Is Selling ETFs Short A Financial "Extreme Sport"?

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Abstract

Short selling in ETF shares is a low-risk activity because short squeezes are not possible and most short sales are made to reduce an investor's portfolio risk. While short selling will increase ETF trading activity, it is unlikely to have a significant effect on trading volume or trading spreads unless the ETF shares are based on a very popular index like the S&P 500 or the Nasdaq 100.

The market for ETF share lending has changed recently as market makers have reduced their inventories of ETF shares to lend in 2003's low short-term interest rate environment. The share ownership requirements of the Jobs and Growth Tax Relief Reconciliation Act of 2003 promises future changes in ETF share lending practices. Perhaps the most interesting aspect of the very large aggregate short interests in many ETFs is the fact that changes in the short interest are often greater than changes in shares outstanding, obscuring the meaning of changes in investor commitments to ETFs.

Introduction

Anyone who has wandered by video monitors in the windows of a ski or surf shop has seen dramatic pictures of skiers or surfers in obvious peril. A skier jumps from the edge of a cliff above the camera and disappears from view into the couleur below with no apparent chance of survival – until the scene cuts to another camera showing a "safe" landing on a 75-degree slope. At the surf shop, a surfer dude – or, with increasing frequency, a surfer girl – is tucked in the curl of a six-story wave headed for shore. Both skier and surfer lack obvious exit strategies.

At first glance, it might appear that an investor who ventures to sell ETF shares short is taking risks similar in magnitude to these extreme ski and surf enthusiasts. Whereas the short interest in the average listed common stock is about two percent of the stock's capitalization, the short interest in large ETFs is often 20% to as much as 45% of the ETF's outstanding shares. When one understands that short sales in ETFs can be executed *without a price uptick* – a trading practice that has not yet received regulatory approval for most other equity securities in the United States – the comparison of ETF short sellers to extreme skiers and surfers seems apt. In fact, however, the risks associated with ETF short selling are more in line with the risks accepted by a competent skier cruising on a beginner or intermediate trail. The ETF short seller, like the cruising skier, has to be alert and follow the rules of the road, but the risks are clear and manageable.

What Are the Most Important Safety Features Protecting ETF Short Sellers?

1. It is essentially impossible to suffer a short squeeze in ETF shares. In contrast to most corporate stocks where the shares outstanding are fixed in number over long intervals,[1] shares in an ETF can be greatly increased on any trading day by any Authorized Participant.[2] Creations or redemptions in large ETFs like the S&P 500 SPDRs and the Nasdaq 100 QQQ's are occasionally worth several billion dollars on a single day. The theoretical maximum size of the typical ETF, given this in-kind creation process, can be measured in hundreds of billions or even trillions of dollars of market value. The open-ended capitalization and required diversification of ETFs takes them out of the extreme risk category. As a practical matter, the idea of cornering an ETF market is unimaginable. The upside risk in a short sale is still theoretically greater than the downside risk in a long purchase, but even that risk is modified by the way ETF short selling is used to offset other risks.

2. Most ETF short sales are made to reduce, offset or otherwise manage the risk of a related financial position. The dominant risk management/risk reduction ETF short sale transaction offsets long market risk with a short or short equivalent position. Unlike the aggressive skier or surfer, the risk manager who sells ETF shares short is nearly always reducing the net risk of an investment position. In contrast to extreme athletes, the risk managers selling ETFs short are more like the ski patrol or lifeguards: *they sell ETFs short to reduce total risk in a portfolio*.

3. Most serious students of markets consider the uptick rule an anachronism (at best). Requiring upticks for short sales is certainly unnecessary and inappropriate for ETFs which compete in risk management applications with sales of futures, swaps and options – risk management instruments that have never had uptick rules.

How Do ETFs Work in Risk Management Applications?

Existing exchange-traded funds are all based on benchmark indices. While there are important benchmarks and there are unimportant benchmarks, benchmark index derivatives are widely used in risk management applications. For example, an investor with an actively-managed small-cap portfolio might feel that superior stock selection reflected in the portfolio will provide good, *relative* returns over the period ahead, but that most small-cap stocks might still perform poorly. The investor can hedge the portfolio's exposure to small-caps while capturing its stock selection advantage by hedging the small-cap risk with a short position in a financial instrument linked to the Russell 2000 small cap benchmark index. Available risk management tools for this application range from futures contracts and equity swap agreements – to the shares of a small-cap exchange-traded fund.

Derivative contracts have limited lives. The most active contracts in any futures market are the near month and the next settlement after the near month. Equity index futures contracts will usually be rolled over about four times a year in longer-

term risk management applications. While risk managers could take futures positions with more distant settlements, liquidity is usually concentrated in the nearest contracts. Consequently, risk managers typically use the near or next contract and roll the position forward as it approaches expiration. Similar expiration provisions apply to most swap agreements, leaving the typical derivative transaction with considerable "roll" risk – risk of adverse market impact from rolling the hedge forward to the next expiration.

If a hedger uses ETF shares instead of futures, a risk management position can be held indefinitely without roll risk. Of course, the open-end nature of an ETF risk management or hedging position has other differences from futures and swaps. There is an implied cost associated with the expenses of the fund that may make the ETF a better short hedge, and there may be tracking error between the ETF portfolio and the benchmark index, but these are usually small considerations relative to fluctuating roll risk and recurring transaction costs in a longer-term rolling derivatives hedge.

The table in Exhibit 1 illustrates two snapshot cost analyses of *long* stock index futures versus *long* ETF shares as one-year portfolio replication positions. When these analyses were prepared (at different times), they indicated that the ETF was the low-cost replication instrument of choice for an investor who expected the position to stay in place for a year. The assumptions used in these analyses were

appropriate at the times they were prepared, but any investor or hedger should evaluate current market conditions before choosing between futures or swaps and ETFs. More importantly, the risk manager needs to convert the analyses of Exhibit 1 from a long side into a short side cost comparison with specific data for the organization managing the risk. The reason the examples in Exhibit 1 show long positions in futures versus long positions in ETFs is that the expected costs and trading frictions associated with a long position are about the same for nearly everyone on the long side. On the short side, *the management fee works in favor of the ETF short seller*, but, more importantly, *the net cost of borrowing ETF shares varies over time and among risk managers*. Long-term representative cost data for many share borrowers is not readily available.

In estimating the net "share borrowing cost" of a short ETF position, we will not spend much time discussing the fund management fee. It is a cost incurred by the lender that will be passed on by a lender that has purchased shares to lend them. Such lenders will usually be the marginal lenders in the market and they should be able to recoup the management fee as part of their securities lending revenue. The fact that the management fee favors the short seller will stimulate ETF share lending efforts by third-party securities lending agents working with brokerage firms and custodians because "recapturing" the management fee should effectively increase the lending revenue on which agency lending fees are calculated. The generally larger and most variable component of the lending cost is the net interest-rate-

linked spread which the share borrower pays. For ETF share loans, the spread can range from near 10 basis points in a very low interest rate environment to a maximum of about 30 basis points on an S&P 500 ETF.

The low end of this range is determined by the minimum administrative costs of setting up a large securities lending program and implementing only very large intermediate- and longer-term securities loans in this very liquid and very transparent market. The high end of the range *in this particular market* is determined by the economics of persuading large pension funds with S&P 500 index portfolios to switch from direct ownership of indexed portfolios – with few individual stock lending opportunities – to SPDRs with substantial and relatively consistent lending opportunities. In fact, an astute S&P 500 index manager will probably handle this transaction for its pension plan clients at no extra charge. The 30-basis point lending fee covers the expense ratio of the ETF, any performance penalty associated with the way the ETF is managed,[3] an offset for any index outperformance the pension plan's index manager was obtaining and administrative costs.[4] A careful reading of Gastineau (2002) and (2003; Blume and Edelen (2002) and (2003) and Quinn and Wang (2003) will help the reader understand how these costs can aggregate to as much as 30 basis points for an S&P 500 portfolio. The maximum lending fee will be larger for smaller cap funds, perhaps as much as 100 – 150 basis points for a Russell 2000 ETF because a good pension plan index manager should beat the Russell 2000 by a substantial margin.

A more efficient[5] underlying large cap index than the S&P 500 could theoretically lead to a lower maximum lending fee and a tighter spread if the index were as widely accepted as the S&P 500. For now, a 20-basis point spread between low and high borrowing costs is as tight as it gets and smaller lenders and borrowers will often see significantly wider spreads. To see the short side perspective on an ETF versus stock index futures comparison, the reader should modify the numbers in Exhibit 1 for a short ETF position by reversing the effect of the management fee (the management fee is the same as the fund's expense ratio in most ETFs) and adding an annual lending fee in the 10-to-30-basis point range to the cost of the ETF transaction.

Who Owns ETF Shares?

In contrast to the obvious relevance of this question when it is asked about a common stock in the context of short selling, who owns the ETF shares outstanding should not matter very much to the ETF investor or to the risk manager who would sell ETF shares short. The opportunity to increase ETF shares outstanding, literally at a moment's notice, makes current ETF shares outstanding largely irrelevant from a trading or risk management perspective. Nonetheless, knowing something about the composition of the shareholder population and the effect of short sales on share ownership can help traders better understand the ETF market and ETF trading costs.

A typical large-capitalization common stock without significant insider holdings will show institutional investors accounting for 70 to 80% of its share capitalization. This institutional shareholder data can be accumulated from 13-F reports and similar filings with the Securities and Exchange Commission. The institutional share of ETF ownership varies widely among the funds, but most ETF 13-F summaries show institutional shareholdings in the 20 – 40% of ETF capitalization range, far below the institutional holdings in most of the U.S. common stocks held by the typical ETF.[6]

When the ETF institutional shareholder numbers are viewed relative to the typical ETF's short interest, the relatively low ETF institutional ownership is almost surprising. With the short interest running about two percent of shares outstanding in the average common stock, it is not important that two percent of shares may be reported twice because one institution has lent its shares to a short seller and the shares have been purchased by another reporting institution. With a two percent short interest, double counting all or part of the short interest in the 13-F reports does not affect the reported institutional ownership of most common stocks very much because the short interest is such a negligible part of the total stock capitalization. However, the large short interest in many ETFs affects the reports considerably because *all shares that have been sold short appear as holdings in two investor portfolios*. Consequently, the ETF institutional ownership percentage reflected in the 13-F reports is *overstated* as a percentage of total shares. For

example, if the short interest is reported at, say, 45% of capitalization, *the number of shares shown on the books of all holders of the ETF's shares will total 145% of the number of shares outstanding*. If the 13-F reports show that institutions hold 45% of the shares outstanding in the ETF, that is actually 45% out of 145% or only about 31% of the shares that all investors combined show long in their accounts. Huge ETF short interests also mean that short sellers play important roles in the size of an ETF's assets and in its trading activity. Specialists and other market makers have frequently maintained significant inventories of ETF shares to lend to short sellers. These market makers hedge their positions and obtain a fee from the securities lending operation, making creation of ETF shares for securities lending a modestly profitable business activity. In the summer of 2003, many market makers substantially reduced these ETF lending positions, apparently because interest rates were so low that ETF share lending was no longer profitable for them. (The fees associated with net securities lending are partly a function of short-term interest rates. When interest rates are low, net securities lending fees also tend to be low.)

The departure of some dealers from the business of buying and hedging ETF shares for the securities lending market has not led to a shortage of shares available to short sellers.[7] As the recent increase in many of the *short interest percentages* (SIPs) in the largest ETFs listed in Exhibit 2 suggests, the ETF share borrowing needs of short sellers have been readily accommodated by institutional ETF holders, by brokerage firms carrying retail margin accounts and by other dealers. When

market makers reduced their participation in the ETF share lending business, they redeemed the shares they had been lending. This reduced the funds' shares outstanding, but had no negative effect on the short interest which actually grew in most large ETFs.[8] In fact, *the same lower interest rates that reduced the attractiveness of ETF share lending to market makers also reduced the effective cost of ETF short selling by risk managers*. The reduction in the cost of borrowing ETF shares made ETF short sales more attractive relative to short futures positions in comparisons like those illustrated in Exhibit 1. Consequently, short ETF positions gained risk management market share from short stock index futures positions.

With or without market makers' ETF lending portfolios, substantial numbers of ETF shares are made available to short sellers by institutions and by brokerage firms from their retail investor accounts – which typically exceed the size of institutional ETF holdings.[9] Broker-dealers, both in their roles as market makers and for their own risk management operations, are also substantial holders, lenders and short sellers of ETF shares. There is little published data to help us quantify all these participations.

Will It Always Be Possible to Borrow ETF Shares at Low-Cost for Risk Management Applications?

Clearly, if short-term interest rates increase from mid-2003 levels, the attractiveness of securities lending should increase for dealers who create and hold hedged

positions in ETFs while lending the ETF shares to short sellers. Their activity should assure a supply for ETF share borrowers. However, an interesting change in the U.S. Federal Tax Code will certainly change the dynamics of ETF securities lending and short selling even if it does not change the economics very much.

The 2003 Tax Act, formally the Jobs and Growth Tax Relief Reconciliation Act of 2003, cut the tax rate for individual investors on *qualified dividends* from certain equity securities (including most ETFs) to 15%. The Internal Revenue Code distinguishes between various kinds of dividend and interest income, on the one hand, and payments-in-lieu of such dividend and interest income, on the other hand. This distinction can be significant for municipal bonds, for example, where *payments-in-lieu of municipal interest are not exempt from federal and certain state income taxes*, while the actual interest payment or an interest passthrough from municipal bond funds will qualify fully for tax exemption. Similar provisions apply to *Treasury interest*, which is *generally exempt from state income taxes, but payments-in-lieu of Treasury interest* on securities lent out *do not qualify for tax exemption*.

Dividends can be affected by a similar distinction between actual or passed-through dividends and payments-in-lieu of dividends. Corporations have had to exercise care that the “dividends” they have received on common and preferred stocks have qualified for the tax code’s corporate tax dividend-received deduction by being

actual dividend payments or passthroughs rather than payments-in-lieu. Most individual investors have not had to worry about the character of such payments – until now. For the rest of 2003, the new tax act provides that as long as an individual investor has no reason to believe that what he or she is receiving is a payment-in-lieu, the taxpayer can assume dividend payments from a brokerage firm or other custodian that holds the taxpayer's stocks, equity mutual funds or equity ETF shares are qualified dividends. The Treasury is expected to issue rules and procedures before the end of 2003 that will dictate how the shareholder will know dividends are "qualified" for 2004 and subsequent years. Although enforcement of this rule awaits the Treasury's determination, it is clear that *payments-in-lieu of ETF dividends from securities lenders will not qualify for the special dividend tax rate in 2004 and later years*. While some observers have suggested that the lower dividend tax rate for individuals may increase the cost of borrowing dividend-paying securities, it is more likely that there will be a change in *where* the shares will be borrowed.

Whatever the Treasury does to clarify what constitutes a qualified dividend and what constitutes a payment-in-lieu will affect short sellers. Some current ETF share lending may dry up. For example, brokers carrying ETFs in individual investor's accounts will not be able to certify the ETF dividends as eligible for the 15% tax rate if they lend out the shares. Mutual funds reporting dividend qualification to their shareholders have a complex calculation to make. This may be significant because

mutual funds often use ETFs to equitize small cash balances. In fact, mutual funds probably account for a substantial fraction of reported ETF institutional ownership.[10] Some mutual funds may not be willing to loan their ETF shares as freely in 2004 and later years because *any payment-in-lieu of dividends that they receive from the borrower will not be distributable as qualifying dividends to their taxpaying individual shareholders*. However, the provisions of Internal Revenue Code § 854 will probably govern the eligibility of fund dividend distribution for the 15% tax rate. This Section was written to cover eligibility of dividends for the dividend-received deduction and it, in effect, applies non-qualifying income to expenses first, leaving qualified dividends to be distributed. Assuming the same treatment under the new law, only funds with very low expense ratios or very large share lending programs, will risk distributing payments in lieu of dividends when they loan out ETF shares. A fund held primarily by tax-exempt accounts would lend shares readily. Lending opportunities might draw in the pension plans we described as potential ETF lenders in the previous section. Long ETF positions held by a broker-dealer in its risk management activities will be lendable because the broker-dealer cannot take advantage of the special 15% dividend tax rate. Long positions held by a dealer to hedge an equity swap transaction where the broker-dealer pays the *return on an ETF* as a swap payment in return for receiving the *return on a stock position* should also be lendable without incurring disadvantageous tax treatment. The swap payments are already payments-in-lieu and, hence, the position held by the dealer

would be lendable without disturbing any individual investor's receipt of a qualified dividend.

The net effect of this provision of the tax law on who lends ETF shares and under what circumstances or with what promises as to the nature of the cash flows involved, may not be as great as the economic effect of interest rate changes on securities lending. In most recent interest rate environments, lending ETF shares created specifically for the purpose of lending has been a moderately attractive business opportunity for specialists and other market makers. As short-term interest rates move up from recent extremely low levels, ETF share lending should become an attractive business activity for dealers once again. Of course, the need for more extensive record-keeping to meet requirements the Treasury may impose could affect the economics of short selling and securities lending in unpredictable ways. Pension plan ETF share lenders should be able to avoid most such record-keeping costs.

As an aside, the QQQ's – with their 45% of capitalization short interest in August 2003 – do not pay a dividend. Ironically, however, the new dividend tax treatment has encouraged many firms to begin paying dividends or to increase their dividends, so the possibility of a QQQ's dividend cannot be ignored. Any QQQ's dividend is not likely to be large enough to affect the lending of QQQ's shares anytime soon.

What is the Effect of Short Selling and Risk Management Activity on ETF Trading Volume and Trading Costs?

The facts that QQQ's are the most actively traded equity security in the world (in terms of *number of shares*) and that SPDRs are the most actively traded securities (in terms of *trading value*) is not due to the fact that the *average investor* in these fund shares is trading frenetically. That the total number of SPDRs and QQQ's shares outstanding turns over every few weeks simply reflects that these ETFs have become extremely popular risk management instruments, and have taken significant risk management market share from futures contracts. The effect of these hedging applications on trading spreads and share volume makes the nature of the markets in a few actively-traded ETFs with large short interests very different from the markets in less active ETFs and more traditional securities.

At first thought, widespread use of ETFs in risk management applications should not have a material effect on the quality of the markets in the ETF shares. Other things equal, the bid/asked spread which an investor or trader faces in an ETF should be largely a function of spreads in the markets for the underlying basket of securities which make up the ETF portfolio. However, if the ETF's portfolio becomes a standard portfolio or basket trade and if ETF market makers experience a high level of trading activity in the ETF shares, they may trade the ETF at a tighter spread than an investor trading in a similar basket or less active ETF would experience. A benchmark index portfolio basket, whether for the S&P 500, the QQQ's or the

Russell 2000, is a standard basket and will trade more cheaply as a basket than an investor or trader can trade the individual securities separately. If an ETF is extraordinarily active like the SPDRs and QQQ's, a consistent high level of trading activity in the ETF shares may further reduce trading costs.

Tight spreads on these baskets and on some of the related ETFs are not just the result of a large number of orders interacting. In today's markets, the presence of a number of market centers on exchanges, on Nasdaq and on the trading books of a variety of electronic communication networks (ECNs) permits some market participants who can access multiple market centers to trade the most active ETF shares at very low cost.

The interaction of multiple ETF market places with futures contracts on the ETFs themselves and, more importantly, with futures contracts on the indices underlying the ETFs, leads to active trading in what we call an index "arbitrage complex" that facilitates active trading on tight spreads for online traders and traders at hedge funds and broker-dealers. As the pattern of growth and decline in capitalization reflected in the shares outstanding for each of the 10 largest ETFs listed in Exhibit 2 illustrates, the number of shares an ETF has outstanding is not particularly stable. Short selling and other risk-management-related ETF activity varies greatly in importance depending, in large measure, on how widely the underlying index of the ETF is used in risk management applications. Ultra tight trading spreads from the

interaction of competing markets and competing instruments has had a major effect only on the S&P 500 SPDRs and the QQQ's. The growing short interests for the DIAMONDS, based on the Dow Jones Industrial Average, and the iShares Russell 2000 fund suggest that these funds might ultimately experience some similar trading effects.[11]

Two funds based on the same underlying index – the S&P 500 SPDR, the largest ETF in terms of assets, and the iShares 500 ETF, the third largest ETF in terms of assets – vary greatly in trading activity, and in the absolute and relative size of the funds' short interests. This particular case is interesting because the iShares 500 has a very slightly lower expense ratio than the 500 SPDR. Also, the two funds have had very similar performance for most of the period they have competed, with the SPDRs showing the better performance earlier and the iShares 500 fund having done a little better more recently. Trading activity and the short interest are concentrated in the S&P 500 SPDR, probably because it was the first ETF on the market and its trading and risk management applications are better established. The short interest in the 500 SPDRs is worth nearly twice as much as the value of all shares outstanding in the iShares 500 fund.

As Exhibit 2 illustrates, short interest, the most readily available indicator of risk management applications for an ETF, varies considerably over funds and indices and over time. Substantial differences in short interests also will be found among smaller

ETFs. In smaller ETFs, measurements like the short interest or the percentage of institutional ownership may be determined by a few large shareholders or large short sellers in a particular ETF. For example, it is theoretically possible for securities lending and re-lending to lead to a short interest in excess of the share capitalization of a fund. Furthermore, in at least one case, (the iShares MSCI Taiwan Fund) institutional ownership reported under rule 13-F once accounted for more than 100% of the shares outstanding as a result of securities lending among a few large institutional investors combined with dealer trading facilitation.

Are Risk Management Applications and Heavy ETF Share Trading Desirable For Fund Shareholders and Fund Advisors?

From the viewpoint of a fund shareholder who might want to trade fund shares from time to time,[12] the tighter the market spread and, other things equal, the more active trading in the fund shares becomes, the easier and cheaper it will be to trade shares in the fund. However, significant effects of a fund's membership in an index arbitrage complex and trading in different market centers competing to tighten trading spreads are still confined to two funds: the S&P 500 SPDRs and the QQQ's. Shareholders in funds with at least $100 million in assets and a conscientious exchange specialist are not likely to be at a significant *trading cost disadvantage* to multi-billion dollar funds with more trading activity, but no active futures contract. Trading has to expand very dramatically before trading *activity per se* has a significant effect on ETF trading *costs*.[13]

Great popularity in the market for risk management instruments is not an advantage to an ETF's investment advisor. ETF short sales supported by market maker share inventories held to lend to short sellers have a positive effect on an ETF's shares outstanding. These market maker activities, in fact, foster the creation of lendable fund shares which pay fees to the fund advisor, increasing the assets under management and, together with the increase in trading activity, creating an appearance of success for the fund which might have the effect of attracting additional assets. On the other hand, if the recent trend to less covered lending by specialists and other market makers who create shares to lend them and more lending by other holders of ETFs becomes the dominant pattern, *short selling will reduce an ETF's shares outstanding*. A short seller needs a buyer. If shares are easy to borrow, that buyer is likely to be a market maker who will sell the shares back to the fund and shares outstanding will decline. *It matters very much to fund advisors whether shares are created to lend or lending is an incidental activity of ETF investors and replaces shares issued by the fund*.

If all open short positions in the QQQ's in August 2003 were covered by share borrowing from traditional investors, the shares supplied by the short sellers reduced the fund's assets by approximately $9 billion. At the fund's 20-basis point expense ratio, this represents forgone fee revenue of approximately $18 million annualized. There is little question that the large benchmark ETFs are more actively traded as a result of risk management applications. The fact that short sellers meet

the needs of many ETF buyers with shares borrowed from traditional investors rather than shares created to be loaned is certainly not a gain for the fund's advisor.

What is the Significance of the Short Interest for Growth in ETF Assets?

An interesting aspect of fluctuations in ETF shares outstanding and fluctuations in the short interest, is the fact that growth in assets committed to ETFs reflects an entirely different process than growth in assets committed to conventional mutual funds. With trivial exceptions, it is not possible to sell shares in most conventional mutual funds short.[14] If creation of ETF shares to lend for a short sale is replaced by borrowing from traditional investors, each share sold short supplies an additional long share which appears in some investor's account but does not increase the fund's shares outstanding. *ETF shares credited to investors' accounts consist of the total fund shares outstanding on the fund's books plus the short interest*. The short selling mechanism leads to more ETF shares "owned" in shareholder accounts than there are shares outstanding. This phenomenon merits careful consideration by all ETF users. If the reader does not understand it, he should re-read the prior three paragraphs until he does.

The most widely circulated data on ETF assets focuses on the current market value of each fund's recorded outstanding shares.[15] This weekly report places no emphasis on *changes in the number of shares outstanding in each ETF*. Investors looking at this kind of report perceive growth or decline in the value of ETF portfolios as more

a function of market price changes in underlying portfolios than of net investment or disinvestment by fund share holders.

Aggregate ETF net investment and redemption data reflecting changes in shares outstanding is published monthly by the Investment Company Institute (ICI). These reports translate share changes into net purchases and sales at the prices of the actual purchases (creations) and sales (redemptions). The ICI data compilation shows and prices changes in shares outstanding appropriately, but it cannot take into account the fact that changes in an ETF's short interest substitute for shares purchased or redeemed with the fund.[16] In Exhibit 3, we average the shares outstanding for each of the 10 largest equity funds for December 2002 and January 2003 and compare that average with the same data for August 2003.[17] Three of the larger ETFs, particularly the S&P 500 SPDR and the QQQ's, experienced significant *declines* in shares outstanding from year end 2002 through August 2003. When the general increase in ETF short interests over this period is accounted for, only the S&P 500 SPDR and the S&P MidCap SPDR showed *any* decline in share equivalent positions over that interval. If the reduction in shares outstanding was due primarily to market makers withdrawing from ETF share lending, substantial net ETF purchases by the public have been accommodated by short sellers and, hence, ETF investment has been much more robust in 2003 than some observers have suggested.[18] From an analytical perspective, the large and fluctuating size of many ETF short interest positions and uncertainty about where the shares sold short are

borrowed make any statement about short-term changes in investor interest in ETFs of dubious validity.

Conclusion

August 2003 saw relative, and, in some cases, absolute highs in the short interest for a number of ETFs. Interestingly enough, ETF short interest was growing dramatically while the short interest in the typical common stock was declining slightly. We see no particular reason to expect a continuation of the rapid growth in the short interest of many ETFs, but there is also no particular reason to expect the short interest to decline, especially for ETF shares used widely in risk management applications. On balance, short selling contributes to the trading efficiency of some of the more actively-traded ETFs. Even more importantly, it contributes to the efficiency of various index arbitrage activities and, consequently, to overall market efficiency.

Investors need not examine or even care about the short interest in an ETF chosen for longer-term investment. The large or small size of its short interest has no implications for a fund's suitability for investment purposes. Fund analysts and active traders should understand the significance of short selling in the ETF market place, both for its trading cost implications and its sometimes misleading effect on the statistics for share ownership and ETF investment in the aggregate. The ETF short

interest is a particularly important – and potentially misleading – indicator of ETF popularity among investors, especially when it changes significantly.

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Exhibit 1 – Comparisons of Long Position Costs in iShares S&P 500 Fund and S&P 500 Futures for One-Year Portfolio Replication Applications

(All numbers in basis points (bps) unless otherwise indicated)

	iShares S&P 500	S&P 500 Futures	
Value as of 12/02/02	$100,000,000	$100,000,000	
Based on a price of	$94.13*	$934.53**	
Multiplier	1	250	
No. of Shares/Index Units	1,062,361	428	
December 2002	**Estimated Costs (BPS)**		**ETF Advantage**
Commission (round trip)	8.70	1.70	
Bid/Offer Spread (round trip)	0.00	5.35	
Management Fee (annual)	9.50	0.00	
Mispricing	0.00	10.70	
Roll Risk	0.00	22.50	
Impact	30.00	21.40	
Total	48.20	61.66	13.46
May 2003			
Commission (round trip)	6.45	2.16	
Bid/Offer Spread (round trip)	0.00	5.40	
Management Fee (annual)	9.45	0.00	
Mispricing	0.00	21.59	
Roll Risk	0.00	21.00	
Impact (round trip)	28.90	21.59	
Total	44.80	71.73	26.93

*Price per share, **Index value
Source: Salomon Smith Barney, Stock Facts PRO

We assume the ETF shares are being created, given the large size of the trade. The commission costs include $0.04 per share for the ETF plus the creation fee of $2,000 [$0.002 per share]. The market impact for the ETF was calculated using Stockfacts PRO and assumes a round-trip trade. Since the impact cost includes the spread of the underlying stocks, we are not including an additional spread for the ETF. For the futures, we used a commission of $5 per contract, a spread of 0.5, mispricing risk of 0.5, and 2 points in market impact for a trade of this size. As the size of this trade shrinks (e.g., to $10 million) the market impact for the futures and the iShares will both likely approach zero. ***Salomon Smith Barney*** from the December 4, 2002 report.

Comment: These analyses use iShares as an example, but, as Exhibits 2 and 3 illustrate, most traders use S&P 500 SPDRs for S&P 500 futures substitute applications. See the discussion in the text of the economics of a risk manager selling ETFs short as a futures substitute. **GG**.

Exhibit 2 - Short Interest and Short Interest Percentage (SIP) for Ten Largest U.S. Equity ETFs (All Shares in Thousands)*

ETF	Symbol	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03
S&P 500 SPDR	SPY														
Shares Outstanding		303,835	312,638	368,038	381,288	459,288	421,691	453,441	399,745	413,095	458,745	466,698	436,748	397,048	350,652
Short Interest		42,044	56,319	53,559	73,567	53,759	62,315	44,580	61,058	60,246	66,496	73,838	83,694	96,335	113,175
Short Interest Percentage		**13.8%**	**18.0%**	**14.6%**	**19.3%**	**11.7%**	**14.8%**	**9.8%**	**15.3%**	**14.6%**	**14.5%**	**15.8%**	**19.2%**	**24.3%**	**32.3%**
Nasdaq 100 Index	QQQ														
Shares Outstanding		763,400	778,700	733,350	740,250	743,100	719,500	674,250	644,450	668,450	738,850	676,950	700,600	630,400	639,900
Short Interest		164,008	178,626	148,173	178,098	167,533	163,473	167,090	203,890	192,151	151,786	201,050	223,400	260,147	287,709
Short Interest Percentage		**21.5%**	**22.9%**	**20.2%**	**24.1%**	**22.5%**	**22.7%**	**24.8%**	**31.6%**	**28.7%**	**20.5%**	**29.7%**	**31.9%**	**41.3%**	**45.0%**
iShares S&P 500	IVV														
Shares Outstanding		40,150	38,800	38,450	41,650	46,300	47,450	52,600	48,950	49,800	57,750	58,450	59,500	64,550	64,950
Short Interest		543	1,236	1,856	4,982	3,963	3,369	1,518	558	1,276	2,077	2,884	5,132	4,681	1,651
Short Interest Percentage		**1.4%**	**3.2%**	**4.8%**	**12.0%**	**8.6%**	**7.1%**	**2.9%**	**1.1%**	**2.6%**	**3.6%**	**4.9%**	**8.6%**	**7.3%**	**2.5%**
DJIA DIAMONDS	DIA														
Shares Outstanding		40,453	44,254	44,404	49,504	54,854	58,304	58,205	52,005	59,555	66,256	61,506	63,906	61,907	58,558
Short Interest		11,070	11,980	15,923	19,505	15,972	14,575	11,751	14,517	15,892	16,277	18,957	20,594	21,388	23,315
Short Interest Percentage		**27.4%**	**27.1%**	**35.9%**	**39.4%**	**29.1%**	**25.0%**	**20.2%**	**27.9%**	**26.7%**	**24.6%**	**30.8%**	**32.2%**	**34.5%**	**39.8%**
S&P 400 MidCap SPDR	MDY														
Shares Outstanding		75,205	77,106	74,406	63,258	62,058	63,358	63,258	57,784	57,184	56,334	55,986	55,086	55,836	56,187
Short Interest		6,102	4,883	4,683	5,148	8,319	6,214	4,502	4,998	4,547	4,385	5,346	5,623	5,636	7,811
Short Interest Percentage		**8.1%**	**6.3%**	**6.3%**	**8.1%**	**13.4%**	**9.8%**	**7.1%**	**8.6%**	**8.0%**	**7.8%**	**9.5%**	**10.2%**	**10.1%**	**13.9%**
iShares MSCI-EAFE	EFA														
Shares Outstanding		35,800	37,800	37,800	20,600	18,000	21,800	20,600	20,600	20,600	20,200	22,400	23,600	24,800	27,200
Short Interest		270	1,569	464	328	594	1,440	576	323	524	836	1,920	1,540	970	473
Short Interest Percentage		**0.8%**	**4.2%**	**1.2%**	**1.6%**	**3.3%**	**6.6%**	**2.8%**	**1.6%**	**2.5%**	**4.1%**	**8.6%**	**6.5%**	**3.9%**	**1.7%**
iShares Russell 2000	IWM														
Shares Outstanding		34,750	34,750	33,900	27,700	34,000	27,250	26,850	27,400	26,850	26,100	28,850	35,300	33,350	30,450
Short Interest		6,658	6,105	5,726	7,329	8,711	7,209	5,794	7,927	6,542	8,304	9,263	8,411	7,175	11,950
Short Interest Percentage		**19.2%**	**17.6%**	**16.9%**	**26.5%**	**25.6%**	**26.5%**	**21.6%**	**28.9%**	**24.4%**	**31.8%**	**32.1%**	**23.8%**	**21.5%**	**39.2%**
Vanguard Total Market VIPERS	VTI														
Shares Outstanding		12,636	12,737	13,639	16,441	15,755	16,404	16,441	16,448	15,902	17,506	18,820	19,574	20,179	20,634
Short Interest		35	21	27	86	219	562	451	665	37	1,380	126	495	91	363
Short Interest Percentage		**0.3%**	**0.2%**	**0.2%**	**0.5%**	**1.4%**	**3.4%**	**2.7%**	**4.0%**	**0.2%**	**7.9%**	**0.7%**	**2.5%**	**0.4%**	**1.8%**
iShares Russell 1000	IWB														
Shares Outstanding		8,850	12,350	13,350	16,350	14,800	14,800	16,350	16,350	17,200	19,850	19,850	22,100	32,400	31,750
Short Interest		377	542	568	585	529	622	1,597	589	751	886	1,415	922	1,048	812
Short Interest Percentage		**4.3%**	**4.4%**	**4.3%**	**3.6%**	**3.6%**	**4.2%**	**9.8%**	**3.6%**	**4.4%**	**4.5%**	**7.1%**	**4.2%**	**3.2%**	**2.6%**
iShares S&P SmallCap 600	IJR														
Shares Outstanding		11,200	11,050	10,800	11,250	10,800	11,950	13,600	11,250	11,150	11,550	11,800	12,100	13,850	14,300
Short Interest		309	1,033	687	988	1,231	1,761	1,146	965	973	864	939	651	1,644	1,306
Short Interest Percentage		**2.8%**	**9.3%**	**6.4%**	**8.8%**	**11.4%**	**14.7%**	**8.4%**	**8.6%**	**8.7%**	**7.5%**	**8.0%**	**5.4%**	**11.9%**	**9.1%**

***Largest Equity ETFs based on assets of August 15, 2002. Data Source: American Stock Exchange.**

Exhibit 3 - Largest Equity ETFs Shares and Equivalents Held in Long Accounts - Year End 2002 to August 2003

ETF	Symbol	Dec-02	Jan-03	Average	Aug-03	% Change Shares Outstanding	% Change Share Equivalents
S&P 500 SPDR	SPY						
Shares Outstanding		421,691	453,441	**437,566**	350,652	**-19.86%**	
Short Interest		62,315	44,580		113,175		
Total Share Equivalents		484,006	498,021	**491,014**	**463,827**		**-5.54%**
Nasdaq 100 Index	QQQ						
Shares Outstanding		719,500	674,250	**696,875**	639,900	**-8.18%**	
Short Interest		163,473	167,090		287,709		
Total Share Equivalents		882,973	841,340	**862,157**	**927,609**		**7.59%**
iShares S&P 500	IVV						
Shares Outstanding		47,450	52,600	**50,025**	64,950	**29.84%**	
Short Interest		3,369	1,518		1,651		
Total Share Equivalents		50,819	54,118	**52,469**	**66,601**		**26.94%**
DJIA DIAMONDS	DIA						
Shares Outstanding		58,304	58,205	**58,255**	58,558	**0.52%**	
Short Interest		14,575	11,751		23,315		
Total Share Equivalents		72,879	69,956	**71,418**	**81,873**		**14.64%**
S&P 400 MidCap SPDR	MDY						
Shares Outstanding		63,358	63,258	**63,308**	56,187	**-11.25%**	
Short Interest		6,214	4,502		7,811		
Total Share Equivalents		69,572	67,760	**68,666**	**63,998**		**-6.80%**
iShares MSCI-EAFE	EFA						
Shares Outstanding		21,800	20,600	**21,200**	27,200	**28.30%**	
Short Interest		1,440	576		473		
Total Share Equivalents		23,240	21,176	**22,208**	**27,673**		**24.61%**
iShares Russell 2000	IWM						
Shares Outstanding		27,250	26,850	**27,050**	30,450	**12.57%**	
Short Interest		7,209	5,794		11,950		
Total Share Equivalents		34,459	32,644	**33,552**	**42,400**		**26.37%**
Vanguard Total Market Vipers	VTI						
Shares Outstanding		16,404	16,441	**16,423**	20,634	**25.64%**	
Short Interest		562	451		363		
Total Share Equivalents		16,966	16,892	**16,929**	**20,997**		**24.03%**
iShares Russell 1000	IWB						
Shares Outstanding		14,800	16,350	**15,575**	31,750	**103.85%**	
Short Interest		622	1,597		363		
Total Share Equivalents		15,422	17,947	**16,685**	**32,113**		**92.47%**
iShares S&P SmallCap 600	IJR						
Shares Outstanding		11,950	13,600	**12,775**	14,300	**11.94%**	
Short Interest		1,761	1,146		1,306		
Total Share Equivalents		13,711	14,746	**14,229**	**15,606**		**9.68%**

Data Source: American Stock Exchange.

ENDNOTES:

[1] Exercise of employee options or public sale of new stock by the corporation can increase the number of shares outstanding from time to time.

[2] An Authorized Participant is a dealer that has signed an agreement with the fund's distributor to create additional fund shares by depositing baskets of securities with the fund custodian and to redeem fund shares in exchange for similar baskets of the fund's portfolio securities.

[3] The economics of short selling and ETF share lending is complicated by the fact that managers of major benchmark ETFs seem to manage these funds with more emphasis on index tracking than on maximizing performance for fund investors. For a discussion of this issue, see Gastineau (2003).

[4] If pension funds become important participants in ETF lending, we would expect competition to make net ETF lending fees largely independent of interest rate levels and dependent primarily on index popularity and efficiency.

[5] In terms of index change transaction costs.

[6] Of course, the advisors of each ETF report the ETF's *stock* positions as institutional holdings on 13-F reports.

[7] We call this lending activity by market makers, Covered Lending. The term should carry no connotation that this process affects market risk exposure. It should suggest only that the holding is linked to the securities loan.

[8] Note the substantial growth in many of the large ETFs' short interests over the period covered in Exhibit 2.

[9] Statements about the size of retail ETF holdings are hard to verify because there is no formal reporting of retail positions comparable to the 13-F filings by institutional investors. Note also that there are important restrictions on a brokerage firm's right to lend retail customer securities.

[10] Many ETFs trade until 4:15 p.m. Eastern Time, making them readily tradable by a fund facing a last-minute cash purchase or sale of its shares. However, because 13-F reports usually show total holdings for the accounts of a reporting investment advisor, it is difficult to distinguish mutual fund holdings from other accounts managed by an advisor.

[11] Significant recent activity in single stock futures (SSF) contracts on the DIAMONDS and the iShares Russell 2000 ETFs may be contributing to this change. Some of these multi-market effects on trading activities are described in Chapter 8 of Gastineau (2002b).

[12] In contrast to a buy and hold investor.

[13] Unfortunately, the indices used in benchmark index funds tend to be relatively inefficient, increasing embedded transaction costs associated with index changes. These costs penalize longer term investors in the funds to a much greater degree than a long-term investor will benefit from lower share trading costs. See Gastineau (2002a) and Quinn and Yang (2003).

[14] There is limited short selling in the shares of the Fidelity Select (sector) Portfolios, but we are not aware of much other short selling of conventional mutual fund shares.

[15] A weekly summary compiled by the American Stock Exchange and distributed by e-mail.

[16] http://www.ici.org/stats/etf/index.html .

[17] The ranking of the 10 largest equity funds is based on assets in mid-August 2003, as reported by the American Stock Exchange. The reason for averaging December and January is that the short interest and the contemporary shares outstanding are mid-month figures. The short interest is published only on a mid-month settlement, not a

month end, which would be the usual way to judge growth or decline in the funds from year end 2002. All the data in Exhibits 2 and 3 come from the American Stock Exchange's data website, www.amextrader.com.

[18] Of course, observers who have looked only at the total value of ETF shares outstanding also have been misled by a rising stock market. For most purposes the ICI analysis of ETF investments and disinvestments is the appropriate measure of ETF growth or decline, but Exhibit 2 indicates that ETF analysts should also monitor and evaluate changes in ETF short interests. Data on ETF institutional ownership and short interest reports are difficult to interpret consistently over time.