Understanding sector spreading opportunities

E-mini S&P Select Sector Index Futures

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How the world advances

CME Group

E-mini S&P Select Sector Index Futures

CME Group recently launched nine E-mini futures contracts based on the S&P Select Sector indices: E-mini S&P Select Sector Index futures.

The nine Select Sector indices that underlie the E-mini S&P Select Sector Index futures encompass all 500 constituents in the S&P 500 Index. The S&P Select Sector indices include the following categories:

1. **Consumer Discretionary**
2. **Consumer Staples**
3. **Energy**
4. **Financial**
5. **Health Care**
6. **Industrials**
7. **Materials**
8. **Technology**
9. **Utilities**

E-mini S&P Select Sector Index futures offer investors the ability to gain exposure to the nine distinct sectors that comprise the S&P 500, while attaining leverage comparable to that of other broad-based equity index futures.

Additionally, E-mini S&P Select Sector futures give market participants opportunities to benefit from an array of spread trading possibilities that include relative value changes among the nine S&P Select Sector indices. Another opportunity to consider is spread trading between the E-mini S&P Select Sector Index futures and other broad-based U.S. equity index futures, such as E-mini S&P 500 futures, E-mini NASDAQ-100 futures or E-mini ($5) Dow futures. One benefit of inter-market spread trading is the potential for considerable equity index cross-margin efficiencies.

In today's volatile markets, traders often use spread techniques to alter risk exposure to the equity market. Instead of establishing a position in a specific equity index futures contract and the associated idiosyncratic risk, inter-market spread positions enable traders to benefit from the changing price relationships between highly (though not perfectly) correlated equity markets sectors.

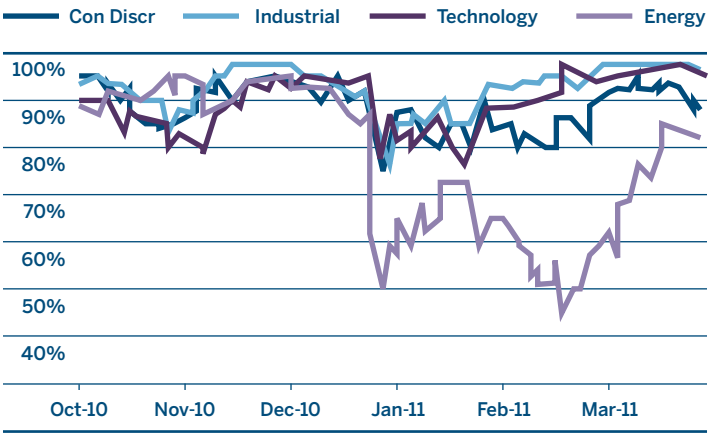
One potential method of establishing equity index spread transactions is by examining the relationships between the various Select Sector indices and broader-based indices to determine if price relationships have moved out of line on a risk-adjusted basis. Trading relationships between highly correlated indices or asset classes often tend to be mean-reverting. When two assets diverge from a previously well-defined relationship, they will often return to the average relationship that previously existed.

Traders are frequently motivated by the relative rates of return attainable between different segments of the equity market. These differential rates of return may be brought on by cyclical fundamental market conditions or temporary mispricing of one Select Sector Index versus another.

Relatively high correlations exist between many Select Sector Index pairs, as well as between individual Select Sector Indexes and other broad equity market indexes, such as the S&P 500 Index. Yet there are many occasions when a pattern of highly correlated returns breaks down. One sector of the equity market may come to be viewed more or less favorably than another.

Such a breakdown may be seen in Exhibit 1 below. The correlation of Energy Select Sector daily returns versus S&P 500 daily returns were very high during the latter part of 2010, yet began to deviate substantially during late December 2010 through late March 2011.

Exhibit 1: 20 day Correlations Select Sector versus S&P 500 Index



The listing of E-mini S&P Select Sector Index futures introduces accessible, transparent and leveraged equity market spread trading opportunities that may take advantage of the under- or over-performance of one market sector versus another, using an inter-market futures spread.

Constructing a Futures Spread Transaction

To construct an inter-market E-mini Select Sector Index futures spread, one should identify the appropriate "spread ratio." The spread ratio is an indication of the ratio or number of stock index futures that must be held in the two markets to balance the economic risk on both sides of the spread transaction.

One way to assess economic or monetary exposure is to multiply the E-mini S&P Select Sector Index futures price by the futures contract multiplier. The product of these two values will yield the notional value of the futures contract.

For example, if the Energy Select Sector Index is quoted at 740.15, and the corresponding futures multiplier is equal to $100, then the notional value of the E-mini Energy Select Sector futures is calculated as follows:

E-mini Energy Select Sector Futures Notional Value

= Sector Index x Contract Multiplier

= 740.15 x $100 = $74,015

Beta Risk — Another way to measure equity market risk is by reference to the beta (β) of an equity portfolio. In order to understand β and how it may be used, we've provided a short review of the Capital Asset Pricing Model (CAPM) below.

CAPM represents a way of understanding how equity values fluctuate or react to various economic forces driving the market. CAPM suggests that the total risk associated with any particular stock may be categorized into systematic risks and unsystematic risks.

Total Risk = Systematic Risks + Unsystematic Risks

Systematic risk is a reference to "market risks" reflected in general economic conditions that affect all stocks to some degree. For example, all stocks are affected to some degree by Federal Reserve monetary policies, general economic strength or weakness, tax policies, and so on.

Unsystematic or "firm-specific" risks represent factors that uniquely impact a specific stock. For example, a company may have created a unique new product or its management may have introduced new policies or direction that will affect the company to the exclusion of others.

The extent to which systematic and unsystematic risks impact the price behavior of an equity (or a portfolio of equities) may be examined via regression analysis. Accordingly, one may regress the returns of an equity sector (R_{sector}) against the price movements of the market in general (R_{market}).

$$R_{sector} = \alpha + \beta\,(R_{market}) + \varepsilon$$

R_{market} is generally defined as the returns associated with a very broad-based stock index such as the S&P 500 Index. The alpha (α) or intercept term of the regression equation represents the average return on the stock unrelated to market returns. We also have an error term (ε). But the most important attributes of the regression analysis include beta (β) and R-squared (R^2).

Beta identifies the expected relative movement between an individual stock or sector and the market. This figure is normally positive to the extent that all stocks tend to rise and fall together. Beta gravitates towards 1.0 (the beta associated with the market in the aggregate) but may be either greater than or less than 1.0.

If the Select Sector Index beta = 1.1, the sector is expected to rally by 11 percent when the S&P 500 Index rallies by 10 percent; or, conversely, to decline by 11 percent if the S&P 500 Index declines by 10 percent. Select Sector indices with a beta > 1.0 are expected to be more sensitive than the benchmark S&P 500 Index and are considered to include more "aggressive" stocks. Historically, the Energy, Financial, Industrial and Materials sectors have fallen into the more aggressive category, as evidenced by Table 1 on page 6.

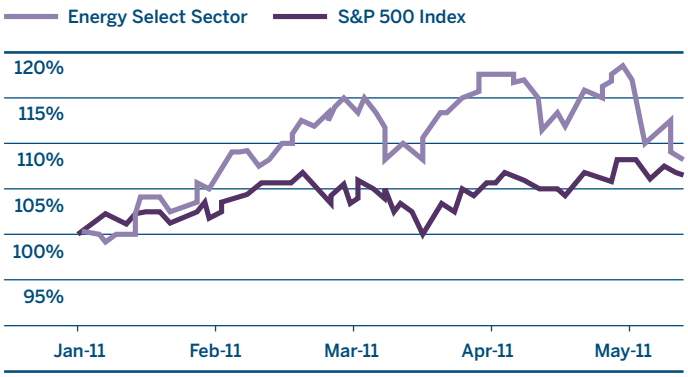
If beta = 0.9, the Select Sector Index is expected to rally by 9 percent in response to a 10 percent rally in the S&P 500 Index; or, is expected to decline by 9 percent if the S&P 500 Index declines by 10 percent. Select Sectors with a beta < 1.0 are viewed as more "conservative" because they are expected to be less sensitive than the market in general. As shown in Table 1 on page 6, the Consumer Staples, Health Care and Utilities sectors possess betas < 1.

To mitigate market directional risk associated with a particular sector, a sector beta or volatility factor may be introduced into the inter-market spread construction.

Beta-Adjusted Spread Ratio — To evaluate a potential spread trade between two stock market sectors, traders may look at the anticipated relative valuation or performance of the two candidate sectors or broader-based indices.

For example, as of the market close on April 1, 2011, the Energy Select Sector Index had rallied 14.56 percent since the end of 2010. The S&P 500 Index also gained, but by only 3.83 percent over the same time period. The relative performance of the Energy Select Sector Index and the S&P 500 Index is illustrated in Exhibit 2.

Exhibit 2: Energy Select Sector Index versus E-mini S&P 500 (2011)



One may believe that the Energy sector is temporarily over-valued relative to the broader equity market. As such, a trader may choose to sell or go short E-mini Energy Select Sector futures, while buying or going long E-mini S&P 500 futures. But what is the proper spread relationship between these two futures contracts?

Consider the application of an E-mini Energy Select Sector future (XAE)/E-mini S&P 500 future (ES) spread on April 1, 2011. The data used to construct this and other spread ratios is provided in Exhibit 3 on page 5 and in the tables on pages 6 and 7.

Beta-adjusted spread ratios are shown in Table 2 on page 6. The appropriate risk-adjusted E-mini Energy Select Sector/E-mini S&P 500 futures spread ratio may be determined as follows:

Beta-Adjusted Futures Spread Ratio =

$$\frac{(\text{Multiplier}_{Energy} \times \text{Price}_{Energy} \times \text{Beta}_{Energy})}{(\text{Multiplier}_{ES} \times \text{Price}_{ES} \times \text{Beta}_{S\&P500})}$$

$$= \frac{(\$100 \times 803.73 \times 1.342)}{(\$50 \times 1{,}332.41 \times 1)}$$

$$= 1.6190$$

This beta-adjusted spread ratio (1.6190) indicates that for every 10 contract short positions in E-mini Energy Select Sector futures, one should buy or go long approximately 16.19 contracts in E-mini S&P 500 futures to balance the risk-adjusted value of each leg of the spread. In other words, the price risk of one E-mini Energy Select Sector futures contract is *anticipated* to be 61.90 percent greater than that of one E-mini S&P 500 futures contract.

If a trader's expectations align with the ratio defined above, a more precise spread relationship would be to go short 21 E-mini Energy Sector futures and go long 34 E-mini S&P 500 futures. The performance of this beta-adjusted E-mini Energy Select Sector/ E-mini S&P 500 futures spread in a ratio of 34:21 contracts for the six-week period beginning on April 1, 2011 is shown in Exhibit 3 on page 5.

Exhibit 3: Results of our sector spreading example

	Jun-11 E-mini Energy Sel. Sector futures	Jun-11 E-mini S&P 500 futures
4/1/11	Sell 21 @ 803.73 = $1,687,833	Buy 34 @ 1,332.41 = $2,265,0972
5/13/11	Buy 21 @ 740.15 = $1,554,315	Sell 34 @ 1,337.77 = $2,274,209
	Profit = $133,518	Profit = $9,112
	Net Profit of $142,630	

With the benefit of hindsight, the Energy sector was over-valued relative to the broader large-cap market as of April 1. During the course of the next six weeks that followed, the Energy sector declined more than seven percent, while the broader market index posted a marginal four-tenths of one percent increase. The result was a profit in excess of $142,000.

As a reference, beta-adjusted spread ratios for each possible E-mini Select Sector futures pair and the E-mini S&P 500 Futures contract are calculated based on the Select Sector Index levels and the Select Sector two-year betas for the period ending May 13, 2011. The beta-adjusted spread ratios and related information are listed in Tables 1 and 2 on page 6.

Keep in mind that in addition to spreading the E-mini Select Sector Index futures against the E-mini S&P 500 futures, there are other popular futures contracts available at CME Group exchanges representing somewhat different broad equity market exposures. For example, spreading opportunities could be explored between E-mini Technology Select Sector futures and E-mini NASDAQ-100 futures, which has a heavy technology weighting, or between E-mini Industrial Select Sector futures and E-mini Dow ($5) futures that are based on the Dow Jones Industrial Average.

Performance Bond Requirements — Because equity index futures spreads often entail reduced risk relative to outright stock index futures positions, CME Clearing offers reduced performance bond or initial margin requirements of as much as 90 percent of the outright requirements on many of these spreads when placed in an appropriate ratio. These rates vary from time to time — for the most current rates, visit the performance bonds page on the CME Group website, at **cmegroup.com/margins**.

Note that these performance bond reductions can only apply when spreading between CME Group products.

As of May 23, 2011, the initial speculative margin requirements for the E-mini Health Care Select Sector and E-mini S&P 500 futures contracts were $2,500 and $5,625, respectively. Initial margin and futures contract leverage ratio information is provided in Table 3.

When traded in a +2:-1 ratio (long two E-mini Health Care/short one E-mini S&P 500, or vice versa), this spread is eligible for a 50 percent reduction in the initial speculative margin requirement. Instead of posting the aggregate of the individual futures contract initial margin requirements:

($2,500 x 2) + $5,625 = $10,625

the required margin on the +2:-1 E-mini Health Care Select Sector/ E-mini S&P 500 eligible spread is equal to:

$10,625 x 0.50% = $5,312.50

The $5,312.50 initial margin requirement for this ratio futures spread is slightly lower than the initial margin requirement for one E-mini S&P 500 futures contract traded outright. As you can see, potential margin offsets can be significant, freeing up capital for other uses.

Appetite for Risk — We anticipate strong demand in coming years for leveraged relative opportunity investment strategies that may be pursued by hedge funds and other types of CME Group customers. The nine E-mini S&P Select Sector futures markets give market participants many opportunities to take advantage of relative price changes among the constituents of the S&P 500 Index.

Concluding Remarks — In today's marketplace, investors frequently rotate investments between market sectors and distinct broad-based equity indices. Inter-market spreads between stock index futures facilitate these sector index rotational strategies nicely.

These inter-market spreads may be pursued based on many different analytical techniques. For example, one may pursue spreads between the S&P 500 Index sectors by analyzing the sector constituencies and gauging relative performance over a short-to-intermediate time horizon. Spreads between futures on the Select Sector indices and broader-based stock index futures at CME Group exchanges also provide ample profit-seeking opportunities.

TABLE 1: E-mini Select Sector Futures – Beta Adjusted Value (as of May 13, 2011)

E-mini S&P Select Sector Futures	Con. Discret.	Con. Staples	Energy	Financial	Health Care	Ind's	Mater'ls	Tech.	Util's	S&P 500
Index Ticker	IXY	IXR	IXE	IXM	IXV	IXI	IXB	IXT	IXU	SPX
CME Futures Ticker	XAY	XAP	XAE	XAF	XAV	XAI	XAB	XAK	XAU	ES
5/13/2011: Index Last Price	406.16	320.07	740.15	157.20	361.71	376.59	406.10	264.80	341.42	1,337.77
Multiplier	$100	$100	$100	$250	$100	$100	$100	$100	$100	$50
Notional Value	$40,616	$32,007	$74,015	$39,300	$36,171	$37,659	$40,610	$26,480	$34,142	$66,889
2-year Beta (β) daily data	1.071	0.556	1.342	1.267	0.584	1.261	1.411	1.001	0.723	1.000
(R^2) — Coefficient of Determination	0.855	0.699	0.781	0.775	0.579	0.911	0.870	0.865	0.772	1.000
Beta Adjusted Notional	**$43,500**	**$17,796**	**$99,328**	**$49,793**	**$21,124**	**$47,488**	**$57,301**	**$26,506**	**$24,685**	**$66,889**

Source: Bloomberg

TABLE 2: E-mini S&P 500 and E-mini Select Sector Futures, Beta Adjusted Spread Ratios (as of May 13, 2011)

	E-mini S&P Select Sector Futures	Con. Discret.	Con. Staples	Energy	Financial	Health Care	Ind's	Mater'ls	Tech.	Util's	S&P 500
E-mini S&P Select Sector Futures	**(10 Contract Relative Value Spread Relationships)**										
	Beta Adjusted Notional	**$43,500**	**$17,796**	**$99,328**	**$49,793**	**$21,124**	**$47,488**	**$57,301**	**$26,506**	**$24,685**	**$66,889**
Consumer Discret.	**$43,500**	10.0	4.1	22.8	11.4	4.9	10.9	13.2	6.1	5.7	15.4
Consumer Staples	**$17,796**	24.4	10.0	55.8	28.0	11.9	26.7	32.2	14.9	13.9	37.6
Energy	**$99,328**	4.4	1.8	10.0	5.0	2.1	4.8	5.8	2.7	2.5	6.7
Financial	**$49,793**	8.7	3.6	19.9	10.0	4.2	9.5	11.5	5.3	5.0	13.4
Health Care	**$21,124**	20.6	8.4	47.0	23.6	10.0	22.5	27.1	12.5	11.7	31.7
Industrial	**$47,488**	9.2	3.7	20.9	10.5	4.4	10.0	12.1	5.6	5.2	14.1
Materials	**$57,301**	7.6	3.1	17.3	8.7	3.7	8.3	10.0	4.6	4.3	11.7
Technology	**$26,506**	16.4	6.7	37.5	18.8	8.0	17.9	21.6	10.0	9.3	25.2
Utilities	**$24,685**	17.6	7.2	40.2	20.2	8.6	19.2	23.2	10.7	10.0	27.1
S&P 500	**$66,889**	6.5	2.7	14.8	7.4	3.2	7.1	8.6	4.0	3.7	10.0

TABLE 3: E-mini S&P Select Sector Futures, Leverage Ratios (as of May 13, 2011)

E-mini S&P Select Sector Futures	Con. Discret.	Con. Staples	Energy	Financial	Health Care	Ind's	Mater'ls	Tech.	Util's	S&P 500
Initial Speculative Margin	$3,125	$1,750	$6,500	$6,500	$2,500	$3,125	$3,125	$1,750	$2,500	$5,625
Spec Leverage Ratio	12.44	16.96	12.15	6.27	13.13	11.88	13.23	14.83	12.70	11.28
Initial Hedge Margin	$2,500	$1,400	$5,200	$5,200	$2,000	$2,500	$2,500	$1,400	$2,000	$4,500
Hedge Leverage Ratio	15.56	21.20	15.18	7.84	16.41	14.85	16.54	18.54	15.88	14.10

TABLE 4: E-mini S&P Select Sector Futures, Ticker Symbols

E-mini S&P Select Sector Futures	Con. Discret.	Con. Staples	Energy	Financial	Health Care	Ind's	Mater'ls	Tech.	Util's
Index Ticker	IXY	IXR	IXE	IXM	IXV	IXI	IXB	IXT	IXU
CME Futures Ticker	XAY	XAP	XAE	XAF	XAV	XAI	XAB	XAK	XAU
Bloomberg Futures Ticker	IXYA	IXRA	ISPA	IXAA	IXCA	IXIA	IXDA	IXTA	IXSA
Reuters Futures Ticker	0#XAY:	0#XAP:	0#XAE:	0#XAF:	0#XAV:	0#AIX:	0#XAB:	0#XAK:	0#XAU:
ETF Ticker	XLY	XLP	XLE	XLF	XLV	XLI	XLB	XLK	XLU

For more on E-mini S&P Select Sector futures, please visit **cmegroup.com/sectors** or **contact**:

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