▶ **Greycourt White Paper**

White Paper No. 1 – *Exchange-Traded Funds: Are They the Right Choice?*

Background

Exchange Traded Funds (ETFs) are recent phenomena that started in 1993 when State Street sponsored the first ETF in the form of the SPDR Trust. At present, approximately $60 billion are invested in ETFs although new funds are constantly being formed and ETFs now provide investors with viable alternatives to mutual funds. SPDRs (SPY) attempt to track the S&P 500 index much in the same way that Vanguard manages its popular S&P 500 mutual fund.

Discussion

The following chart illustrates how closely prices for the two funds have moved over time.

VFINX - Vanguard 500 Index Fund
SPY - S&P Depositary Receipts

Source – quicken.com
Greycourt & Co., Inc.

Despite the similar investment objectives and results, there are significant differences between the Vanguard fund and the SPDR when it comes to trading, expenses and tax efficiency. In fact, these differences are common to most mutual funds and ETFs.

Generally speaking, ETFs are passive investments that follow market indices in one form or another although there are notable exceptions that are discussed later.

ETFs may not be suitable for all investors but Greycourt believes that they should be given serious consideration when circumstances warrant. ETFs can be used to construct a well diversified and tax efficient portfolio as well as offer hedging opportunities.

Exchange Traded Funds vs Mutual Funds

Structure. SPDRs were issued in 1993 as a Unit Investment Trust with the shares traded on the AMEX. In 1996, World Equity Benchmark Shares (WEBS) were organized as an Investment Company rather than a Unit Investment Trust to provide the fund with more management discretion. Mutual Funds and ETFs generally structure their operations to qualify as Regulated Investment Companies (RIC) under the tax code. This practice results in significant tax advantages, which will be explained later.

At present, most ETFs are open-ended investment companies, again, similar to mutual funds. However, while mutual funds are priced daily at the close of the trading day, ETFs trade throughout the day similar to common stock. In addition to SPDRs, a variety of ETFs are available including SelectSector SPDRs (State Street Global Advisors), iShares (Barclays Global Investors), HOLDRs (Merrill Lynch) and the recently issued StreetTRACKS (State Street Global Advisors). Each product line offers a variety of investment options.

Although ETFs and mutual funds share certain characteristics, the issuance and redemption of shares/units are very different. ETF shares are initially issued in creation units, usually defined as 50,000 share blocks. Pricing a creation unit is equal to the pro-rata value of the underlying shares in the index. For example, each security required to replicate the S&P 500 index would be priced and weighted in the proper proportions. The NAV per share is calculated and multiplied by 50,000 shares. The investor interested in the creation unit must then surrender the required securities in-kind to the fund sponsor. The transaction is cash free and incurs minimal cost. The redemption of creation units works in the same manner but in reverse. The investor surrenders the creation units and the fund sponsor gives a commensurate basket of stocks. Again, no cash is exchanged.

Once a creation unit is formed, the shares can be held, traded or sold off in smaller lots. Trading is done on the AMEX much in the say way that common stock is bought or sold.

In contrast, mutual funds issue units, which must be purchased from or redeemed by the fund. No trading is permitted on the exchanges and all transactions typically occur on a cash basis.

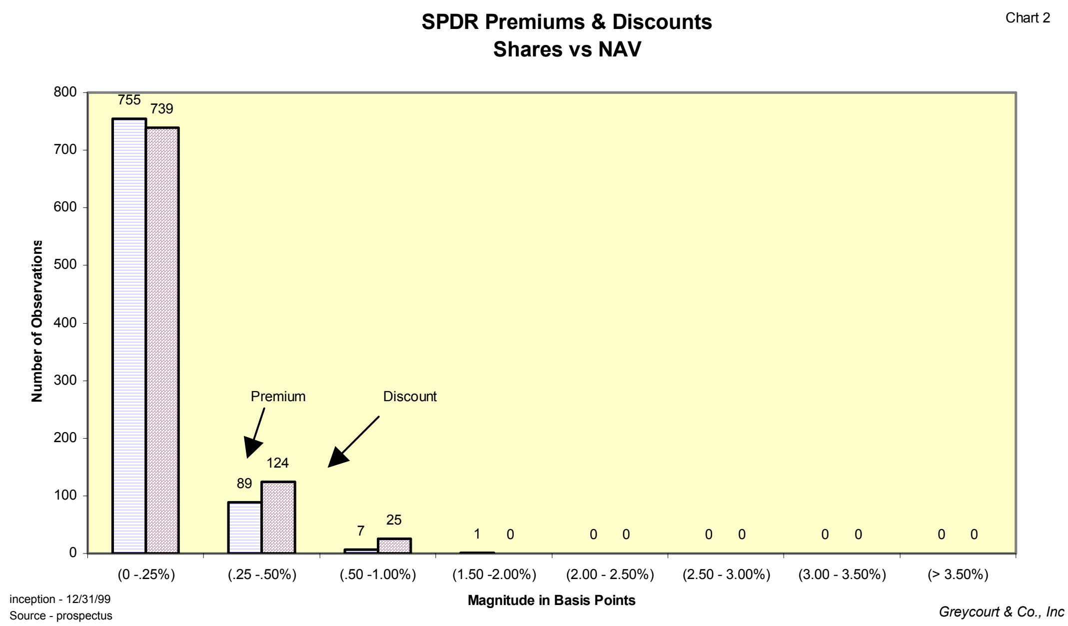
ETFs - Premiums & Discounts

We know that ETFs are traded in a manner similar to trading common stocks. The creation units are parceled out in smaller lots or ETF shares and traded through brokers. Trading and pricing of the ETF shares are independent of the valuation process at the fund level.

Again, using SPDRs as an example, the fund sponsor continuously values the fund and calculates the Net Asset Value (NAV) of all the securities held to track the S&P 500 index. However, ETF share prices fluctuate based on investor demand, which result in price movements that are not entirely reflective of price changes in the underlying index shares held in trust. As a result, the ETF share price may sell at a premium or discount to the per unit NAV of the fund. This could be a problem for any investor that purchases shares at a premium and subsequently sells them at a discount, especially when the differences are large. Compounding the problem, the average investor may not have easy access to a fund's NAV on an ongoing basis to determine the premium or discount at any given point in time.

Fortunately, the mechanism to issue or redeem creation units acts to minimize the premium or discounts. If the ETF shares sell at a premium, investors can present the fund with a basket of securities and receive creation units in return. The ETF shares would be sold at a profit more or less equal to the premium. The reverse is true if the ETF shares sell at a discount. This arbitrage mechanism works to minimize the premium or discounts at any point in time and maintain near parity between the fund NAV and the ETF shares.

The following chart presents a history of the premiums and discounts attributable to SPDRs over the years since inception of the fund.



This arbitrage mechanism is dependent on the continued issuance or redemption of creation units. However, in unusual market conditions, the premium or discounts could be large. Also, SPDRs track the S&P 500, a widely held and liquid index. As more ETFs are created which track specific sectors or less liquid indices, the arbitrage mechanism may not be as effective. We will not know if this mechanism works consistently until ETFs build longer track records similar to SPDRs.

Expenses and Trading Costs

Index based mutual funds and ETFs can provide investors with low cost investment vehicles. ETF expenses are as low as 9 basis points , which is very competitive even when compared to the lowest cost mutual funds. However, trading activity and investment patterns can drive ETF expenses higher. Since ETFs are traded as common stock, trading costs and commissions are incurred on each trade. If an investor makes periodic contributions, say through a dollar cost averaging program, trading costs and commissions would accumulate over time. Investors who trade frequently when using an index fund to maintain temporary market exposure would also incur higher expenses. However, low expenses shouldn't always carry the day. Tracking error could more than offset the expense differences. Consider how well a fund has performed relative to its competition as part of the review process.

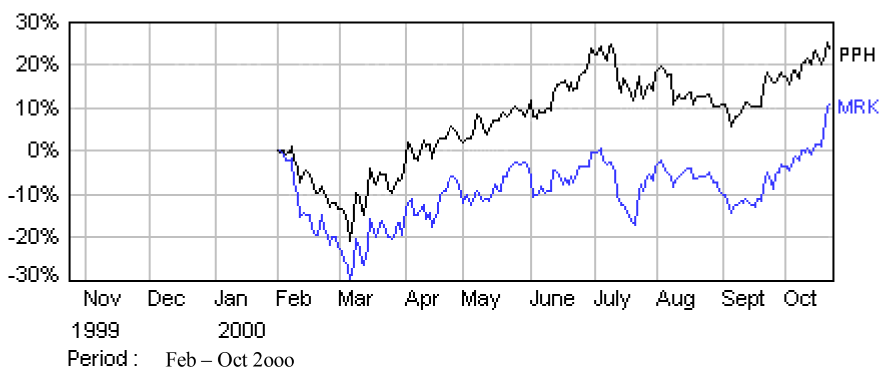
Market Shorts & Hedges

ETFs can be shorted and trade throughout the day, a feature not available with mutual funds. In fact, most ETFs can be shorted on a downtick. This feature provides the investor with an opportunity to hedge index positions in a straightforward and cost effective manner.

Another interesting application is the possibility of hedging specific companies. Say a security is held at a gain just to satisfy the one-year holding period to qualify for long-term capital gains treatment. A hedge could be set up with an ETF that is well correlated to the security. Merrill Lynch's HOLDRs* present interesting possibilities for this type of strategy due to their structure and sector concentration.

The next chart illustrates the price movement of Merck in relation to the Pharmaceutical HOLDR since inception, giving a sense of how well correlated the two securities have been over time.

Pharmaceutical HOLDR (PPH) versus Merck & Co. (MRK)



Source – Yahoo *Finance* *Greycourt & Co., Inc.*

* See Appendix 2 for a detailed description of HOLDRs

Tax Efficiency

ETFs are generally more tax efficient than comparable mutual funds although index based ETFs and Mutual Funds share inherent tax efficiencies. Index funds have low turnover so gains are realized slowly. In both vehicles, dividends and realized gains flow to the investors.

However, this is where the similarities end. Unlike ETFs, mutual funds have several problems that taxable investors should consider. New investors in a mutual fund with unrealized gains are in effect buying these gains. If gains are subsequently realized, the investor incurs a tax liability although the investor did not derive any benefit. Gains realization can occur through the rebalancing process or redemptions.

In theory, ETFs are susceptible to the same rebalancing problem but the redeeming and issuing of creation units presents a mechanism that can actually reduce the level of unrealized gains in the fund. Under Section 852(b)(6) of the Internal Revenue Code, if a RIC uses appreciated property, stock in this case, to satisfy redemption requests, then the RIC does not realize a gain on the distribution.

For example, when an investor presents the fund sponsor with a redemption request for a creation unit, the investor receives a distribution in-kind. The fund management can distribute low basis stock without realizing any gain. This has the effect of increasing the average basis of the remaining shares. When the fund goes through its normal rebalancing process, the potential for realized gains is lower.

ETFs, unlike mutual funds, are not subject to forced gains realization due to investor redemptions. Shares of ETFs traded by one investor will not generate tax liabilities for other investors. Since ETF shares are bought and sold rather than units, the fund is not required to sell securities to satisfy redemptions. In fact, the buying and selling of shares, other than creation units, is transparent to the fund.

In 1999, both SPDRs and the Vanguard 500 Index had similar dividend distributions but Vanguard also distributed 92 cents/ share in long-term capital gains. SPDRs did not have any capital gains distributions in 1999 and have not had any significant distributions since 1993.

Summary

Investors, especially those subject to taxes, should consider ETFs whenever passive investment strategies are appropriate. The combination of tax efficiency, competitive fees and hedging opportunities could offer significant advantages over similarly managed mutual funds and in some cases, separate accounts.

However, ETFs are not suitable for every situation and need to be carefully evaluated in relation to the investor's objectives and time horizons. Also, as ETFs become more concentrated and possibly less liquid, the associated risks of ownership could increase.

Greycourt will continue to monitor and evaluate ETFs as the industry changes. Since many ETFs have short histories, a complete understanding of the underlying risks is absolutely necessary before investing.

GREYCOURT & CO., INC
January 2001

(This paper was written by Claude R. Perrier, a Principal at Greycourt.)

Exchange Traded Funds Appendix 1

Name	Symbol				
Nasdaq-100 Index Tracking Stock	QQQ				
SPDRs	SPY				
MidCap SPDRs	MDY				
DIAMONDS Trust Series I	DIA				
iShares S&P 500 Index Fund	IVV				
iShares S&P 500/BARRA Value Index Fund	IVE				
iShares S&P 500/BARRA Growth Index Fund	IVW				
iShares S&P MidCap 400 Index Fund	IJH				
iShares S&P SmallCap 600 Index Fund	IJR				
iShares Russell 1000 Index Fund	IWB				
iShares Russell 1000 Growth Index Fund	IWF				
iShares Russell 1000 Value Index Fund	IWD				
iShares Russell 2000 Index Fund	IWM				
iShares Russell 3000 Index Fund	IWV				
Select Sector SPDRs Fund - Basic Industries	XLB				
Select Sector SPDRs Fund - Consumer Services	XLV				
Select Sector SPDRs Fund - Consumer Staples	XLP				
Select Sector SPDRs Fund - Cyclical/Transportation	XLY				
Select Sector SPDRs Fund - Energy Select Sector	XLE				
Select Sector SPDRs Fund - Financial	XLF				
Select Sector SPDRs Fund - Industrial	XLI				
Select Sector SPDRs Fund - Technology	XLK				
Select Sector SPDRs Fund - Utilities	XLU				
iShares Dow Jones U.S. Financial Sector Index Fund	IYF				
iShares Dow Jones U.S. Internet Index Fund	IYV				
iShares Dow Jones U.S. Technology Sector Index Fund	IYW				
iShares Dow Jones U.S. Telecommunications Sector Index Fund	IYZ				
iShares MSCI - Australia	EWA				
iShares MSCI - Austria	EWO				
iShares MSCI - Belgium	EWK				
iShares MSCI - Canada	EWC				
iShares MSCI - France	EWQ				
iShares MSCI - Germany	EWG				

iShares MSCI - Hong Kong	EWH				
iShares MSCI - Italy	EWI				
iShares MSCI - Japan	EWJ				
iShares MSCI - Malaysia (Free)	EWM				
iShares MSCI - Mexico (Free)	EWW				
iShares MSCI - Netherlands	EWN				
iShares MSCI - Singapore (Free)	EWS				
iShares MSCI - South Korea	EWY				
iShares MSCI - Spain	EWP				
iShares MSCI - Sweden	EWD				
iShares MSCI - Switzerland	EWL				
iShares MSCI - United Kingdom	EWU				
iShares S&P - TSE 60 Index Fund	IKC				
iShares Dow Jones U.S. Basic Materials Sector Index Fund	IYM				
iShares Dow Jones U.S. Chemicals Index Fund	IYD				
iShares Dow Jones U.S. Consumer Cyclical Sector Index Fund	IYC				
iShares Dow Jones U.S. Consumer Non-Cyclical Sector Index Fund	IYK				
iShares Dow Jones U.S. Energy Sector Index Fund	IYE				
iShares Dow Jones U.S. Financial Services Sector Index Fund	IYG				
iShares Dow Jones U.S. Healthcare Sector Index Fund	IYH				
iShares Dow Jones U.S. Industrial Sector Index Fund	IYJ				
iShares Dow Jones U.S. Real Estate Index Fund	IYR				
iShares Dow Jones U.S. Total Market Index Fund	IYY				
iShares Dow Jones U.S. Utilities Sector Index Fund	IDU				
iShares MSCI - Taiwan	EWT				
iShares MSCI - Brazil	EWZ				
iShares MSCI EMU Index Fund (European Monetary Union)	EZU				
iShares S&P Europe 350	IEV				
iShares S&P MidCap 400/BARRA Growth	IJK				
iShares S&P MidCap 400/BARRA Value	IJJ				
iShares Russell 2000 Value Index Fund	IWN				
iShares Russell 2000 Growth Index Fund	IWO				
iShares Russell 3000 Growth Index Fund	IWZ				
iShares Russell 3000 Value Index Fund	IWW				
iShares Small Cap 600/BARRA Growth Index Fund	IJT				
iShares Small Cap 600/BARRA Value Index Fund	IJS				
streetTRACKS Dow Jones Global Titans Index Fund	DGT				

streetTRACKS Dow Jones U.S. Small Cap Growth Index Fund	DSG				
streetTRACKS Dow Jones U.S. Small Cap Value Index Fund	DSV				
streetTRACKS Dow Jones U.S. Large Cap Growth Index Fund	ELG				
streetTRACKS Dow Jones U.S. Large Cap Value Index Fund	ELV				
streetTRACKS Morgan Stanley Internet Index Fund	MII				
streetTRACKS Morgan Stanley High Tech 35 Index Fund	MTK				
FORTUNE e-50 Index Tracking Stock	FEF				
FORTUNE 500 Index Tracking Stock	FFF				

HOLDRs

Appendix 2

Name	Symbol
Biotech HOLDRS	BBH
Broadband HOLDRS	BDH
B2B Internet HOLDRS	BHH
Internet HOLDRS	HHH
Internet Architecture HOLDRS	IAH
Internet Infrastructure HOLDRS	IIH
Market 2000+ HOLDRS	MKH
Pharmaceutical HOLDRS	PPH
Regional Bank HOLDRS	RKH
Semiconductor HOLDRS	SMH
Telecom HOLDRS	TTH
Utilities HOLDRS	UTH

Definition
The HOLDRS℠ Trust will issue Depositary Receipts called HOLDRS ℠ representing an undivided beneficial ownership in the common stock of a group of specified companies that are involved in various segments of a specified Industry. The Bank of New York is the trustee. Biotech HOLDRS may be acquired, held or transferred in a round-lot amount of 100 HOLDRS or round-lot multiples. HOLDRS are separate from the underlying deposited common stocks that are represented by the HOLDRS. The HOLDRS Trust is not a registered investment company under the Investment Company Act of 1940.

Source – AMEX

HOLDRs begin with a basket of 20 stocks that focuses in on a market sector (i.e. Biotech) or industry. These are concentrated portfolios and can be very volatile. HOLDRs are exchange traded funds that can be traded throughout the trading day.
The composition of the companies does not change unless there is a corporate action such as a merger or acquisition. In effect, HOLDRs follow a buy and hold strategy.

This concentration allows the investor to utilize HOLDRs to gain specific market exposure or hedges. If a HOLDR is available with a high correlation to a specific stock, the effect can be similar to a short sale as described in the text.

A unique feature of HOLDRs is the investor's right to receive the underlying securities in kind for each round lot of 100 HOLDRs. This feature can provide significant tax advantages under certain conditions.

Appendix 3

Exchange Traded Funds
Expense Summary

Product Name [a]	Product	Ticker	Firm	Strategy	Exp Ratio [b]
Broad Market					
S&P Depositary Receipts	SPDRs	SPY	SSB	S&P 500 Index	0.12%
S&P 500 Index	iShares	IVV	Barclays	S&P 500 Index	0.09%
S&P 500 Index	Mutual Fund	VFINX	Vanguard	S&P 500 Index	0.18%
Domestic Style Funds					
US Large Cap Value	StreetTRACKS	ELV	SSGA	DJ US Large Cap Value Index	0.20%
S&P 500/BARRA Value	iShares	IVE	Barclays	S&P/BARRA Value Index	0.18%
Value Index Fund	Mutual Fund	VIVAX	Vanguard	S&P/BARRA Value Index	0.22%
Domestic Sector Funds					
SPDRs Fund - Utilities	Select Sector	XLU	SSB	S&P 500 Index Sectors	0.28%
US Utilities Sector Index	iShares	IDU	Barclays	DJ US Utilities Sector Index	0.60%
International Regional Funds					
European Stock Index	Mutual Fund	VEURX	Vanguard	MSCI Europe Index	0.29%
S&P Europe 350 Index	iShares	IEV	Barclays	S&P Europe 350 Index	0.60%
International Country Funds					
MSCI France Index fund	iShares	EZU	Barclays	MSCI France Index	0.84%
MSCI Japan Index fund	iShares	EWI	Barclays	MSCI Japan Index	0.84%

[a] The following funds represent examples of available funds but are not intended to represent a comprehensive list

[b] Note: expense ratios may change without notice.