



## **CME® E-mini® Stock Index Futures vs. Exchange Traded Funds**

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Two of the most significant financial products to debut in recent years are CME E-mini® stock index futures and Exchange Traded Funds (ETFs). Both of these products are based on major stock indexes representing broad market movements, and both allow an investor to capitalize on the anticipated movement in various stock market indexes. Both are also traded on major exchanges subject to regulatory oversight by U.S. government agencies and a full array of financial safeguards.

**CME E-mini stock index futures and Exchange Traded Funds (ETFs) allow investors to trade based on the value of popular stock indexes.**

Still, there are some important differences between the two investment approaches. Let's compare and contrast the advantages and disadvantages of these investment vehicles, focusing in particular on the CME E-mini futures and ETFs associated with two of the most significant and widely referenced domestic stock indexes: the venerable Standard & Poor's 500® (S&P 500®) Index and the high-tech NASDAQ-100® Index.

**Basic Concepts** – Before we discuss those differences, however, let’s review a few basic concepts associated with CME E-mini stock index futures and Exchange Traded Funds.

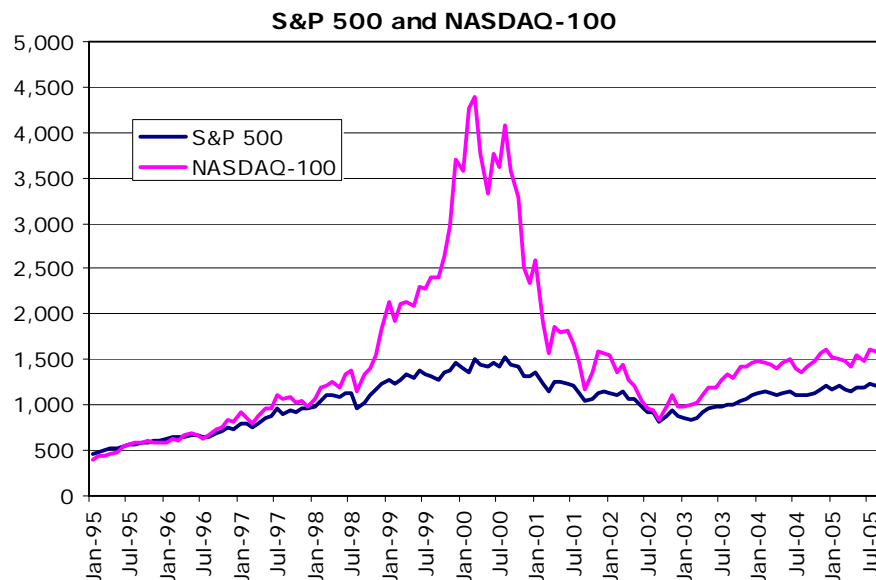
**CME E-mini stock index futures are 1/5<sup>th</sup> sized versions of standard CME stock index futures and trade exclusively on the CME Globex electronic trading platform.**

CME E-mini S&P 500 and CME E-mini NASDAQ-100 stock index futures are one-fifth-sized versions of the standard stock index futures offered on CME. Like other CME stock index futures, they are settled in cash to the spot value of the index. CME E-mini contracts are offered exclusively on the CME Globex<sup>®</sup> electronic trading platform.

As of October 18, 2005, the value represented by one CME E-mini S&P 500 futures contract was \$59,070, calculated as the contract multiplier of \$50 x the futures price of 1,181.40 on that date. On the same date, the value represented by one CME E-mini NASDAQ-100 contract was \$30,940, calculated as the contract multiplier of \$20 x futures price of 1,547.00.

**SPDRs are ETFs based on the S&P 500. QQQs are ETFs based on the NASDAQ-100. These investment vehicles trade much like mutual funds, but can be traded throughout the day not just at the close.**

An ETF represents ownership in a unit investment trust patterned after an underlying index, and is a mutual fund that is traded much like any other fund. Unlike most mutual funds, however, but akin to futures contracts, ETFs can be bought or sold throughout the trading day, not just at the closing price of the day. ETFs generate dividends but are also subject to annual management fees, in addition to the commissions and other transaction costs associated with their purchase or sale. ETFs on both the S&P 500 and the NASDAQ-100 are offered on various stock exchanges including the AMEX, NASDAQ<sup>®</sup> and the NYSE.



Standard & Poor’s 500 Depositary Receipts or “SPDRs” are traded at approximately 1/10<sup>th</sup> the value of the Index. Thus, a single SPDR was quoted at \$117.82, or approximately 1/10<sup>th</sup> the value of the S&P 500 at 1,178.14, on October 18, 2005. On the same day, the NASDAQ-100 Tracking Stock, commonly referred to by its ticker symbol “QQQQ,”

traded at approximately 1/40<sup>th</sup> the value of the Index. Thus, a single QQQQ was quoted at \$37.91, approximately 1/40<sup>th</sup> the value of the NASDAQ-100 at 1,538.43.

As indicated above, CME E-mini futures are settled in cash vs. the value of the underlying index on the final settlement day. ETFs represent ownership in unit trusts designed to parallel the underlying index. As such, both futures and ETFs closely parallel movement in the underlying stock index.

**Rapid Growth** – Both CME E-mini stock index futures and ETFs have experienced remarkable growth in the relatively short periods that they have been available. The first ETFs were introduced in the early 1990s, but it took until the mid- to late-90s to achieve a good deal of market penetration. SPDRs now trade on average \$7.5 billion daily while QQQQs post some \$3.2 billion. CME E-mini stock index futures debuted in 1997 and have become the fastest-growing futures products in history. The dollar value of average daily trading volume is a remarkable \$47.4 billion for CME E-mini S&P futures, while CME E-mini NASDAQ-100 futures post \$9.1 billion.

The growth story in both CME E-mini stock index futures and ETFs has been quite compelling.

Thus, one might safely conclude that both product lines are quite attractive. Still, there are distinctions that can be considered significant for the investing public, as discussed below.

**Trading Flexibility** – ETFs may be attractive to the small investor in that they are sized at small values. For example, a SPDR was recently quoted at \$117.82, while a CME E-mini S&P 500 futures contract had a much higher nominal (cash equivalent) value of \$59,070.

It takes 500 SPDRs to equate to the value of one CME E-mini S&P 500 futures contract. It takes 800 QQQQs to equate to the value of one CME E-mini NASDAQ-100 futures contract.

To illustrate this point, consider that it would require 500 SPDRs to equate with the value of one CME E-mini S&P 500 contract, and 800 QQQQs to equate with the value of one CME E-mini NASDAQ-100 contract. Clearly, ETFs permit one to trade in smaller unit sizes with greater flexibility than do CME E-mini futures.

**Leverage** – The capital requirements or margin rules are applied very differently with ETFs and CME E-mini futures. Like other equity securities, ETFs are subject to the Fed's Regulation T margin requirements. This means that one must margin a security holding with an initial minimum deposit of 50% of the purchase price, the balance of which may be borrowed at interest. When a customer shorts an ETF, he must put up 50% of the sale price and retain the short sale proceeds in his account.

CME E-mini futures offer considerable leverage as the performance bond or margin requirements may be 6-12% of the notional contract value. ETFs are subject to Reg T margin requirements, i.e., 50% margins.

By contrast, futures traders put up a margin deposit or performance bond to secure the transaction, not the amount implied by the nominal value. The performance bond or margin requirements associated with CME E-

mini futures are designed to reflect the maximum anticipated risk associated with the position from day-to-day. While the Exchange minimum margin requirements are subject to adjustment, they currently run at \$3,938 or ~6.7% of the contract value for CME E-mini S&P 500 futures and at \$3,750 or ~12.1% for CME E-mini NASDAQ-100 futures.

Consider the implications of such margin on the purchase of a CME E-mini S&P futures contract relative to the purchase of 500 SPDRs. Assume that an investor buys one futures contract at a price of 1,180, which equates to a value of \$59,000, on margin of \$3,938. The market rallies by 40 index points to 1,220 and the investor sells the contract for a profit of \$2,000 – a profit of 46.4% on the initial margin of \$4,313 (not counting fees and commissions).

<b>Buy one CME E-mini S&amp;P futures @ 1,180</b>	\$59,000 (= \$50 x 1,180)
<b>Sell @ 1,220</b>	\$61,000 (= \$50 x 1,220)
<b>Profit (Loss)</b>	\$2,000 (= \$61,000 - \$59,000)
<b>Initial Margin</b>	\$3,938
<b>Percentage Profit</b>	<u>50.8%</u> (= \$2,000 ÷ \$3,938)

Now, assume that the investor buys the rough equivalent of that CME E-mini contract by purchasing 500 SPDRs at a price of \$118, subsequently selling at \$122, for a profit of \$2,000. Per Reg T, the initial margin requirement is 50% of the \$59,000 purchase price, or \$29,500, which his translates into a profit of 6.8% on initial margin. And, of course, the investor still owes interest to his broker.

<b>Buy 500 SPDRs @ \$118.00</b>	\$59,000 (= 500 x \$118.00)
<b>Sell @ \$122.00</b>	\$61,000 (= 500 x \$122.00)
<b>Profit (Loss)</b>	\$2,000 (= \$61,000 - \$59,000)
<b>Initial Margin</b>	\$29,500 (= 50% of \$59,000)
<b>Percentage Profit</b>	<u>6.8%</u> (= \$2,000 ÷ \$29,500)

**CME E-mini futures are openly competitive while ETFs traded on the AMEX are traded through specialists.**

CME E-mini futures provide the opportunity to leverage one's capital to a greater extent than ETFs. Of course, care must be taken when applying such leverage to control one's risk exposure and avoid overextending one's financial resources. Leverage cuts both ways. It can be used to enhance one's percentage returns when a trade becomes profitable, but likewise increases one's percentage losses in unfavorable market circumstances.

**Open Competition vs. Specialist System** – CME E-mini futures are traded on the CME Globex electronic trading platform. The system provides for fast, efficient order entry and reporting of resulting fills to the customer without favoritism or regard to the identity of the customer.

ETFs were pioneered on the floor of the American Stock Exchange (AMEX). But the popularity of the concept was such that other

exchanges, including the New York Stock Exchange (NYSE) and Chicago Stock Exchange (CHX), took steps to offer a trading forum for ETFs. Further, many Electronic Communication Networks (ECNs) offer trading in ETFs through their electronic trading platforms.

On a traditional stock exchange such as the AMEX, trade flows through the specialist's station. In other words, there is a human hand involved, which is not the case with CME E-mini products.

**Trading Costs** – The costs associated with trading either CME E-mini stock index futures or ETFs represent a rather small proportion of the value of the instruments, or the potential profit, or possible loss, associated with such trading activities. Still, active traders should be sensitive to these costs because they have a way of adding up over time and over a sizable volume of trades.

The most obvious cost associated with trading either CME E-mini futures or ETFs are broker commissions that accrue to the broker, which vary widely in futures and security markets, and range from deep discount to full-service brokerage firms. Deep discounters often require investors to operate completely on-line with little or no support, while full-service brokers may take on the role of personal financial consultants. However, commissions generally represent a very small proportion of the actual cost of trading.

The major cost of doing business is implied in the bid/offer spread, to the extent that a market order to buy may be filled at the prevailing offer, while a market order to sell may be filled at the prevailing bid.

ETFs are distinguished from futures in that they entitle the holder to the receipt of dividends. (Of course, dividends tend to be quite small in the context of high-tech stocks as represented in the NASDAQ-100.) But futures prices will trade to levels that reflect the value of the underlying stock index, plus finance charges, less anticipated dividends. This is referred to as “cost of carry.” Because futures prices tend to be discounted to reflect the lack of dividend receipts, there is no reason to believe that ETFs are superior in this respect.

ETFs are charged ordinary expenses, or a management fee, by the firm that administers the underlying unit investment trust. SPDRs entail a management fee of 10 basis points (0.10%), and QQQQs a fee of 20 basis points (0.18%).

While futures are not subject to annual fees as such, there is an implicit cost in maintaining a futures position for an extended period of time. Typically, futures are most actively traded in the lead or most current contract month, *e.g.*, in November 2005, most trading volume and open interest is in the December 2005 contract. But traders will typically

**A variety of factors affect the cost of trading including brokerage commissions, market impact or the bid/offer spread, management fees associated with ETFs, the cost of rolling futures to maintain a position.**

**The costs of trading CME E-mini futures compare favorably with the costs associated with trading ETFs.**

“roll” forward their positions by liquidating December futures in favor of establishing a position in March futures as the December expiration approaches. The costs associated with the roll are reflected in the spread between the nearby and deferred futures contract and in any additional commissions associated with the transaction.

Goldman Sachs recently tallied up the costs associated with CME E-mini futures and ETFs, concluding that the cost of holding a \$100 million position for one year in CME E-mini S&P 500 futures totaled 21.1 basis points annually vs. 27.5 basis points for SPDRs. The advantage associated with CME E-mini futures was even greater in NASDAQ-100 markets, where a \$100 million position in CME E-mini NASDAQ-100 cost 26.2 basis points to maintain vs. 59.5 basis points in QQQs.<sup>1</sup>

**Estimated Cost of Holding a Long \$100 Million Position  
for One Year in the S&P 500 and Nasdaq-100 Products  
(Expressed in Basis Points)**

	CME E-mini S&P 500 Futures	S&P 500 Depository Receipts (SPDRs)	CME E-mini NASDAQ- 100 Futures	NASDAQ- 100 Shares (QQQs)
Commission	0.8	2.8	1.6	8.8
One-Way Market Impact/Transaction Cost	6.0	6.0	15.0	12.0
<b>Total Entry Cost</b>	6.8	8.8	16.6	20.8
ETF Mgt Fee/Futures Roll Costs	2.5	10.0	-16.8	18.0
Additional Commission from Roll	5.0	0.0	9.8	0.0
<b>Total Holding Cost</b>	7.5	10.0	-7.0	18.0
Commission	0.8	2.8	1.6	8.8
One-Way Market Impact/Transaction Cost	6.0	6.0	15.0	12.0
<b>Total Exit Cost</b>	6.8	8.8	16.6	20.8
<b>Total Cost for 1 Year</b>	21.1	27.5	26.2	59.5

Source: “Equity Derivatives Strategy, Futures and Swaps,”  
Goldman Sachs, July 26, 2004

Calyon (formerly Carr) Futures conducted a similar study and tallied up the relative cost savings associated with trading various quantities of CME E-mini NASDAQ-100 futures over the course of a year vs. the cost of trading QQQs. The savings were considerable as detailed in the table below.<sup>2</sup>

<sup>1</sup> “Equity Derivatives Strategy, Futures and Swaps,” Goldman Sachs, July 26, 2004

<sup>2</sup> “E-Mini Futures Can Reduce the Cost of Trading Equities,” Carr Futures Research Note, January 20, 2004

**Potential Monthly Savings Using  
CME E-mini NASDAQ-100 Futures Instead of QQQQ ETFs**

QQQQ shares traded per month	Round-Turn Trading Cost per QQQQ Share			
	\$0.04	\$0.06	\$0.08	\$0.10
100,000	\$1,750	\$3,750	\$5,750	\$7,750
500,000	\$8,750	\$18,750	\$28,750	\$38,750
1,000,000	\$17,500	\$37,500	\$57,500	\$77,500
5,000,000	\$87,500	\$187,500	\$287,500	\$387,500

Source: "E-Mini Futures Can Reduce the Cost of Trading Equities,"  
Carr Futures Research Note, January 20, 2004

***Holding Period Considerations*** – A trader considering a long-term “buy and hold” strategy must consider the perpetual nature of an ETF vs. the somewhat more transitory nature of a futures contract. Futures contracts are traded for cash settlement on a quarterly basis. And while one might trade futures for a deferred delivery month, the nearby futures contracts are typically the most liquid and, therefore, the trading vehicle of choice.

But because futures expire, they must be “rolled over” in order to maintain a “buy and hold” strategy. In other words, the expiring contract must be liquidated and the position reestablished in a deferred futures month, at least on a quarterly basis. This implies certain trading costs, such as commissions and bid/offer spreads, as discussed above. A position in ETFs, by contrast, can be held indefinitely with the management fees representing the only costs.

We note, however, that the average holding period in SPDRs is currently only 24 days. The average holding period in QQQQs is only five days. Thus, the advantage that ETFs offer in this respect may be more theoretical than practical.

Finally, when adding up the respective advantages and disadvantages, the value implied by average daily trading volume in CME E-mini futures tends to be some multiple of the value associated with ETFs – specifically, \$47.4 billion in CME E-mini S&P 500 futures vs. \$7.5 billion in SPDRs. While both investment vehicles have unique merits, we suggest that this figure is most telling.

**ETFs are perpetual while futures maintain an element of “futures” and must periodically be rolled over.**

### Characteristics of CME E-mini Futures vs. ETFs

	<b>CME E-mini S&amp;P 500 Futures</b>	<b>S&amp;P 500 Depository Receipts (SPDRs)</b>	<b>CME E-mini NASDAQ-100 Futures</b>	<b>NASDAQ-100 Shares (QQQs)</b>
<b>Underlying Index</b>	S&P 500	S&P 500	NASDAQ-100	NASDAQ-100
<b>Contract Size</b>	\$50 x Index	1/10 <sup>th</sup> of Index	\$20 x Index	1/40 <sup>th</sup> of Index
<b>Dollar Value *</b>	\$59,070 (One CME E-mini Futures = 500 SPDRs)	\$117.82	\$30,940 (One CME E-mini Futures = 800 QQQs)	\$37.91
<b>Dollar Value of Average Daily Volume **</b>	\$47.4 billion **	\$7.5 billion ***	\$9.1 billion **	\$3.2 billion ***
<b>Exchange</b>	CME	AMEX, NYSE, CHX, ECNs	CME	AMEX, NYSE, CHX, ECNs
<b>Trading Platform</b>	CME Globex electronic trading platform	Traded thru specialists - Spear Leeds is AMEX specialist	CME Globex electronic trading platform	Traded thru specialists - Susquehanna is AMEX specialist
<b>Ticker Symbol</b>	ES	SPY	NQ	QQQ
<b>Minimum Capital Requirements *</b>	Exchange minimum initial spec margin of \$3,938 per contract or ~6.7%	50% Reg T margin requirements apply	Exchange minimum initial spec margin of \$3,750 per contract or ~12.1%	50% Reg T margin requirements apply
<b>24-Hour Trading</b>	Yes	No	Yes	No
<b>Options</b>	Yes	No	Yes	No
<b>Operating Expenses</b>	None	0.10% per annum	None	0.20% per annum

\* Data sampled on October 18, 2005.

\*\* Data compiled from January through September 2005.

\*\*\* Data compiled from July 18-October 18, 2005