CME Group
A CME/Chicago Board of Trade/NYMEX Company

Research & Product Development

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# CME Group Equity Index Futures Quarterly Roll Summary

While the tumultuous market conditions in the past couple of months had subsided going into the 4th quarter roll period, the spread market was clouded by another source of uncertainty: Dividend forecasts for the coming year. The uncertainty led to some highly divergent perceptions of the richness/cheapness in the spread pricing.

Exhibit 1 shows a summary of the volume weighted averages of the price and the implied financing rates of the quarterly rolls for US equity index futures at the CME Group. The implied financing rate, however, depends on the dividend yield information. Since futures position holders forego the dividend flow from the underlying stock portfolio, a high dividend yield assumption given the same spread price will lead to a conclusion of a high implied financing rate.

For the sake of continuity, we have calculated the implied financing calculation based on the same widely available source for the dividend forecasts as in all the previous quarterly roll summaries. To illustrate the relative magnitude of these dividend assumptions, we have compared the forecasted dividend points as well as the approximate annualized dividend yield in Exhibit 2.

Under normal circumstances, dividend policies in the short run are highly predictable. The absolute amount of dividend for each stock does not fluctuate much. With capital in short supply, however, especially in the heavy dividend paying sectors, dividends are expected to be severely curtailed. For example, the financial sector accounts for approximately 13 percent in weight but easily more than 20 percent of the dividend in the

**Exhibit 1**

Volume Weighted Average Price (VWAP) and the corresponding volume weighted average implied financing rate of December-March calendar spreads in various index futures. As we alluded to, the implied financing rates are based on dividend yield assumptions that might be overly optimistic, leading to upwardly biased estimates of implied financing costs.

| | S&P 500 VWAP | | S&P 500 Impl. Fin. | E-mini NASDAQ-100 | | E-mini Dow ($5) | | E-mini S&P MidCap 400 | | E-mini S&P SmallCap 600 | | Forward |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Regular | E-mini | E-mini | VWAP | Impl. Fin. | VWAP | Impl. Fin. | VWAP | Impl. Fin. | VWAP | Impl. Fin. | LIBOR |
| 12/8 | -0.495 | -0.488 | 2.814 | 2.435 | 1.557 | -14.78 | 2.766 | -0.543 | 1.796 | -0.600 | 0.822 | 2.183 |
| 12/9 | -0.575 | -0.580 | 2.790 | 2.087 | 1.437 | -16.89 | 2.718 | -0.609 | 1.746 | n/a | n/a | 2.054 |
| 12/10 | -0.587 | -0.583 | 2.800 | 2.092 | 1.445 | -22.18 | 2.470 | -0.547 | 1.779 | n/a | n/a | 1.957 |
| 12/11 | -0.574 | -0.581 | 2.814 | 1.740 | 1.341 | -20.05 | 2.597 | -0.384 | 1.936 | -0.636 | 0.765 | 1.939 |
| 12/12 | -0.615 | -0.600 | 2.879 | 1.630 | 1.325 | -21.94 | 2.564 | -0.237 | 2.111 | n/a | n/a | 1.896 |
| 12/15 | -0.817 | -0.826 | 2.761 | 1.586 | 1.323 | -24.94 | 2.399 | -0.789 | 1.659 | -0.500 | 1.032 | 2.032 |
| 12/16 | -0.853 | -0.845 | 2.642 | 1.937 | 1.407 | -22.78 | 2.463 | -0.793 | 1.627 | -0.782 | 0.539 | 1.980 |
| 12/17 | -0.948 | -0.977 | 2.686 | 2.109 | 1.443 | -24.25 | 2.468 | -0.330 | 1.913 | -0.717 | 0.609 | 1.679 |
| 12/18 | -1.978 | -2.334 | 2.112 | 1.723 | 1.325 | -29.91 | 2.237 | -0.802 | 1.557 | n/a | n/a | 1.566 |

Written by Richard Co, Research & Product Development, CME Group. You can contact the author at richard.co@cmegroup.com or 312-930-3227.

**Exhibit 2**

Dividend yield forecasts for US Index Futures from a popular source. The assumptions appear distinctly out of line in light of recent market conditions, especially for the heavy dividend paying sectors.

| | S&P 500 | DJIA | S&P MidCap | NASDAQ-100 | S&P SmallCap |
|---|---|---|---|---|---|
| Dividend Points | | | | | |
| Forecasted for the Upcoming quarter | 6.96 | 77.65 | 2.87 | 2.37 | 1.12 |
| … Last 4 quarters | 6.93 | 77.58 | 2.91 | 2.21 | 1.13 |
| … Last 8 quarters | 7.00 | 77.30 | 2.76 | 2.27 | 1.05 |
| Dividend Yield (p.a.) | | | | | |
| Forecasted for the Upcoming quarter | 3.14 | 3.62 | 2.19 | 0.78 | 1.72 |
| … Last 4 quarters | 2.06 | 2.54 | 1.41 | 0.47 | 1.17 |
| … Last 5 years | | | | | |
| High | 2.17 | 2.69 | 1.53 | 0.64 | 1.24 |
| Average | 1.89 | 2.33 | 1.24 | 0.43 | 0.98 |
| Low | 1.59 | 1.95 | 1.11 | 0.17 | 0.86 |

S&P 500 index. Likewise, the financial sector contributes to 19 percent of the weight of the S&P MidCap 400 index, and 23percent of the MSCI EAFE index.

Put differently, the average implied financing rate of E-mini S&P 500 index futures was at an approximately 78 basis point premium to LIBOR. With the forecasted dividend yield at approximately 97 basis points higher than the highest yielding quarter in the last five years, the realized implied financing rate could turn out to be 19 basis points below LIBOR or lower.

Notwithstanding the uncertainty over the appropriate dividend yield level, we have plotted the intra-day movements of the implied financing rate for both the E-mini S&P 500 and E-mini S&P MidCap 400 index futures in Exhibit 3. Readers with their own view of the dividend yield levels can simply shift the level of the curves up or down to account for the difference in the opinion in the dividends. Along with the implied financing rates, we have also plotted Eurodollar futures as well as the Federal Funds futures strip rate for comparison.

As expected, the superior liquidity in the E-mini S&P 500 market relative to the E-mini S&P MidCap 400 market manifested itself in the form of a slower moving, less volatile path for the implied financing rate. Also of note was the “unusual” FOMC announcement with the overnight Fed Fund target being set to a range of 0 to 25 basis points, lower than the level expected in the market. The rates futures adjusted quickly, while the index futures spreads appeared to have lagged.

Turning to E-mini MSCI EAFE and E-mini MSCI Emerging Market index futures, we have seen a very encouraging development in this roll in the form of much earlier participation. For the past few quarters, rollover activities have been concentrated in the expiration week, leading to congestions at the end that led to exaggerated spread pricing. Though we had exaggerated pricing at the end of the period, it was a by-product of much earlier participation in the roll by the vast majority of the position holders.

Exhibit 4 shows the pricing and volume distribution of the spread market. Please note that the MSCI EAFE index is even more heavily weighted in the financial stocks than its US brethren, and, as such, may have even more significant dividend yield distortion in terms of the financing rate calculation we have supplied here.

**Exhibit 3**

Intra-day roll pricing of E-mini S&P 500 and E-mini S&P MidCap 400 index futures relative to other interest rate instruments. ** The levels of the implied financing are based on the dividend assumptions summarized in Exhibit 2.

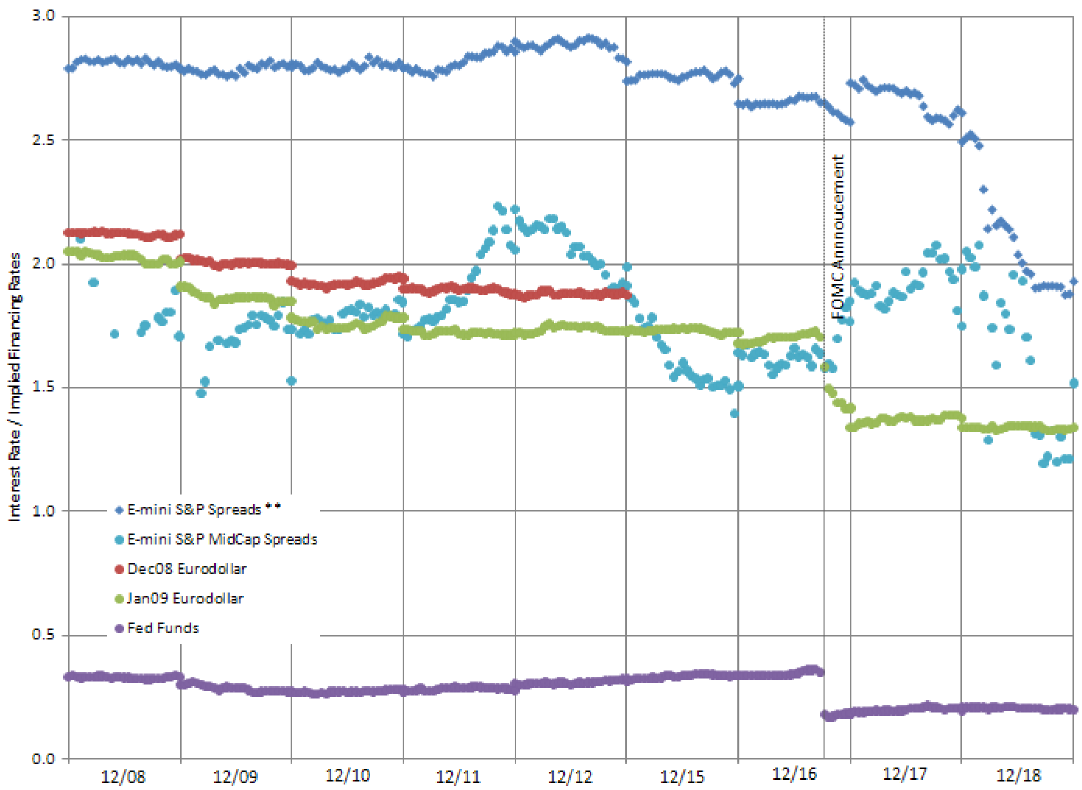


**Exhibit 4**

Estimated roll costs for E-mini MSCI EAFE and E-mini MSCI Emerging Market index futures. Same caveat applies regarding the embedded dividend assumptions.

| | MSCI EAFE | | | MSCI EM | | | Forward |
|---|---|---|---|---|---|---|---|
| | VWAP | Impl. Fin. | Volume | VWAP | Impl. Fin. | Volume | LIBOR |
| 12/8 | n/a | n/a | 0.000 | -1.000 | 1.882 | 14 | 2.183 |
| 12/9 | 2.116 | 3.475 | 1679 | 0.773 | 3.199 | 6653 | 2.054 |
| 12/10 | 1.564 | 3.259 | 4497 | -0.707 | 2.057 | 444 | 1.957 |
| 12/11 | 0.234 | 2.817 | 10545 | 0.493 | 2.890 | 1835 | 1.939 |
| 12/12 | 0.183 | 2.842 | 4469 | -1.394 | 1.652 | 1137 | 1.896 |
| 12/15 | 0.241 | 2.876 | 3643 | 0.555 | 3.030 | 1171 | 2.032 |
| 12/16 | -0.023 | 2.773 | 1975 | -2.976 | 0.523 | 1171 | 1.980 |
| 12/17 | -3.136 | 1.651 | 1082 | -6.915 | -2.105 | 861 | 1.679 |
| 12/18 | -13.829 | -1.658 | 2292 | -5.910 | -1.362 | 189 | 1.566 |

Exhibit 5 shows the composition of the open interest by expiration. It was fairly obvious that the roll-over of open interest into the next expiration month was early, by as much as 3 to 4 days in both contracts. The remaining unrolled positions dwindled quickly towards the end of the rollover period. As such, a relatively small volume moved the spread market several points in the last few days.

Insofar as open interest levels go, both of the E-mini MSCI contracts gained more traction this roll period. The new lead month E-mini MSCI EAFE index futures emerged from the rollover with 28,123 contracts in open interest, up from 18,809 and 17,485 in the last two quarters. Open interest for E-mini MSCI Emerging Markets index futures increased marginally to 12,782 contracts, up from 12,022 and 6,622 contracts in the last two quarters.

**Exhibit 5**

Proportion of the open interest in the E-mini MSCI EAFE and EM index futures in the deferred months. The pace of the rollover for the E-mini MSCI contracts was significantly ahead of the previous rolls.