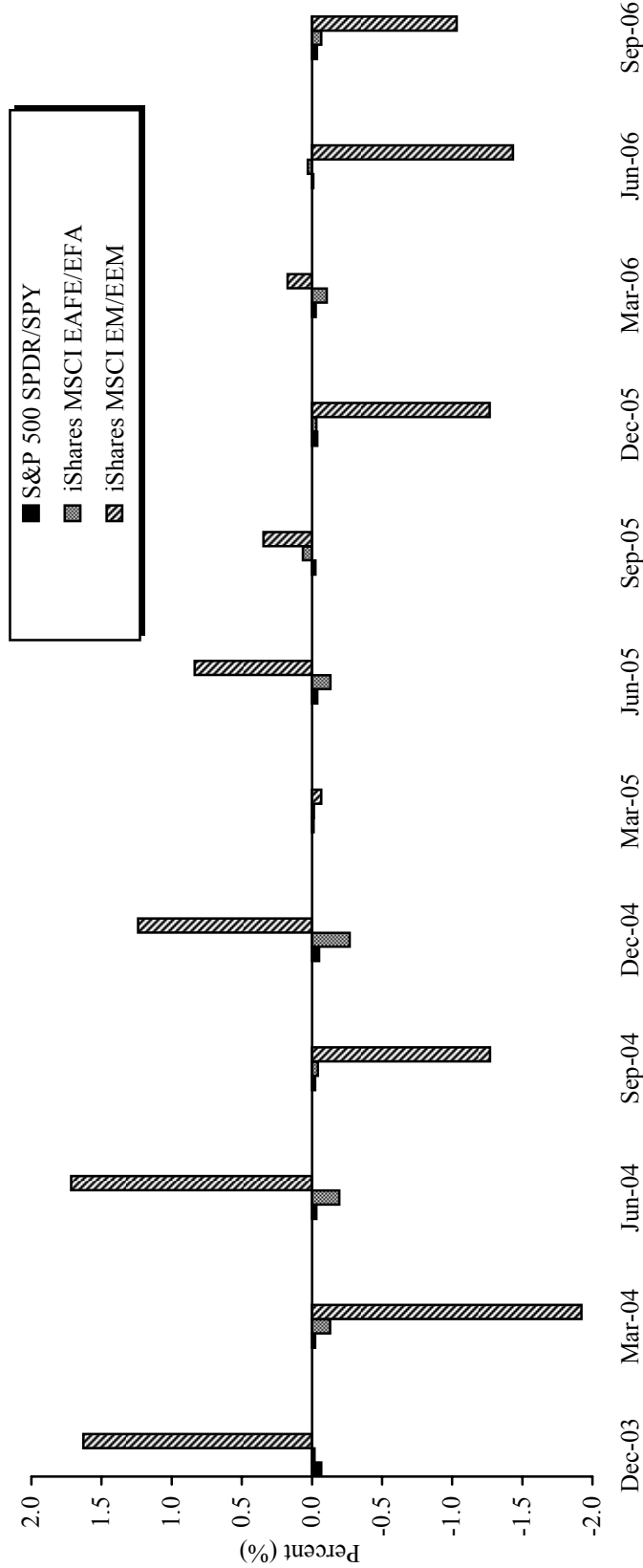
September 30, 2003 - September 30, 2006



Source: The Bloomberg.

Notes: Graph data represents the distribution of daily premia or discounts of the exchange-traded fund's (ETF) closing market price to its net asset value (NAV). Closing prices may reflect trades occurring after the close of normal market trading; premia or discounts to NAV may be smaller during the normal trading day. Each box represents data within the 5th to 95th percentile, while the circle and triangle represent the maximum and minimum of the data observations, respectively. The intercept of the x-axis represents NAV for each exchange traded fund. IEF represents the Lehman Brothers 7-10 Year Treasury iShares ETF, VTI represents the Vanguard Total Stock Market ETF, SPY represents the S&P 500 SPDRs ETF, IWN represents the iShares Russell 2000® Value ETF, EFA represents the iShares MSCI EAFE ETF, and EEM represents the iShares MSCI Emerging Markets ETF.

Table F
EXCHANGE-TRADED FUNDS' DIVERGENCE RELATIVE TO UNDERLYING INDICES
ETF RETURN LESS INDEX RETURN
October 1, 2003 - September 30, 2006



Sources: Morgan Stanley Capital International, Morningstar, Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any expressed or implied warranties.

Notes: Graph data represents excess returns of selected exchange-traded funds (ETFs) versus their respective benchmarks. Excess return is defined as the difference between the quarterly net asset value return and the quarterly benchmark total return. The SPY ETF is benchmarked against the S&P 500 Index, the EFA ETF against the MSCI EAFE Index, and the EEM ETF against the MSCI Emerging Markets Index. MSCI returns are net of dividend taxes.