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Exchange-Traded Funds Not for Everyone

This paper describes the increasingly popular exchange-traded funds; ETFs, for short; as alternatives to traditional mutual funds. ETF features are identified and compared with index mutual funds in terms of trading, creation and redemptions, cost comparisons, and tax efficiency. The results indicate that transaction costs limit ETF attractiveness for small investors. The in-kind creation and redemption process of ETFs provide significant tax efficiencies. Finally, the study finds little or no ETF advantage for the tax deferred, long-term retirement investor.

by Wilfred L. Dellva

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First there were SPDRs and WEBS. Then late in 1999 and throughout 2000 came the explosion of HOLDRS, iShares and streetTRACKS. These new exchange-traded funds; ETFs, for short; along with HOLDRS (Holding Company Depositary Receipts), are listed and traded on the American Stock Exchange (AMEX). ETFs are index-based equity instruments that represent ownership in either a fund or a unit investment trust and give investors the opportunity to buy and sell shares of an entire stock portfolio as a single security. HOLDRS have many characteristics similar to ETFs except that HOLDRS represent ownership of a specified group of individual stocks in a particular industry, sector or group. What are the features of ETFs and HOLDRS that have made them popular with both the financial press and with investors? How do they work? Are they comparable with traditional index mutual funds? Are they suitable investments for the individual investor? These are the questions that motivated this paper. Following a description of the major ETF categories, I conduct a comparison between ETFs and index mutual funds, focusing on trading, creation and redemptions, cost comparisons, and tax efficiency. This paper concludes with a discussion of the suitability of ETFs for small investors.

Market for ETFs

While there has been a great deal of media attention directed toward ETFs and Merrill Lynch HOLDRS portfolios, there is a need for a more comprehensive look at these new investment vehicles. Recent columns in the financial press and featured stories on Internet sites have given these new products much exposure. Dow Jones Newswires reports on a study by Strategic Insight, a New York mutual fund research firm, that the market for ETFs continued to grow at a rapid pace during the third quarter of 2000. New money invested was \$5.6 billion on top of \$17.6 billion for the first six months of the year. As of the end of September, \$57.5 billion was invested in 76 ETFs and 13 exchange-traded HOLDRS. This amount represents almost 15 percent of the \$388 billion invested in U.S. equity index mutual funds as of August 31, 2000. Table 1 lists all ETFs trading on the AMEX as of September 30, 2000.

TABLE 1 / PART 1

Exchange-Traded Funds and HODRS on AMEX

Name	Ticker Symbol	Exp. Ratio	Net* Assets	Inception
Nasdaq-100 Index Tracking Stock	QQQ	.18%	12.56B	3/10/99
SPDRs	SPY	.12%	24.05B	1/29/93
MidCap SPDRs	MDY	.25%	3.07B	5/4/95
DIAMONDS Trust Series I	DIA	.18%	1.92B	1/20/98
iShares S&P 500 Index Fund	IVV	.09%	1.69B	5/19/00
iShares S&P 500/BARRA Value Index Fund	IVE	.18%	60M	5/26/00
iShares S&P 500/BARRA Growth Index Fund	IVW	.18%	81M	5/26/00
iShares S&P MidCap 400 Index Fund	IJH	.20%	255M	5/26/00
iShares S&P SmallCap 600 Index Fund	IJR	.20%	71M	5/26/00
iShares Russell 1000 Index Fund	IWB	.15%	2.66M	5/19/00
iShares Russell 1000 Growth Index Fund	IWF	.20%	42M	5/26/00
iShares Russell 1000 Value Index Fund	IWD	.20%	41M	5/26/00
iShares Russell 2000 Index Fund	IWM	.20%	234M	5/26/00
iShares Russell 3000 Index Fund	IWW	.20%	33M	5/26/00
Select Sector SPDRs Fund - Basic Industries	XLB	.28%	60M	12/22/98
Select Sector SPDRs Fund - Consumer Services	XLV	.28%	80M	12/22/98
Select Sector SPDRs Fund - Consumer Staples	XLP	.28%	1.69M	12/22/98
Select Sector SPDRs Fund - Cyclical/Transportation	XLX	.28%	1.05M	12/22/98
Select Sector SPDRs Fund - Energy Select Sector	XLE	.28%	2.91M	12/22/98
Select Sector SPDRs Fund - Financial	XLF	.28%	443M	12/22/98
Select Sector SPDRs Fund - Industrial	XLI	.28%	51M	12/22/98
Select Sector SPDRs Fund - Technology	XLK	.28%	1.08B	12/22/98
Select Sector SPDRs Fund - Utilities	XLU	.28%	1.07M	12/22/98
iShares Dow Jones U.S. Financial Sector Index Fund	IYF	.60%	120M	5/26/00
iShares Dow Jones U.S. Internet Index Fund	IYV	.60%	73M	5/19/00
iShares Dow Jones U.S. Technology Sector Index Fund	IYW	.60%	132M	5/19/00
iShares Dow Jones U.S. Telecommunications Sector Index Fund	IYZ	.60%	38M	5/26/00
iShares MSCI - Australia	EWA	.84%	63M	3/18/96
iShares MSCI - Austria	EWO	.84%	11M	3/18/96
iShares MSCI - Belgium	EWK	.84%	12M	3/18/96
iShares MSCI - Canada	EWC	.84%	21M	3/18/96
iShares MSCI - France	EWQ	.84%	91M	3/18/96
iShares MSCI - Germany	EWG	.84%	158M	3/18/96
iShares MSCI - Hong Kong	EW H	.84%	72M	3/18/96
iShares MSCI - Italy	EWI	.84%	48M	3/18/96
iShares MSCI - Japan	EWJ	.84%	755M	3/18/96
iShares MSCI - Malaysia (Free)	EWM	.84%	87M	3/18/96
iShares MSCI - Mexico (Free)	EWX	.84%	38M	3/18/96
iShares MSCI - Netherlands	EWN	.84%	33M	3/18/96
iShares MSCI - Singapore (Free)	EWS	.84%	80M	3/18/96
iShares MSCI - South Korea	EWY	.99%	12M	5/12/00
iShares MSCI - Spain	EW P	.84%	42M	3/18/96
iShares MSCI - Sweden	EW D	.84%	21M	3/18/96
iShares MSCI - Switzerland	EWL	.84%	44M	3/18/96
iShares MSCI - United Kingdom	EWU	.84%	157M	3/18/96
iShares S&P - TSE 60 Index Fund	IKC	.50%	9M	6/16/00

Source: www.amex.com/funds/etf/etf.html, hodrs.com

*As of September 30, 2000

#Annual fee on HODRS is eight cents per HODRS

TABLE 1 / PART 2

Exchange-Traded Funds and HOLDRS on AMEX

Name	Ticker Symbol	Exp. Ratio	Net* Assets	Inception
iShares Dow Jones U.S. Basic Materials Sector Index Fund	IYM	.60%	8M	6/16/00
iShares Dow Jones U.S. Chemicals Index Fund	IYD	.60%	15M	6/16/00
iShares Dow Jones U.S. Consumer Cyclical Sector Index Fund	IYC	.60%	15M	6/16/00
iShares Dow Jones U.S. Consumer Non-Cyclical Sector Index Fund	IYK	.60%	14M	6/16/00
iShares Dow Jones U.S. Energy Sector Index Fund	IYE	.60%	24M	6/16/00
iShares Dow Jones U.S. Financial Services Sector Index Fund	IYG	.60%	74M	6/16/00
iShares Dow Jones U.S. Healthcare Sector Index Fund	IYH	.60%	30M	6/16/00
iShares Dow Jones U.S. Industrial Sector Index Fund	IYJ	.60%	28M	6/16/00
iShares Dow Jones U.S. Real Estate Index Fund	IYR	.60%	30M	6/16/00
iShares Dow Jones U.S. Total Market Index Fund	IYY	.20%	14M	6/16/00
iShares Dow Jones U.S. Utilities Sector Index Fund	IDU	.60%	47M	6/16/00
iShares MSCI - Taiwan	EW T	.99%	39M	6/23/00
iShares MSCI - Brazil	EWZ	.99%	17M	7/14/00
iShares MSCI EMU Index Fund (European Monetary Union)	EZU	.84%	40M	7/14/00
iShares S&P Europe 350	IEV	.60%	21M	7/28/00
iShares S&P MidCap 400 BARRA Growth	IJK	.25%	37M	7/28/00
iShares S&P MidCap 400 BARRA Value	IJJ	.25%	19M	7/28/00
iShares Russell 2000 Value Index Fund	IWN	.25%	27M	7/28/00
iShares Russell 2000 Growth Index Fund	IWO	.25%	20M	7/28/00
iShares Russell 3000 Growth Index Fund	IWZ	.25%	16M	7/28/00
iShares Russell 3000 Value Index Fund	IWW	.25%	18M	7/28/00
iShares Small Cap 600 BARRA Growth Index Fund	IJT	.25%	17M	7/28/00
iShares Small Cap 600 BARRA Value Index Fund	IJS	.25%	14M	7/28/00
HOLDRS-Biotech	BBH	#	2.22B	11/26/99
HOLDRS-Broadband	BDH	#	454M	5/6/00
HOLDRS-B2B Internet	BHH	#	697M	2/24/00
HOLDRS-Internet	HHH	#	636M	9/28/99
HOLDRS-Internet Architecture	IAH	#	277M	3/16/00
HOLDRS-Infrastructure	IHH	#	409M	9/28/99
HOLDRS-Market 2000	MKH	#	N/A	8/30/00
HOLDRS-Pharmaceutical	PPH	#	635M	2/1/00
HOLDRS-Regional Bank	RKH	#	82M	6/23/00
HOLDRS-Semiconductor	SMH	#	194M	6/5/00
HOLDRS-Software	SWH	#	N/A	9/27/00
HOLDRS-Telecom	TTH	#	498M	2/1/00
HOLDRS-Utilities	UTH	#	51M	6/30/00
streetTRACKS Dow Jones Global Titans	DGT	.50%	N/A	9/29/00
streetTRACKS Dow Jones U.S. Large Cap Growth Index	ELG	.20%	N/A	9/29/00
streetTRACKS Dow Jones U.S. Large Cap Value Index	ELV	.20%	N/A	9/29/00
streetTRACKS Dow Jones U.S. Small Cap Growth Index	DSG	.25%	N/A	9/29/00
streetTRACKS Dow Jones U.S. Small Cap Value Index	DSV	.25%	N/A	9/29/00
streetTRACKS Morgan Stanley High Tech 35 Index	MTK	.50%	N/A	9/29/00
streetTRACKS Morgan Stanley Internet Index	MII	.50%	N/A	9/29/00
FORTUNE 500 Index Tracking Stock	FFF	.20%	N/A	10/10/00
FORTUNE e-50 Index Tracking Stock	FEF	.20%	N/A	10/10/00

Sources: www.amex.com/indexofarx/etf/indexofarx/etf/indexofarx/etf

*As of September 30, 2000

#Annual fee on HOLDRS is eight cents per HOLDR

State Street Global Advisors (SSgA), along with the American Stock Exchange, developed and launched the ETF market in 1993.¹ The first ETF, the SPDR (Standard & Poor's Depository Receipts), which tracks the S&P 500 index, continues to be the most successful product, with over \$24 billion in assets. With a 50-day moving average volume of nearly 5 million shares a day, SPDRs are liquid and often ranks as one of the most active securities on the AMEX. SPDR's bid/ask spread is \$0.03 per share, the lowest of the ETFs, reflecting its trading activity and liquidity in the marketplace. Building on the SPDR, State Street and the AMEX launched the S&P MidCap SPDR in 1995, the Dow Jones 30 Industrials DIAMONDS in 1998, and in 1999, the Select Sector SPDRs, which track the nine broad sectors that make up the S&P 500. On September 29, 2000, State Street launched a new family of ETFs called streetTRACKS. The seven new funds track four Dow Jones style indexes, the Dow Jones Global Titans Index and two Morgan Stanley technology indexes. Global Titans is the first ETF based on a global index. It will track 50 of the world's largest companies. On October 10, 2000, State Street launched ETFs that track the Fortune 500 and the Fortune E50 indexes.

The Nasdaq-100 Index represents the largest and most active nonfinancial issues trading on the Nasdaq. In addition to market capitalization, eligibility for inclusion in the index is a minimum average daily trading volume of at least 100,000 shares. In response to the strong Nasdaq-100 performance in the 1990s (a ten-year average return of 35.63 percent compared with the S&P 500 return of 19.5 percent), the tracking stock ETF, QQQ, began trading in March of 1999. Invested assets in QQQ have grown from an initial investment of \$15 million to over \$12.5 billion by the end of the third quarter of 2000. During the past quarter, QQQ has traded at an average daily trading volume of over 31 million shares a day, often the most actively traded issue in the market. QQQ closely tracks the Nasdaq-100 Index with a correlation of 0.99 for 2000.

The iShares Trust, created by Barclays Global Fund Advisors, consists of over 50 separate investment portfolios called Funds. The shares of the Funds, called iShares, seek to track the price and yield performance, before fees and expenses, of a particular equity market index compiled by one of four "Index Providers": Standard & Poor's, Dow Jones, Frank Russell and Morgan Stanley International. The S&P indexes include the BARRA Growth and Value indexes for the 500, the Mid Cap 400 and the SmallCap 600 Index Funds. In addition, there is an S&P Europe and TSE Index Fund. The Dow Jones indexes tracked are the Dow Jones Total Market and Sector indexes. The Russell indexes tracked are the 1000, 2000 and 3000, and the respective Growth Index and Value Index. Finally, the MSCI iShares series tracks 23 country and regional Morgan Stanley international indexes. iShares index funds offer investors a convenient way to obtain index-based exposure to a market, country or region.

The S&P SPDRs, the NASDAQ QQQs and the Dow Jones DIAs are organized as unit investment trusts (UIT), as opposed to the open-end mutual fund structure. All of the newer ETFs; Barclays' iShares and State Street's streetTRACKS; are organized with the open-end mutual fund structure. A UIT is an unmanaged portfolio consisting of securities that are fixed at the UIT initiation. Units of the trust are sold to investors who receive a share of the principal, dividend or capital gains. The unit trusts accrue cash dividends for the stocks in the trust and pay dividends (less trust expenses) on a calendar quarter basis. The open-end structure reinvests cash dividends on a daily basis just like traditional mutual funds. The delay on investment of dividends by unit investment trusts could create a drag on their performance if dividend yields were near their long-term yields of four or five percent, as opposed to the current yield of about one percent. At a dividend yield of one percent, the return of the SPDR closely tracks that of the S&P 500.

HOLDERS are a product of Merrill Lynch & Co., traded on the American Stock Exchange. HOLDERS are depositary receipts that represent an investor's ownership in the common stock or ADRs (American depositary receipts) of specified companies in a particular industry, sector or group. Table 1 includes the HOLDERS outstanding as of September 30, 2000. Each HOLDER is a security that represents a portfolio of 20 stocks and can be traded like a single stock. HOLDERS trade only in 100-share round lots designed to represent whole share interests in each of the underlying securities. The underlying stocks do not change except for changes due to corporate events (such as mergers and acquisitions, or spin-offs). Because the relative weighting of the stocks is a function of market prices, weightings within the HOLDERS will change over time based on the success or failure of the included stocks. HOLDERS can become highly concentrated if one or more of their component stocks appreciates greatly relative to the other stocks in the HOLDER. Outstanding HOLDERS can be purchased in the secondary market, or new HOLDERS can be created by depositing the underlying stock in the appropriate share amounts. Stock may be converted into HOLDERS and HOLDERS converted into stock at any time in round lots of 100 HOLDERS.

Beginning in 1993, total assets and trading volume of Index Shares (the collective term used by the AMEX for all ETFs traded on the AMEX) have doubled each year. What are the features that have made ETFs so popular? In the next section, I describe the characteristics of ETFs and HOLDERS that distinguish them from index mutual funds and that make them a formidable challenge to the conventional mutual fund industry.

Comparison Between ETFs And Mutual Funds

The growing popularity of ETFs can be traced to the increased acceptance of index-based products by the investment community. Lipper Analytical Services estimates that total holdings of U.S. index mutual funds exceeded \$388 billion as of August 31, 2000, which is about nine percent of the \$4.2 trillion invested in equity mutual funds. Indexing has been popular due to three factors: lower cost, lower turnover, and competitive performance results when compared with actively managed funds. Index funds typically have very competitive expense ratios; the buy-and-hold nature of most index funds reduces turnover and its corresponding expense. They generally are tax efficient when compared with actively managed funds. Index funds tend to be better diversified, thereby reducing risk. These features have created an environment whereby passive index funds have become an attractive alternative to actively managed mutual funds. ETFs are gaining popularity because of their features that help provide important alternatives to traditional index mutual funds.

Trading

ETFs and HOLDERS trade throughout the trading day. ETFs trade in round or odd lots, while HOLDERS are purchased and sold only in round lot increments of 100 shares. All ETFs can be purchased on margin, generally subject to the same terms that apply to common stocks. All can be sold short and are exempt from the rule that requires shares to be sold only on an "uptick." The trading features of ETFs and HOLDERS generate both advantages and disadvantages for the individual investor. Commonly viewed advantages of ETFs over mutual funds are (1) ability to value assets in ETFs during the trading day, (2) direct accessibility to the market via the AMEX, (3) symmetric trading via short as well as long positions and (4) the ability to leverage one's portfolio via margin trades. Mutual fund investors can trade only at the market close and may be subject to adverse market moves during the trading day as they wait for the close. To restrict trading, many mutual fund families limit the number of trades, add short-term redemption fees or require written notice to trade their index mutual funds.

Critics of ETFs argue that these flexible trading rules create an environment that fosters a short-term trading mentality using indexed instruments that were designed for long-term investments, and that investors use the trading features of ETFs to chase the hot fund or sector, not to match the performance of an index. In response, a recent Financial Research Corporation study reports that 75 percent of people who invest in ETFs or plan to invest in ETFs, are doing so with a buy-and-hold strategy, while the remaining 25 percent said they would use ETFs for a mix of both long-term and trading-oriented strategies.

Creations and Redemptions

Index Shares are created by large investors and institutions in block-sized units of shares (or multiples) known as creation units. A unit of 50,000 shares (or a multiple) is required to create SPDRs, NASDAQ-100 Index Tracking Stock, Select Sector Funds, DIAMONDS and streetTRACKS. A unit of 25,000 shares is required to create MidCap SPDRs. A creation unit requires a deposit with the trustee of a specified number of shares of a portfolio of stocks closely approximating the composition of a specific index and cash equal to accumulated dividends in return for specific Index Shares. Similarly, block-sized units of Index Shares can be redeemed in return for a portfolio of stocks approximating the index and a specified amount of cash.

Creation and redemption of HOLDRS differs from that of Index Shares in that they are created and redeemed only in round lots of 100 HOLDRS. Delivering to the trustee the requisite underlying securities creates them. Similarly, surrendering HOLDRS in integral multiples of 100 HOLDRS will withdraw deposited shares from the trust. Fractional shares are not accepted by the trust in either the creation or redemption phase.

This creation and redemption process is a major feature of exchange-traded funds and creates important advantages relative to traditional mutual funds. Because ETFs are not open to cash contributions or redemptions, most small shareholder activity takes place on the exchange where the market matches buyers and sellers of fund shares throughout the trading day. Unlike closed-end funds, ETFs can issue and redeem shares, but only by taking in or distributing in-kind securities held by the fund. In-kind distributions from ETFs do not trigger realized capital gains because the in-kind contributions already reflect the index composition that eliminates costly trading within the fund. The process of redemption in-kind is an important source of ETF tax efficiency that will be discussed later in this paper. Creation and redemption generally separate the ETF investor into two categories: the large investors who deal directly with the fund during the creation/redemption process and the smaller investors who limit their activity to trading shares of the ETF on the stock exchange.

Costs

ETFs often are described in terms of their expense ratio advantage over traditional index mutual funds. Expense ratios have been increasingly important to investors because of the impact of expenses on fund performance, and they are exceedingly important to fund administrators as a competitive tool. Barclays iShares S&P 500 leads the low cost assault with an expense ratio of 0.09 percent. In response to this low rate, the expense ratio for SPDRs was lowered to 0.12 percent, Dow Jones DIAMONDS lowered to 0.18 percent and Nasdaq-100 (QQQ) set at 0.18 percent, which matches the expense ratio for the low-cost mutual fund leader, Vanguard's 500 Index Fund. The ETFs that track the major benchmark indexes clearly have targeted Vanguard's low expense rate. Table 1 reports ETF expense ratios as of September 30, 2000. Generally, ETFs that track broadly diversified indexes have the lowest expenses, in the 0.18– 0.25 percent range. ETFs tracking domestic sector indexes have somewhat higher rates, in the 0.25– 0.60 percent range. The ETFs that track the MSCI international indexes have the highest rates, in the 0.84– 0.99 percent range. The annual custody fees on HOLDERS are inexpensive, only eight cents per HOLDER to be deducted from cash dividends and distributions. In addition, the trustee will waive this fee if no dividends or other cash distributions are paid on any of the underlying stocks.

Expense ratios don't tell the whole story of ETF costs. Buying and selling ETFs generate commissions, just as there would be for stock transactions. The commission amount you pay is determined by the type of broker (full service or discount) used and the amount and timing of the transactions. Table 2 illustrates cost comparisons between the Vanguard Index 500 Mutual Fund and two comparable ETFs, Barclays' iShares S&P Index Fund and State Street's SPDRs. The example compares the total cost of trading and owning each investment based on one-time investments of \$10,000, \$50,000 and \$100,000 for various holding periods.

TABLE 2 / PANEL 1

Index Fund Versus ETF: Cost Comparisons¹

Transactions Cost

		\$10,000 Investment			\$50,000 Investment			\$100,000 Investment		
		Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR
Online Trade	Commissions ²	None	\$20.00	\$20.00	None	\$20.00	\$20.00	None	\$20.00	\$20.00
	Bid/Ask Spread ³	None	9.25	2.25	None	46.63	11.19	None	93.25	22.38
	Total Purchase Costs	\$0.00	\$29.95	\$22.25	\$0.00	\$66.63	\$31.19	\$0.00	\$113.25	\$42.38
BrokerTrade	Commissions ²	None	\$47.22	\$47.22	None	\$56.19	\$56.19	None	\$67.38	\$67.38
	Bid/Ask Spread ³	None	9.25	2.25	None	46.63	11.19	None	93.25	22.39
	Total Purchase Costs	\$0.00	\$56.47	\$49.47	\$0.00	\$102.82	\$67.38	\$0.00	\$160.66	\$89.77

Sources: Vanguard and AMEX.

Notes: 1. Trading and ownership costs for one-time investments of \$10,000, \$50,000, and \$100,000 in Vanguard Index 500 and two S&P 500 Index ETFs for various holding periods. Close all positions at the end of each period.

2. Commissions from Vanguard Brokerage Service (VBS). Online rate of \$20 broker-assisted trade at \$45 + 0.00 per share.

3. Bid/Ask spread of \$0.125 per share for iShares, \$0.05 per share for SPDR.

Panel 1 of Table 2 develops trading costs using the Vanguard Brokerage Service (VBS). Commissions are developed for an online trade as well as a broker- assisted trade. Bid/ask spreads vary depending on the market activity of the ETF. Widely held and actively traded ETFs such as the SPDR trade at spreads around 1/32, while the more thinly traded iShares Index trades at a spread nearer to 1/8. As the size of the investment increases, transaction costs increase for the ETFs due to the per-share bid/ask spread. The zero transaction costs for Vanguard Index 500 creates a significant cost advantage for the mutual fund versus the ETFs. Panel 2 of Table 2 illustrates annual expenses. When focusing only on expenses, the lower expense ratios of the ETFs result in considerable cost savings over time. The cost savings are magnified as the investment increases.

Annual Expenses ¹									
Annual Expense	\$10,000 Investment			\$50,000 Investment			\$100,000 Investment		
	0.0018	0.0009	0.0012	0.0018	0.0009	0.0012	0.0018	0.0009	0.0012
Holding Period	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR
1	\$19.44	\$9.72	\$12.96	\$97.20	\$48.60	\$64.80	\$194.40	\$97.20	\$129.60
2	40.44	20.22	26.96	202.18	101.09	134.78	404.35	202.18	269.57
3	63.11	31.56	42.07	315.55	157.78	210.37	631.10	315.55	420.73
4	87.60	43.80	58.40	437.99	219.00	292.00	875.99	437.99	583.99
5	114.05	57.02	76.03	570.23	285.12	380.16	1,140.47	570.23	760.31
6	142.61	71.31	95.07	713.05	356.53	475.37	1,426.10	713.50	950.74
7	173.46	86.73	115.64	867.30	433.65	578.20	1,734.59	867.30	1,156.40
8	206.78	103.39	137.85	1,033.88	516.94	689.25	2,067.76	1,033.88	1,378.51
9	242.76	121.38	161.84	1,213.79	606.90	809.19	2,427.58	1,213.79	1,618.39
10	281.62	140.81	187.75	1,408.09	704.05	938.73	2,816.19	1,408.09	1,877.46
11	323.59	161.79	215.73	1,617.94	808.97	1,078.63	3,235.88	1,617.94	2,157.26
12	368.92	184.46	245.94	1,844.58	922.29	1,229.72	3,689.15	1,844.58	2,459.44
13	417.87	208.93	278.58	2,089.34	1,044.67	1,392.90	4,178.69	2,089.34	2,785.79
14	470.74	235.37	313.83	2,353.69	1,176.85	1,569.13	4,707.38	2,353.69	3,138.25
15	527.84	263.92	351.89	2,639.19	1,319.59	1,759.46	5,278.37	2,639.19	3,518.91

Sources: Vanguard and AMDI
 Notes: 1. Expenses on initial investment over various time periods, assuming an eight percent annual rate of return and redemption at the end of the period.

Panel 3 brings together trading costs and expense ratios to develop points where cost advantages shift. Total costs are estimated as two times the purchase cost plus expenses. The high cost of trading the ETFs uses up much of their expense advantages. An online investor with \$10,000 to invest must hold the ETFs into the sixth year, while a broker-directed investor does not achieve an ETF advantage until the ninth year. For the larger \$50,000 and \$100,000 investments, the lower cost advantage to the ETFs occurs in the second year for the SPDR and the third year for iShares when trading online. SPDR's lower bid/ask spread results in a cost advantage versus iShares, offsetting the iShares' lower expenses. Using a broker-assisted trade, the larger investments reduce the index fund advantage, but it still takes more than three years to move the cost advantage to the ETF.

How does the cost relationship play for the small dollar-cost-averaging investor? Using the same cost structure as the one-time investments reported in Table 2, and investing \$500 per quarter, the index funds total cost advantage continued for over 200 quarters. The zero transaction cost advantage of the index fund is magnified for the dollar-cost-averaging investor. Incurring frequent commissions and bid/ask spreads cannot be overcome by relatively small differences in expense ratios.

TABLE 2 / PANEL 3

Total Costs¹

		\$10,000 Investment			\$50,000 Investment			\$100,000 Investment			
Annual Expense		0.0018	0.0009	0.0012	0.0018	0.0009	0.0012	0.0018	0.0009	0.0012	
Holding Period	Online Trade		Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR
	1	\$19.44	\$68.22	\$57.46	\$97.20	\$181.86	\$127.18	\$194.40	\$323.94	\$218.34	
2	40.44	78.72	71.46	202.18	234.35	*197.16	404.35	428.92	*357.31		
3	63.11	90.06	86.57	315.55	*291.04	*272.75	631.10	*542.29	*508.47		
4	87.60	102.30	102.90	437.99	*352.26	*354.38	875.99	*664.73	*671.73		
5	114.05	115.52	120.53	570.23	*418.38	*442.54	1,140.47	*796.97	*848.05		
6	142.61	*129.81	*139.57	713.05	*489.79	*537.75	1,426.10	*939.79	*1,038.48		
7	173.46	*145.23	*160.14	867.30	*566.91	*640.58	1,734.59	*1,094.04	*1,244.14		
8	206.78	*161.89	*182.35	1,033.88	*650.20	*751.63	2,067.76	*1,260.62	*1,466.25		
9	242.76	*179.88	*206.34	1,213.79	*740.16	*871.57	2,427.58	*1,440.53	*1,706.13		
10	281.62	*199.31	*232.25	1,408.09	*837.31	*1,001.11	2,816.19	*1,634.83	*1,965.20		
11	323.59	*220.29	*260.23	1,617.94	*942.23	*1,141.01	3,235.88	*1,844.68	*2,245.00		
12	368.92	*242.96	*290.44	1,844.58	*1,055.55	*1,292.10	3,689.15	*2,071.32	*2,547.18		
13	417.87	*267.43	*323.08	2,089.34	*1,177.93	*1,455.28	4,178.69	*2,316.08	*2,873.53		
14	470.74	*293.87	*358.33	2,353.69	*1,310.11	*1,631.51	4,707.38	*2,580.43	*3,225.99		
15	527.84	*322.42	*396.39	2,639.19	*1,452.85	*1,821.84	5,278.37	*2,865.93	*3,606.65		

*Advantage ETF. The holding period required for the ETF to offset Index 500's zero transaction cost varies with the investment size. Lower cost advantage to ETFs begin in Year 6 for a \$10,000 investment and in Year 2 for larger investments.

		\$10,000 Investment			\$50,000 Investment			\$100,000 Investment			
Annual Expense		0.0018	0.0009	0.0012	0.0018	0.0009	0.0012	0.0018	0.0009	0.0012	
Holding Period	Broker Trade		Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR	Vanguard Index 500 Fund	iShares S&P Index Fund	SPDR
	1	\$19.44	\$122.66	\$111.90	\$97.20	\$254.24	\$199.56	\$194.40	\$418.52	\$309.14	
2	40.44	133.16	125.90	202.18	359.22	269.54	404.35	523.50	449.11		
3	63.11	144.50	141.01	315.55	420.10	345.13	631.10	636.87	600.27		
4	87.60	156.74	157.34	437.99	485.86	*426.76	875.99	*759.31	*763.53		
5	114.05	169.96	174.97	570.23	*556.88	*514.92	1,140.47	*891.55	*939.85		
6	142.61	184.25	194.01	713.05	*633.58	*610.13	1,426.10	*1,034.37	*1,130.28		
7	173.46	199.67	214.58	867.30	*716.41	*712.96	1,734.59	*1,188.62	*1,335.94		
8	206.78	216.33	236.79	1,033.88	*805.87	*824.01	2,067.76	*1,355.20	*1,558.05		
9	242.76	*234.32	260.78	1,213.79	*902.49	*943.95	2,427.58	*1,535.11	*1,797.93		
10	281.62	*253.75	286.69	1,408.09	*1,006.84	*1,073.49	2,816.19	*1,729.41	*2,057.00		
11	323.59	*274.73	*314.67	1,617.94	*1,119.53	*1,213.39	3,235.88	*1,939.26	*2,336.80		
12	368.92	*297.40	*344.88	1,844.58	*1,241.25	*1,364.48	3,689.15	*2,165.90	*2,638.98		
13	417.87	*321.87	*377.52	2,089.34	*1,372.69	*1,527.66	4,178.69	*2,410.66	*2,965.33		
14	470.74	*348.31	*412.77	2,353.69	*1,514.66	*1,703.89	4,707.38	*2,675.01	*3,317.79		
15	527.84	*376.86	*450.38	2,639.19	*1,667.98	*1,894.22	5,278.37	*2,960.51	*3,698.45		

*Advantage ETF. Using full service broker trades, Vanguard Index 500 has a cost advantage for a longer holding period. For the smaller \$10,000 investment, the index fund's transaction cost advantage is more than eight years. For larger investment the index fund advantage is reduced but is still more than 3 years.

Sources: Vanguard and AMD.

Note: 1. Total cost used is two times purchase cost plus expenses.

Looking beyond diversified index funds, there are few sector and international index funds to compare with ETFs. Most sector funds and closed-end country funds are actively managed. ETFs have a significant cost advantage relative to actively managed sector funds, most international funds and closed-end country funds.

Critics of ETFs are concerned that individual investors could be hurt because ETFs can trade at a premium or discount to their net asset value (NAV). They often describe the scenario where the small investor unknowingly buys at a premium and sells at a discount. Generally the gap from NAV is small to non-existent in free markets where arbitrageurs can operate.

The main characteristic of ETFs that limits premiums and discounts is their creation/redemption feature. If ETF shares are trading at a premium to fair market value, market makers can assemble a basket of securities at fair prices and then deliver those securities in return for ETF fund shares trading at a premium. If instead, ETF shares trade at a discount, market makers would purchase ETF shares at discount prices and then redeem them for the underlying index shares, which then can be sold at their fair market value.

Market makers, specialists and other arbitrageurs can trade the ETF against the underlying shares until fair prices are once again established. This arbitrage mechanism protects the investor's ability to transact at fair prices on the open market. The AMEX Web site provides information to track and evaluate the premium/discount issue. The contract specification sheet for each ETF displays; in addition to the trading symbols; symbols that allow the opportunity to track the intra-day value of the underlying index, its NAV (which is computed each business day at 4:00 p.m. Eastern time), shares outstanding, accrued dividends and estimated cash payment amounts. Using the symbol list and amex.com or any quote service, you can evaluate the tracking success of any ETF.

Salomon Smith Barney Closed-End Funds Research group recently tested how well the arbitrage process works. They took random snapshots of U.S. ETFs for the month of September 2000. Analysts compared the bid price, ask price and mid-point between bid/ask with the intra-day value. The study concluded that the arbitrage process is working and that in 91 percent of the sample, ETF intra-day values were between the bid and ask prices. On average, ETFs had a bid price that was at a .167 percent discount to intra-day net asset values. On occasion, ETFs experienced real-time discounts of over 1 percent to NAV and premiums of over .5 percent. Tracking errors may be greater for ETFs with low trading volume, such as out-of-favor sectors and foreign markets. In the case of foreign ETFs, arbitrage may be more difficult with the ETF and the underlying stocks trading in different markets as well as different time zones. (Source: www.indexfunds.com)

The price-to-NAV spread and index tracking are not an issue for HOLDRS. HOLDRS may be exchanged for the underlying stocks for a cancellation fee of up to \$10 per round lot of 100 HOLDRS. Cancellation is not a taxable event. Once the HOLDRS have been cancelled, investors can hold or sell the component stocks to implement an investment strategy.

A final comment on expenses and fees: Many mutual fund families charge significant loads and fees in addition to their expense ratios. To limit the activity of active traders, fund companies have either added redemption fees or restricted trading in their index or sector funds to mail requests. These additional "costs" vary by fund family and often by individual fund. These added costs or trading restrictions might create a cost advantage in favor of ETFs or HOLDRS.

Taxes

Investors in taxable mutual fund accounts are becoming more knowledgeable about the impact of taxes on mutual fund performance. Morningstar has added a tax analysis section to its online mutual fund Quicktake Report. This report contains both pre- and post-tax returns, an after-tax ranking within fund category and Morningstar's estimate of the tax efficiency of each fund. Similar Quicktake Reports are being developed for ETFs as well.

Mutual funds do not pay taxes themselves; the tax code requires that funds distribute dividends and long- and short-term capital gains equally on all shares outstanding without regard to investor holding periods. With funds closing their tax books at the end of October, how bad is this tax season going to be? The Wall Street Journal reported that as of August 25, 2000, there had been 19 distributions by funds that had exceeded 20 percent of their share price compared with just one 20 percent-plus payout at the same point in 1999. The bulk of distributions are a result of funds selling previous years' winners, generating capital gains. The U.S. retail index market has over \$300 billion invested (prior to September and October 2000 sell-offs). Fear of massive shifts from these funds due to an extended market correction hangs over the fund industry. If a market correction leads to the realization of the gains of the ten-year bull market in equities, a significant tax event would affect taxable investors, on top of their market losses. A review of Vanguard's 2000 final year-end fund distributions indicates that most of their short- and long-term capital gains were in actively managed funds such as Explorer and Health Care. Index fund gains were concentrated in the Extended Market Index and the Small-Cap Index funds. (Source: www.vanguard.com.) Taxable investors in these funds did indeed find a significant tax event on top of their market losses.

Index mutual funds have been considered to be tax-friendly investments. Index funds, however, still must trade cash contributions and liquidate investments due to redemption requests. In addition, changes in an index composition will result in more trading and more taxable distributions for investors holding index funds in taxable accounts. Index funds based on narrow sectors and those that follow small-cap and mid-cap indexes will be particularly hard hit.

Exchange-traded funds and exchange-traded HOLDERS are advertised to be more taxpayer-friendly than traditional mutual funds. ETFs, like index mutual funds, aim to match the performance of a stock market index. A key difference is that ETFs don't issue or redeem new fund shares to meet the buying and selling demand of individual investors. Because ETFs trade on an exchange, most shareholder activity is the matching of buyers and sellers of the ETF as opposed to trading activity in the underlying portfolio. This design ensures that an ETF portfolio manager would not have to sell shares to meet a wave of redemption requests and, as a result, trigger large capital gains distributions for the remaining investors.

ETF shares are issued to and redeemed from institutional investors "in kind," meaning institutions deliver or receive baskets of stocks in exchange for ETF shares. Institutions receiving these shares are indifferent as to the cost basis of the individual shares because their cost basis is the price they paid when they created the ETF. This indifference lets the ETF sponsor select the shares with the lowest basis (potentially the largest capital gain) to meet the redemption. Redeeming the lowest cost-basis shares first results in a step-up of basis, which results in continued deferral of capital gains. This process should reduce the realized capital gains for the ETF as a result of changes in the benchmark portfolio. Shares distributed in kind are not a taxable event for the ETF. Managers can use the in-kind redemption to change the compositions of the ETF without triggering a tax liability.

As the number and size of ETFs increases, some investors question how the IRS will respond to the above tax strategy. While there is no pending IRS ruling related to ETF use of the lowest cost basis during an in-kind redemption, it is difficult to predict future Internal Revenue Service interest. If there were to be an unfavorable IRS ruling, then the tax efficiency of ETFs would be reduced. Table 3 illustrates the five-year capital gains tax efficiency for nine S&P 500-index mutual funds and SPDRs. The sample was limited to funds with a minimum five-year history and a downloadable prospectus on the Internet. The S&P 500 is the only fund and ETF category with multi-year data on both mutual funds and ETFs.

Panel 1 of Table 3 reports the dollar capital gains for the last five years. Strict comparability among funds and SPDRs is an issue, due to the various year-end closing dates for the cases. Four funds close in December, while the others close in April, June, August and September. The lack of a common close makes for difficult interpretations of mutual fund financial information. Panel 2 of Table 3 scales the capital gains by the beginning period net asset value to eliminate the effects of fund size on the analysis.

TABLE 3					
Tax Efficiency: Index Mutual Funds vs. SPDR					
Panel 1: Capital Gains Distributions in Dollars Per Share					
	1999	1998	1997	1996	1995
Black Rock EQTY Index (YE 9/30)	0.06	0.04	0.68	1.70	0.12
Deutsche EQTY 500 Index (YE 12/31)	2.33	2.54	4.73	0.84	0.42
Fidelity Spartan Index 500 (YE 4/30)	0.70	1.68	1.38	1.05	0.37
Main Stay EQTY Index Fund (YE 12/31)	0.99	0.43	0.41	0.82	0.27
Munder Index 500 (YE 6/39)	0.24	1.99	0.27	0.72	0.00
State Street S&P 500 Index (YE 8/31)	2.42	0.71	0.67	0.39	0.03
One Group EQTY Index Fund (YE 6/30)	0.92	0.63	0.15	0.52	0.16
T Rowe Price EQTY Index 500 (YE 12/31)	0.31	0.09	0.25	0.38	0.40
Vanguard 500 Index Fund (YE 12/31)	0.995	0.42	0.59	0.25	0.13
SPDR (YE 9/30)	0.00	0.00	0.00	0.12	0.01
Panel 2: Capital Gains as a Percentage of Net Assets					
	1999	1998	1997	1996	1995
Black Rock EQTY Index	.003	.002	.049	.125	.011
Deutsche EQTY 500 Index	.015	.020	.048	.010	.007
Fidelity Spartan Index 500	.008	.021	.024	.022	.010
Main Stay EQTY Index Fund	.025	.014	.018	.043	.019
Munder Index 500	.010	.095	.017	.052	.000
State Street S&P 500 Index	.125	.037	.046	.030	.003
One Group EQTY Index Fund	.034	.029	.009	.037	.014
T Rowe Price EQTY Index 500	.000	.003	.012	.020	.023
Vanguard 500 Index Fund	.009	.005	.009	.004	.003
SPDR	.000	.000	.000	.002	.000
Index Fund Average	.024	.025	.026	.038	.01
Standard Deviation	.041	.029	.017	.036	.008
Source: Fund Family Prospectus					

How good is the tax efficiency of these ten investments? "During 1999, the fund industry distributed over \$200 billion in capital gains with many individual funds paying more than 5 percent of assets in realized gains." (Strategic Insight Overview, May 2000) The nine index funds are very efficient, with Vanguard Index 500 leading the way with no capital gains distribution greater than .01 percent of net assets. Fidelity Spartan Index 500 and T. Rowe Price Index Fund have kept distributions to less than .025 percent of net assets. The SPDR ETF was the most tax efficient, with no reported capital gains distributions in four of the five years. How good was the tax efficiency? Very good.

HOLDRS offer exchange trading and in-kind redemption similar to ETFs. In addition, the stock ownership feature creates more powerful tax advantages. HOLDRS don't exchange stocks to match an index or to cap any big winners to satisfy concentration limits. The only time HOLDRS change is in response to special cases such as mergers and acquisitions or any other "reconstitution events." The buy-and-hold feature of HOLDRS limits taxes due to portfolio turnover. Embedded capital gains are a potential tax liability for index fund investors. Morningstar reports potential capital gains exposure in the tax analysis section of their Quicktake Report. For example, as of September 30, 2000, Vanguard Index 500 (VFINX) has a 39 percent potential exposure. There is no embedded capital gains exposure with HOLDRS. Investors owe taxes only on gains that occur after they buy their shares. With HOLDRS, investors have greater control of when and how to realize capital gains and losses. They can buy or sell their entire HOLDRS to realize overall gains and losses, or exchange the HOLDRS for the underlying stocks (a tax-free event) and then realize gains and losses in the individual stocks. Losses may be taken on stocks that have declined. Gains on winners can be deferred indefinitely. HOLDRS do not cap any big winners.

Sources of Information for Investors

As the number of ETFs has dramatically increased this year, important investor information is still hard to find. Traditional providers of financial information have been slow to come on board. Useful third quarter, 2000 information is available on the Web sites described in this paper. Performance tracking data is readily available. Data on ETFs that track established indexes can be found on the Web and the financial press. On the Web, the first place to look is the AMEX site. With summary information on each ETF and links to ETF and HOLDRS home pages, the AMEX provides the best starting point for ETF information. You can request a quote, scan historical performance or order a prospectus. Other fund-like information, useful for comparing ETFs and ETFs with mutual funds, is hard to find. With the recent growth of sector ETFs, it is often difficult to find information to compare alternatives. Wiesenberger has created a separate ETF database, "Exchange-Traded Funds Weekly Review," which it has integrated into its investment products. Morningstar and Lipper are online with ETF coverage as well. Indexfunds.com has specialized in information about indexes and index mutual funds and has added a new section called the ETF Zone, which provides timely information on all ETFs. Recent stories include details about the first actively traded ETFs trading in Germany (11/21/2000), iShares S&P Global 100; the first ETF to list on the NYSE (12/08/2000), MSCI to adjust all of its indexes for free-float (12/10/2000) and Barclays' plan to launch a U.K.-based FTSE ExUK 100 ETF (12/13/2000).

Conclusions

In comparing index mutual funds and ETFs, each investment offers some attractive characteristics that may appeal to stock and mutual fund investors. ETFs and HOLDRS provide significant trading flexibility. As listed securities on major exchanges, they are easily bought and sold throughout the trading day, allow for the creation of leveraged positions using margin accounts and can be sold short without an uptick.

These trading advantages lead to a disadvantage. Traders incur significant transaction costs with each trade, which limits ETF attractiveness for smaller investors who frequently invest a small dollar amount over time. The expense ratio comparisons do not clearly favor mutual funds or ETFs.

Diversified, low-cost index funds have competitive expense ratios, while ETFs and HOLDRS have an expense advantage versus sector and international country funds. Combining trading cost and operating expense results in cost advantages for diversified index funds in most cases, except for large dollar amounts or long holding periods. The structure of ETF and HOLDRS creation and redemption's provides for significant tax efficiency. No longer would an investor pay capital gains taxes created by trading within the fund.

The arbitrage process that keeps ETF prices in line with asset values has only been tested in the United States during bull markets. Internationally, large discounts from NAV have been observed in times of market turmoil. Significant questions remain. How will the ETF arbitrage process function in a protracted bear market? Will the institutional investors and market makers continue to step up to create and redeem shares? Will ETF prices track NAVs, or will we find sharp discounts to NAV like we see in closed-end funds?

Based on their advantages and disadvantages, who are or could be ETF investors? Currently, the primary ETF investor is an institutional investor or market maker using ETFs to take a low cost position in a market segment, sector or country. Some day traders have moved from restricted trading mutual funds to an ETF. Higher net-worth investors taking larger positions find segment or sector ETFs and HOLDRS attractive ways to generate exposure. Individual investors looking for technology exposure find HOLDRS and the Nasdaq-100 (QQQ) attractive ways to fine-tune their tech exposure.

Who should not be an ETF investor? There appears to be little or no ETF advantage for tax-deferred, long-term, retirement investors. Tax issues are of little concern for these investors. They conduct little if any trading. Many defined contribution plans do not allow brokerage accounts or active trading within the plan. Existing taxable investors will find that it could be very costly to convert a taxable mutual fund with significant gains to an ETF. Taxable investors should only consider new money for investing in an ETF.

Finally, there is the question of where the financial advisor fits in with ETFs? The total cost structure of ETFs does not appear to create many opportunities for their passively investing clients. Accounts with large defined contribution holdings and big IRA rollovers are not likely candidates for a shift to an ETF. While 2000 has been a year of explosive ETF and HOLDRS growth, most of the money invested in ETFs is concentrated in a few funds (SPDRs, Nasdaq-100, iShares S&P 500 and DIAMONDS). These funds have proved to be an attractive alternative to index mutual funds for the active trader. Trading, tax advantages and hedging features of ETFs may attract those advisors and planners who have more aggressive clients. Advisors may also find that some ETFs will assist in their asset allocation decisions.

Investment advisors, financial planners and investors realize that asset allocation, not security selection, drives long-term investment success. Asset allocation has been difficult for smaller investors due to the costs and assets required to develop a diversified portfolio. ETFs and HOLDRS provide investment alternatives to assist in the development of a diversified, asset allocation strategy using broad market segments, sector and size segments, and style segments.

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Endnotes

In the late 1980s, Leland, O' Brien, Rubenstein Associates (LOR) of portfolio insurance fame developed a hedge product for large investors called the "SuperTrust." In 1990, LOR petitioned the Securities and Exchange Commission (SEC) to allow the creation of an S&P 500 index exchange-traded fund as the underlying security and named the investment the "Index Trust SuperUnit." After considerable delay at the SEC, LOR introduced the SuperTrust and the SuperUnit in 1993. The SuperTrust was too complex for the marketplace and did not attract the anticipated large-firm support. At the same time there was a declining interest in all hedge products. The SuperTrust was terminated in 1996. (Source: indexfunds.com, "Exchange Traded Funds: A White Paper," by J.L. Novakoff.)

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