

The Short Side of 130/30 Investing for the Conservative Portfolio Manager

**Gary L. Gastineau
ETF Consultants LLC
382 Springfield Avenue
Suite 206
Summit, New Jersey 07901**

**908-598-0440 – Telephone
908-598-0467 – Fax**

gary@etfconsultants.com

Abstract

Many long-only investment managers are looking for ways to offer 130/30 strategies and other "enhanced long strategies" or "constrained long-short portfolios." A conservative portfolio manager with little or no experience in short selling can use the sector evaluations from her firm's investment process to add alpha with short positions in exchange-traded funds (ETFs). Individual stock selection has the greatest potential to add value on the short side as well as on the long, but the difference in performance among various domestic sectors is a relatively close second to individual stocks. When the dispersion in sector performance is combined with some advantages of using exchange-traded funds to implement short sector positions, the use of sector ETFs to establish the short side of a 130/30 position can be a compelling choice for investment managers unprepared for fully-integrated long-short stock portfolios. Some sector ETFs are easy to trade, easy to borrow and easy to integrate as the short side of a long-short portfolio.

(Forthcoming in the Journal of Portfolio Management)

Many long-only investment managers have watched the financial industry's growing enthusiasm for what are formally called "enhanced long strategies" or "constrained long-short portfolios" with a mixture of interest and concern. The most common label for these portfolios, "130/30," anticipates that the portfolio manager's investment process will select long positions equal to 130% of the nominal capital invested and offsetting short positions equal to 30% of that nominal capital for a net market exposure of 100%. It is convenient to use 130/30 as a shorthand label for various implementations of this investment method.

The premise behind 130/30 and its cousins – from 120/20 to 200/100 – is that most institutional investment processes evaluate a broad range of investment opportunities. If client portfolios are limited to long positions, any negative information the manager accumulates is used only to exclude unattractive positions from portfolios. The long only manager cannot weight an unattractive position at less than zero. Consequently, clients do not get the full benefit of all the manager's research because the long only manager cannot take a short position.

The theoretical grounding for 130/30 portfolios and calculations describing how the underlying investment process can add value by leveraging longs and using information now "wasted" to select short positions is well developed in a number of the references listed at the end of this paper.¹ Both theoretical models and empirical studies of 130/30 portfolios that have been in operation for a few years provide ample support for the notion that this long-short structure is a better way for many investment managers and their clients to approach equity investment.

The purpose of the references is to provide an accessible reading list for portfolio managers and their clients who want to understand some of the nuances of 130/30 portfolios. One paper in particular, Jacobs and Levy (2007a), provides insights on a number of 130/30 issues not addressed here. The specific purpose of the present paper is to describe how a conservative portfolio manager with little or no experience in short selling can use the sector evaluations from her firm's investment process to add alpha with short positions in exchange-traded funds (ETFs).

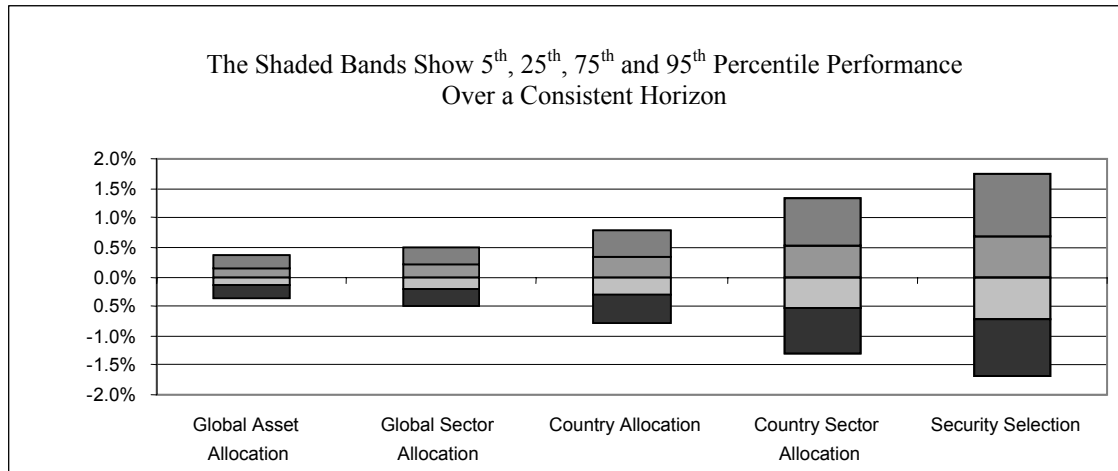
There are a number of reasons an investment manager might use sector ETFs rather than individual stocks as the short components in an initial 130/30 product offered to clients. Some portfolio managers do not welcome the additional flexibility of a 130/30 model because they are not used to evaluating the risks and rewards of the short side of investing. Viscerally, managers may overestimate upside risks or simply be uncomfortable with upside company specific risks. From an operations perspective, a long only manager is used to looking at cash balances and trade management in ways that may not be fully compatible with an integrated long short portfolio. Probably the single most important objection likely to be raised to integrated long-short portfolio management is that the manager's investment process information is not organized to support the analysis and risk management of short positions in individual stocks. For example, there may be no buy back discipline for short positions that is comparable to the firm's sell discipline for long positions.

These are all valid concerns for some managers, but it is possible for an investment organization to approach short selling in an incremental way, even if a firm has not organized the collection and integration of negative

company information into its security selection and risk management systems. Most large investment organizations have well-developed policies on the relative attractiveness of various market segments including large-cap versus small-cap, value versus growth and, most significantly for present purposes, the relative attractiveness of various market sectors.

The literature on effective integration of short selling into long/short portfolios focuses on the value of the information available from the investment process – the breadth and accuracy of that information, and its expected impact on portfolio performance. The basic principles, highly simplified here, but developed in full mathematical glory in Grinold and Kahn (2000a, 2000b), Jacobs, Levy and Starer (1999) and Sorensen, Hua and Qian (2007) usually start with measurement of the value of available information. Different types of information can have very different values. In some cases, the information that suggests one security will do better than another may have little value because the securities are highly correlated and the difference in expected performance is small. Even if a piece of information on this pairing is accurate, using it may add little value. In other cases, the factors affecting the relative value of a pair of stocks are quite different and the expected returns of the stocks are only weakly correlated. Exhibit 1 shows the range of typical performance differences that can be achieved in some common ways of segmenting active management choices.

Exhibit 1 – Return Dispersion for Selected Active Management Choices



Source: Kritzman, Mark and Sebastian Page, “The Hierarchy of Investment Choice,” *The Journal of Portfolio Management*, Summer 2003, pp. 11 – 23.

As intuition suggests, individual stock selection has the greatest potential to add value, but the difference in performance among various domestic sectors is a relatively close second. When the dispersion in sector performances is combined with some advantages of using exchange-traded funds to implement short sector positions, the use of sector ETFs to establish the short side of a 130/30 position can be a compelling choice for investment managers unprepared for fully-integrated long-short stock portfolios. Some sector ETFs are easy to trade, easy to borrow and easy to integrate as the short side of a long-short portfolio.

Why Now?

Investor and investment manager interest in 130/30 portfolios is partly a response to the popularity of hedge funds. Traditional investment managers are called upon to offer hedge fund-like products to a broad range of investors. The public interest in 130/30 portfolios, in particular, and in hedging activities, in general, provides investment managers with an opportunity to expand their offerings of above-average fee products –

products that can generate more revenue and better client performance with modest incremental operating costs.

Why Use Sector ETFs?

As the balance of this paper will demonstrate, at least one ETF in each of a number of U.S. domestic sectors offers unique opportunities for efficient implementation of short positions without concern for some of the risks often associated with short selling:

(1) For institutional size accounts, borrowing sector ETF shares to sell short is simple and low in cost.

(2) The possibility of a short squeeze or a surprise increase in securities borrowing costs is extraordinarily small.

(3) The dispersion of returns for the selected active management choices illustrated in Exhibit 1 reflects the opportunity set available to an active manager. As the exhibit illustrates, sector selection within a country provides return dispersion closer to individual security selection than the other active management choices.

(4) Some small companies with doubtful operating records and prospects have objected volubly that short sellers are "attacking" their stocks. The managements of these companies have created ongoing distractions for fund managers that have shorted their stocks (see McLean and Hajim (2005)). A traditional investment manager might be more reluctant than a hedge fund manager to face this kind of pressure. If the manager's short position is in an exchange-traded fund, there is no link between the short position and a specific company's stock. While the managers of

ETFs are sometimes ambivalent about short sellers, they like the active trading that the sales and repurchases of short sellers generate and they recognize that active trading and tight trading spreads make their funds more attractive to long investors.

Short Selling Operations

A detailed plan for implementing a 130/30 program with sector ETFs as the short side is outside the scope of this paper, but a few comments are appropriate. Depending largely on the custody options open to a specific institutional client, either a prime brokerage account or a traditional margin account will be used. The principal operating issue in the use of sector ETFs for short selling is the ease and cost of borrowing the necessary ETF shares. One of the greatest misunderstandings in ETF short selling is that ETF shares are often said to be difficult to borrow.

It is true that a small investor who wants to sell short a few hundred or a few thousand shares of an ETF will frequently be told by a broker that the shares are hard to borrow. It is also true that if a large investor asks about borrowing 100,000 ETF shares, the answer will nearly always be that the shares are available for prompt delivery against a short sale. What is going on here?

The answer is simple. Securities borrowing and lending is a labor-intensive process by securities industry standards and a small stock loan transaction is rarely worth a broker's effort. However, exchange-traded fund shares can be created in nearly unlimited quantities. Market makers in ETFs will readily create shares in most ETFs for the express purpose of lending the shares. If shares must be created to lend, the cost of borrowing them may be slightly greater than the general collateral rate

that would apply to the loan of an S&P 500 component stock. Any added cost to borrow shares in an ETF will be a function of the effect of the fund expense ratio on the securities lender's costs. Rates may vary, depending on the natural availability of shares to lend in a specific ETF. Other than the noted effect of the expense ratio if shares must be created to lend, ETF shares are neither hard nor expensive to borrow.

Which Sector ETFs?

In the paragraphs and tables that follow, we examine ETFs in eleven popular domestic sectors largely defined by the Global Investment Classification System (GICS) developed jointly by Standard & Poor's (S&P) and Morgan Stanley Capital International (MSCI) and used in the construction of those index publishers' sector indexes.

Most U.S. investment managers organize their securities research around the sector and industry classifications of the GICS sector and industry breakdowns. Furthermore, the U.S. domestic sector ETFs that have the most assets, the greatest trading liquidity and the most active short selling are generally based on the GICS classification system. There are differences between the GICS classification system and its principal rival, the Industry Classification Benchmark (ICB), developed and supported by Dow Jones Indexes and the FTSE Group; but those differences are not substantial for most sectors.

The division between Consumer Discretionary and Consumer Staples under the GICS classification and between Consumer Services and Consumer Goods under the ICB standards is probably the most significant classification difference we encounter in the Sector ETFs. The GICS standards attempt to capture the cyclical nature of consumer demand

by emphasizing the deferrable or discretionary nature of purchases from the companies in the Consumer Discretionary Sector. The ICB standards focus on whether the company is delivering products or services. The discretionary or cyclical emphasis in the GICS classification puts building products retailers and other providers of deferrable services in the Consumer Discretionary Sector, whereas the ICB focus on services includes essentially all retailers and other providers of services in Consumer Services and makes no attempt to focus on the economic sensitivity of the business of a particular retailer. To note the most important specific and representative differences, Walmart, CVS-Caremark and Walgreen are among the top ten holdings of the Sector SPDR Consumer Staples fund and among the top ten holdings of the iShares Dow Jones Consumer Services fund.

Of the three major families of sector index exchange-traded funds, the Sector SPDRs are based entirely on stocks in the Standard & Poor's 500, the most popular template for indexed portfolios in the US market. As S&P is one of the creators of GICS, the indexes underlying the Sector SPDR portfolio are consistent with the GICS sector classifications. The Vanguard sector index funds are based on a family of MSCI indexes covering a broad capitalization range of the U.S. market including approximately 2500 stocks, five times the number of securities in the S&P 500. However, stocks in the S&P 500 account for about 80% of the capitalization weight of the average MSCI sector index underlying a Vanguard sector fund. Most of the stocks in the MSCI sector indexes that are not in the S&P 500 are relatively small companies. In at least half of the Vanguard sector funds, the top 10 stocks account for half or more of the assets of the fund. The other major domestic sector ETFs are the iShares Dow Jones sector funds based on the ICB industry classification

and collectively including a number of stocks roughly intermediate between the 500 in the Sector SPDRs and the 2500 in the Vanguard sector funds. The presence of smaller companies gives some small- and mid-cap exposure to the Vanguard and iShares sector funds and tends to slightly increase the costs of borrowing their portfolio securities. The presence of these smaller companies also increases the trading spread in the basket used to create and redeem the Vanguard and iShares funds and increases the trading spread in the market for the exchange-traded fund shares.

In addition to these three ETF families, there are a large number of additional market segment ETFs based on custom indexes that hold securities selected in different ways and with unusual stock weighting schemes. With the exception of the real estate sector/industry, we stick largely to these three ETF families because their portfolios approximate float weighting and the sector definitions are close to the definitions used by research departments. If a portfolio manager has a strong, negative case for a sub-sector or an industry covered by an ETF, the characteristics that are significant in picking a sector ETF to sell short apply equally to industry funds.

There is no material risk of a short squeeze in any approximately float-weighted exchange-traded fund because more ETF shares can always be created by depositing a basket of the securities in the fund's portfolio composition file (PCF) with the fund custodian. The Appendix provides a simplified description of the ETF creation and redemption process and a reference to more detailed discussions of creation and redemption. Exhibit 2 compares the assets of each of the Sector SPDRs (generally the largest sector ETFs) to the floating capitalization of their respective S&P

500 sectors. In no case does a Sector SPDR hold as much as $\frac{3}{4}$ of 1% of the float of any single stock. Only the Utilities Sector SPDR holds much more than 1/3 of 1% of the float of any stock.

While borrowing shares is not a problem in carrying short positions in any of these funds, the Sector SPDRs illustrate the absence of borrowing risks most clearly. As noted, all of the stocks in the Sector SPDRs are in the S&P 500. Between 10 and 12% of the floating stock in *every company* in the S&P 500 is held in committed indexed portfolios, making the securities in the S&P 500 extraordinarily easy and cheap to borrow. With the exception of highly unusual circumstances (e.g., an oversubscribed self-tender for a company's stock or an unusual proxy battle), stock lending premiums are extremely rare in S&P 500 stocks. Stock loan premiums on smaller stocks in some of the iShares or Vanguard sector portfolios are more common. Premiums to borrow these smaller capitalization stocks may increase borrowing costs slightly in the iShares or Vanguard sector ETFs, but the ability and cost to borrow any of these ETF shares will rarely be an issue for an institutional account.

Each of the Sector SPDRs pays expenses of 23 basis points to the Sector SPDR Trust to pay for operation of the funds. A short seller of the ETFs might retain the benefit of some of this fee as part of the return to the short position, but it is likely that the effect of the fee will be passed on to the lender of the fund shares if shares are created to lend. The expense ratio of the Vanguard funds is only 2 basis points higher at 25 basis points, but the cost of assembling the basket of stocks in the Vanguard funds and the probability of a stock loan premium on some of the smaller cap issues makes the expected cost of borrowing the

**Exhibit 2 - Sector SPDRs Portfolio Assets as a Percentage of the Underlying Securities' Float
(all \$ in millions as of July 31, 2007)**

| | Consumer Discretionary | Consumer Staples | Energy | Financial | Healthcare | Industrial | Materials | Technology | Utilities | S&P 500 |
|-----------------------------------|---------------------------|---------------------|-------------|-------------|-------------|-------------|------------|-------------|------------|--------------|
| Trading Symbol | XLY | XLP | XLE | XLF | XLV | XLI | XLB | XLK | XLU | |
| Float of Underlying Stocks | \$1,299,484 | \$1,206,983 | \$1,427,699 | \$2,580,488 | \$1,498,945 | \$1,495,095 | \$424,634 | \$2,560,146 | \$449,347 | \$12,942,822 |
| Assets of Sector SPDR | \$512 | \$1,643 | \$4,802 | \$2,702 | \$1,952 | \$1,589 | \$1,130 | \$2,390 | \$3,236 | \$19,957 |
| Sector SPDR as % of Float | 0.0394% | 0.1361% | 0.3363% | 0.1047% | 0.1303% | 0.1063% | 0.2661% | 0.0934% | 0.7202% | 0.1210% |

Source: S&P, Spdrindex.com, State Street Global Advisors

Vanguard sector shares slightly greater than the cost of borrowing Sector SPDRs.

The securities borrowing characteristics of the stocks in the Dow Jones Sector indexes and the corresponding iShares sector fund portfolios are intermediate between the Sector SPDRs and the Vanguard funds. The expense ratios of the iShares sector funds are the highest in the group at 48 basis points, increasing the cost to borrow shares that are created to lend. As we will see when we examine the funds in each sector, the short interest figures suggest that short sellers are generally most comfortable using Sector SPDRs.

The trading volume and short interest for each fund reflect the fact that trading spreads are uniformly tighter and trading activity is uniformly greater in the Sector SPDRs than in the competing iShares and Vanguard funds. In contrast to a short seller contemplating a transaction in an individual company with a small-capitalization, the ease of creating and redeeming exchange-traded funds with standard trading portfolios, particularly in the Sector SPDRS, means that an ETF short seller should look for the company of other short sellers, not avoid them. Larger short interests are evidence that the Sector SPDRs are the funds of choice for sector shorting.

A typical exchange-traded fund has a short interest of 10 to 20 times the short interest of the average New York Stock Exchange listed company and the short interest in many funds is much higher than this. A large short interest does not necessarily indicate that short sellers expect an ETF portfolio to underperform other ETFs in the same sector.

In a few cases, the Russell 2000, for example, a very high, persistent and even growing short interest does suggest investor expectations for perennial underperformance of the fund and the index relative to other small-cap indexes and portfolios. In contrast, there is no reason to expect systematic underperformance of the Sector SPDRs which have large short interests relative to their competitors. Clearly, when small-cap stocks outperform large-cap stocks, the Vanguard and Dow Jones sector funds will tend to do better than the Sector SPDRs. When large-cap stocks outperform small cap, the Sector SPDRs will be the better performers.

Sector ETF Data

An investment manager planning to use a sector fund as the short side of a 130/30 strategy should consider the data items provided in the exhibit for each group of sector funds. The columns from left to right provide the name of the fund, its trading symbol, the assets of the fund (in \$ millions) as of July 13, 2007, the consolidated trading volume during 2006 (in millions of shares), the reported short interest in July 2007 expressed as a percentage of the number of fund shares outstanding in mid-July and, finally, the 2006 tracking error in basis points as computed and published by Morgan Stanley Research.

The Consumer Discretionary Sector (using the GICS sector classification names for categorization) consists of three funds: the Sector SPDR Consumer Discretionary fund, the iShares Consumer Services fund, and the Vanguard Consumer Discretionary exchange-traded shares.

Exhibit 3

| Consumer Discretionary Sector | | | | | |
|--------------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR – Consumer Discretionary | XLY | \$744 | 292 | 71% | -19 |
| iShares DJ Consumer Services | IYC | \$293 | 10 | 20% | -55 |
| Vanguard Consumer Discretionary | VCR | \$110 | 4 | 8% | -27 |

Sources for Exhibits 3 – 13: Fund websites, American Stock Exchange, Bloomberg and Morgan Stanley Research (2007).

A few general comments on interpreting this data may be useful, using the Consumer Discretionary Sector exhibit as a source of examples. The assets of each fund reflect the value of the shares issued by the fund. Because short selling involves borrowing shares from one holder of the shares and selling them on the market to another holder, the total number of shares appearing in investor accounts (including the accounts of market makers and other professionals) will be increased by the number of shares borrowed and sold short. In the case of the Sector SPDR Consumer Discretionary fund, the \$744 million in assets held by the fund as of July 13 should be multiplied by 1.71, representing the shares issued by the fund plus the shares provided to investors by short sellers to get a value for shares held by investors of \$1,272 million. (This value does not appear in the table.) When the fund size is adjusted by the effect of the short interest, most Sector SPDRs funds are even larger

relative to their competition than when size is measured by the shares issued by the fund.

The annual volume figures for 2006 stated in millions of shares can be converted easily to average daily trading volume. For each million shares traded in 2006, the daily volume was an average of about 4,000 shares. So, in the case of the Sector SPDRs Consumer Discretionary fund, the 292 million shares traded during the year translate into approximately 1,168,000 shares per day. The average daily trading volume in the iShares Consumer Services fund shares was about 40,000 shares and the average daily volume in the Vanguard Consumer Discretionary shares was about 16,000 shares. It is not impossible to trade the less actively traded funds in large size, but there is obviously less customer order flow and the quality of the market depends heavily on the efforts of specialists and market makers.

The 2006 tracking error is simply the difference in total return between the fund and its template or benchmark index for calendar 2006. As a very rough generalization, if the index is compliant with the diversification standards for a regulated investment company (RIC), as these three indexes are, the tracking error will tend to be close to the expense ratio of the fund.² If the index is RIC compliant, the tracking error number can be a useful but rough indicator of the effectiveness of a fund portfolio manager. In some sectors, most importantly in energy and telecommunications and occasionally in industrials and consumer staples, the portfolios for the iShares and Vanguard sector funds may not match the composition of the index, usually because the index is not RIC-compliant. All the Sector SPDR indexes have been modified from the

standard float-weighted S&P sector indexes, if necessary, to maintain diversification-compliant index compositions.³

In the Consumer Discretionary Sector (Exhibit 3), it is clear that the dominant fund used by most short sellers is the Sector SPDRs Consumer Discretionary fund. It has, by far, the greatest trading volume and the largest short interest among the three funds in this category. In contrast to a traditional common stock where the supply of shares is fixed, the short interest in an ETF is not an indicator of possible danger from a short squeeze. A higher short interest actually indicates that short sellers are more comfortable using the Sector SPDR Consumer Discretionary fund than the other two sector funds. High trading volume is a further indication of the relative ease of trading in and out of the shares.

Exhibit 4

| Consumer Staples Sector | | | | | |
|--------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Consumer Staples | XLP | \$1,735 | 396 | 10% | -66 |
| iShares DJ Consumer Goods | IYK | \$350 | 19 | 8% | -59 |
| Vanguard Consumer Staples | VDC | \$324 | 5 | 1% | +78 |

The Consumer Staples category (Exhibit 4) is dominated by the Sector SPDR Consumer Staples fund. It is notable that this sector has attracted relatively little short selling, but even here the Sector SPDRs dominate the short selling. In looking at the short interest percentages, keep in mind that they are a percentage of each fund's assets outstanding. If the assets of the Sector SPDR are substantially greater than the assets of competitive funds, even a slightly higher short interest percentage means a substantially larger number of shares sold short and greater securities lending activity than in the competitive funds.

Exhibit 5

| Energy Sector | | | | | |
|----------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Energy | XLE | \$4,837 | 5807 | 59% | -28 |
| iShares DJ US Energy | IYE | \$1,139 | 31 | 2% | -230 |
| Vanguard Energy | VDE | \$658 | 12 | 4% | -204 |

In the Energy Sector (Exhibit 5), the sector most significantly affected by the absence of RIC compliance in the iShares and Vanguard indexes, we find, not surprisingly, the greatest volume and the largest assets in the Sector SPDR Energy fund. At times in recent years, the short interest and the total assets in the Energy Sector SPDR have fluctuated dramatically as traders have used the shares as a convenient energy sector proxy. The nearly 6 billion shares traded in 2006 (about 23 million shares on an average day) illustrates the liquidity in these shares.

Exhibit 6

| Financial Sector | | | | | |
|-------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Financial | XLF | \$1,856 | 1986 | 115% | -39 |
| iShares DJ Financial Sector | IYF | \$493 | 8 | 5% | -62 |
| iShares DJ Financial Services | IYG | \$252 | 9 | 11% | -25 |
| Vanguard Financials | VFH | \$306 | 5 | 2% | -61 |

The Financial Sector (Exhibit 6) is characterized by high trading volume and a large short interest in the Financial Sector SPDR. Trading volume has been even higher in 2007, reflecting uncertain valuations from the impact of questionable loan quality on the fortunes of financial sector firms. Note that the 115% short interest indicates that if the shorts were not providing additional securities through borrowing to various investors, the assets of the Sector SPDR Financial ETF might be close to \$4 billion. This is an overstatement of the long position because some of the long position was probably created to obtain ETF shares for lending to short sellers.

Exhibit 7

| Healthcare Sector | | | | | |
|--------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Healthcare | XLV | \$2,067 | 317 | 22% | -26 |
| iShares DJ US Healthcare | IYH | \$1,258 | 36 | 8% | -41 |
| Vanguard Healthcare | VHT | \$451 | 10 | <1% | -23 |

The Healthcare Sector (Exhibit 7) is characterized by somewhat lower trading volume and lower short interests than most other sectors. The tracking errors for all of these funds are close to the fund expense ratios.

Exhibit 8

| Industrial Sector | | | | | |
|--------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Industrial | XLI | \$1,400 | 355 | 29% | -30 |
| iShares DJ US Industrial | IYJ | \$356 | 8 | 9% | -65 |
| Vanguard Industrials | VIS | \$216 | 4 | 3% | +42 |

The Industrial Sector (Exhibit 8) is similar to the Healthcare Sector in share volume with fewer assets. The short interest percentage is slightly larger. As in the other sectors, the Sector SPDR is the favorite of both long investors and short sellers.

Exhibit 9

| Materials Sector | | | | | |
|----------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Materials | XLB | \$1,361 | 878 | 124% | -52 |
| iShares DJ Basic Materials | IYM | \$691 | 27 | 18% | -64 |
| Vanguard Materials | VAW | \$323 | 3 | 5% | -31 |

The Materials Sector (Exhibit 9) is unremarkable except for the relatively high short interest percentage in the Sector SPDR Materials ETF.

The Technology Sector (Exhibit 10) is interesting for a number of reasons. The Technology Sector SPDR has respectable assets at \$2.4 billion and significant trading volume, but the short interest is modest. The short interest *percentage* is higher in the iShares Goldman Sachs Technology Index ETF, an ETF based on a custom index. The iShares Goldman Sachs Technology fund at \$370 million in assets has certainly received reasonable acceptance in the market place.

Exhibit 10

| Technology Sector | | | | | |
|----------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Technology | XLK | \$2,454 | 480 | 7% | -22 |
| iShares DJ US Technology | IYW | \$905 | 31 | 2% | -55 |
| iShares Goldman Sachs Technology | IGM | \$370 | 19 | 35% | -53 |
| Vanguard Information Technology | VGT | \$378 | 7 | 4% | -26 |

Its 35% short interest percentage is smaller in dollar value than the 7% short interest in the much larger Technology Sector SPDR. The higher relative short interest in the Goldman Sachs fund probably reflects the fact that the Sector SPDR Technology fund is not a pure technology fund. In addition to the technology sector, the Sector SPDR Technology fund includes the Telecommunications Sector stocks in the S&P 500. The reason for this unusual feature is that there were not enough telecommunications stocks in the S&P 500 when these ETFs were launched to populate a separate telecommunications fund. About 17% of the assets in the Sector SPDR Technology ETF today are telecommunications shares. It is possible that the lack of short selling in the technology sector reflects the diversity of the very large technology sector, but it would be interesting to see how a "pure" Technology Sector SPDR might attract assets, trading volume – and short sellers.

Exhibit 11

| Utilities Sector | | | | | |
|-------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| Sector SPDR Utilities | XLU | \$3,566 | 835 | 34% | -37 |
| iShares DJ US Utilities | IDU | \$865 | 17 | 6% | -58 |
| Vanguard Utilities | VPU | \$326 | 5 | 1% | -13 |

The Utilities Sector (Exhibit 11) is similar in most respects to the other sectors in terms of dominance by the Sector SPDR in assets, volume and short interest. The current short interest is about average for this fund by recent standards.

Exhibit 12

| Telecommunications Sector | | | | | |
|----------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| iShares DJ US Telecommunications | IYZ | \$1,122 | 91 | 2% | -446 |
| Vanguard Telecommunications | VOX | \$297 | 6 | 3% | -61 |

The Telecommunications Sector (Exhibit 12) funds are relatively modest in size, trading volume and short interest. The large negative tracking

errors, especially in the iShares Dow Jones US Telecommunications ETF, are due to the fact that the underlying indexes are not RIC compliant. Hence, the fund portfolio and the index look very different.

Exhibit 13

| Real Estate Sector | | | | | |
|--------------------------------------|---------------|---|-------------------------------------|-----------------------------------|----------------------------------|
| Fund | Symbol | Assets (\$ millions) July 13, 2007 | 2006 Volume (million shares) | July 2007 Short Interest % | 2006 Tracking Error (bps) |
| iShares DJ US Real Estate | IYR | \$1,599 | 510 | 198% | -26 |
| iShares Cohen & Steers Realty Majors | ICF | \$2,328 | 69 | 7% | -83 |
| DJ Wilshire REIT | RWR | \$1,241 | 19 | 13% | -46 |
| Vanguard REIT | VNQ | \$1,602 | 27 | 1% | -2 |

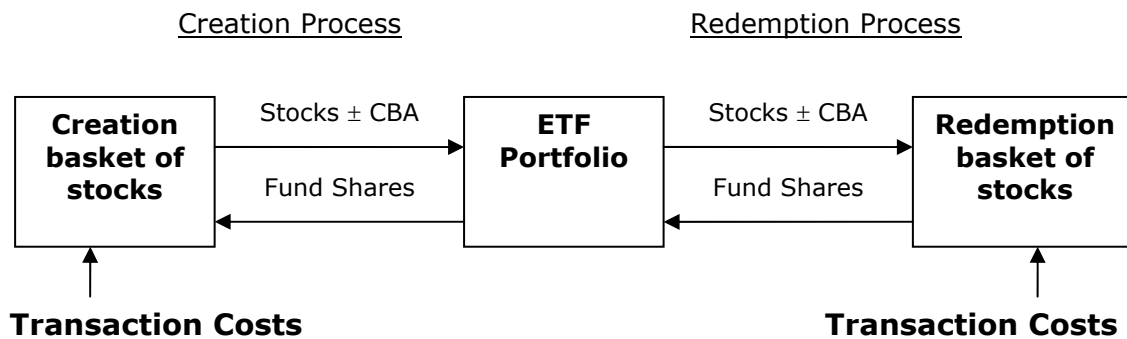
The Real Estate Sector (Exhibit 13) is not a sector in the same GICS categorical sense as the other sectors. The real estate investment trusts are included in the Financial Sector under the GICS sector attributions. Consequently, the companies in the REIT funds and their underlying indexes will, to the extent they qualify for the respective financial sector indexes, be held by the Financial Sector ETFs as well as by the REIT funds.

It is interesting to see that in the absence of a Sector SPDR, there is still a dominant fund in terms of both trading volume and short interest. In this case, the dominant trading and shorting fund is the iShares Dow

Jones Real Estate ETF. The iShares Cohen & Steers fund has the most assets.

Appendix – Creation and Redemption of ETFs

Exhibit 14 – ETF Creation and Redemption is Usually In-Kind: Transaction Costs Are Paid by Entering and Leaving Investors



All securities transfers are priced at net asset value
CBA = Cash Balancing Amount

Exhibit 14 shows that exchange-traded funds work differently than mutual funds. For exchange-traded funds, creations and redemptions of ETF shares are typically made *in kind*. Baskets of portfolio securities are deposited with the fund in exchange for fund shares in a creation. In a redemption, fund shares are turned in to the fund in exchange for a basket of portfolio securities. The creating or redeeming investor – in most cases, a market maker in the ETF shares – is responsible for the costs of investing in the portfolio securities for deposit and the cost of disposing of portfolio securities received in the redemption of outstanding fund shares. The market maker expects to pass these transaction costs on to investors when he trades fund shares on the exchange.

The cost of entering and leaving a fund varies, depending on the level of fund share trading activity and the nature of the securities in the fund's portfolio. For example, the cost of trading in small-cap stocks can be much greater than the cost of trading in large-cap stocks. The bids and offers for an ETF's shares will generally reflect the costs of creation or redemption, as appropriate. For more on creation and redemption, see Gastineau (2001), Gastineau (2002), pp. 62 – 72 or the prospectus or Statement of Additional Information (SAI) for the relevant ETF.

B I B L I O G R A P H Y:

Bernstein, Peter L., "Points of Inflection: Investment Management Tomorrow." *Financial Analysts Journal*, July/August 2003, pp. 8 – 23.

Bernstein Peter L., "What's It All About, Alpha?" *Institutional Investor*, May 2004, pp. 48 – 52.

Clarke, Roger G., Harindra de Silva and Steven Thorley, "Portfolio Constraints and the Fundamental Law of Active Management," *Financial Analysts Journal*, September/October 2002, pp. 48 – 66.

Ennis, Richard, "The Case for Whole Stock Portfolios," *Journal of Portfolio Management*, vol. 27, no. 3, Spring 2001, pp. 17 – 26.

Fabozzi, Frank J., Editor, *Short Selling: Strategies, Risks and Rewards*, John Wiley & Sons, Hoboken, New Jersey, 2004.

Gastineau, Gary L., "Exchange Traded Funds – An Introduction" *Journal of Portfolio Management*, Spring 2001, pp. 88 – 96.

Gastineau, Gary L., *The Exchange-Traded Funds Manual*, 2002, John Wiley & Sons, Hoboken, New Jersey.

Gastineau, Gary L., *Someone Will Make Money On Your Funds – Why Not You? A Better Way to Select Mutual and Exchange-Traded Funds*, 2005, John Wiley & Sons, Hoboken, New Jersey.

Grinold, Richard, C and Ronald N. Kahn, "The Efficiency Gains of Long-Short Investing," *Financial Analysts Journal*, November/December 2000, pp. 40 – 53.

Grinold, Richard, C and Ronald N. Kahn, *Active Portfolio Management*, 2nd Ed., 2000, New York, McGraw-Hill.

Jacobs, Bruce I., and Kenneth N. Levy, "Long-Short Equity Investing," *The Journal of Portfolio Management*, Fall 1993, pp. 52 – 63.

Jacobs, Bruce I., and Kenneth N. Levy, "Enhanced Active Equity Strategies," *Journal of Portfolio Management*, Spring 2006, pp. 45 – 55.

Jacobs, Bruce I. and Kenneth N. Levy, "20 Myths about Enhanced Active 120–20 Strategies," *Financial Analysts Journal*, July/August 2007a, pp. 19 – 26.

Jacobs, Bruce I. and Kenneth N. Levy, "Enhanced Active Equity Portfolios are Trim Equitized Long-Short Portfolios," *Journal of Portfolio Management*, Summer 2007b, pp. 19 – 25.

Jacobs, Bruce I., Kenneth N. Levy and Harry M. Markowitz, "Trimability and Fast Optimization of Long-Short Portfolios," *Financial Analysts Journal*, March/April 2006, pp. 36 – 46.

Jacobs, Bruce I., Kenneth N. Levy and David Starer, "Long-Short Portfolio Management: An Integrated Approach," *Journal of Portfolio Management*, Winter 1999, pp. 23 – 32.

Maginn, John L., Donald L. Tuttle, Dennis W. McLeavey and Jerald E. Pinto, *Managing Investment Portfolios, a Dynamic Process*, 3RD Edition, John Wiley & Sons, Inc., Hoboken, New Jersey, 2007, especially pp. 450 – 458.

McLean, Bethany and Corey Hajim, "Overstock's Phantom Menace" *Fortune Magazine*, November 1, 2005. Also found at:
http://money.cnn.com/2005/11/01/news/midcaps/overstock_fortune_11_1405/

Morgan Stanley Research, "Exchange-Traded Funds: Most US-Listed ETFs Exhibited Low Tracking Error in 2006," February 01, 2007.

Sorensen, Eric, Ronald Hua and Edward Qian, "Aspects of Constrained Long-Short Equity Portfolios," *Journal of Portfolio Management*, Winter 2007, pp. 12 – 22.

Endnotes:

¹ Bernstein (2003, 2004); Clarke, deSilva and Thorley (2002); Ennis (2001); Fabozzi (2004); Grinold and Kahn (2000a, 2000b); Jacobs and Levy (1993, 2006, 2007); Jacobs, Levy and Markowitz (2006); Jacobs, Levy and Starer (1999); Maginn, Tuttle, McLeavey and Pinto (2007) and Sorensen, Hua and Qian (2007).

² Fund total return minus index total return is consistent with the definition used by Morgan Stanley Research (2007), but for some purposes, they use the absolute value of tracking error in their aggregate calculations. Tracking error is defined in different ways for different purposes. For a more comprehensive discussion of tracking error, see Gastineau (2005) pp. 132 – 139.

³ Under Sub-Chapter M of the Internal Revenue Code, a Registered Investment Company (SEC terminology) must qualify as a Regulated Investment Company (RIC) (IRS terminology) in order to pass through dividend and interest income and net realized capital gains without taxation at the fund level. Regulated Investment Company requirements consist largely of certain portfolio diversification rules. For most equity funds, the relevant diversification requirement consists of having no single issuer's securities account for more than 25% of the assets of the fund and, with respect to 50% of the assets of the fund, having the securities of no issuer account for more than 5% of the fund's assets. There are some nuances as to when and how diversification is measured, but they are not significant for most purposes. Occasionally, a fund will fail to qualify for tax-free pass-through of income and realized gains, but such failures are extremely rare.

Some ETFs are designed around non-RIC-compliant indexes. Their portfolios are constructed using a process called "optimization" or representative sampling. The unacceptable security weightings in the index are simply changed to RIC-compliant weightings in the fund. As a consequence of this change in weightings, these funds do not track their benchmark index very closely, making it difficult to evaluate the performance of the fund and the fund manager.