

US Equity Futures Watch

S&P 500 Futures Intraday Roll Cost Monitor

Intraday on 7 Mar, the S&P 500 e-mini futures traded 56bps (VWAP) to Fed Funds using bottom-up dividends

The volume weighted roll cost for the quarter has been 52bps

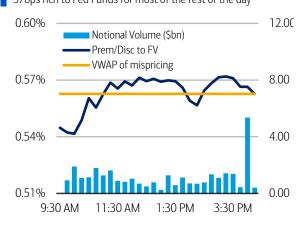
On 7 Mar, \$33.1bn in S&P 500 e-mini contracts rolled

The total notional of S&P 500 ES futures rolled this quarter is \$91.7bn

Open interest implies 10.5% of e-mini contracts have rolled to Jun-24 versus a prior one-year average of 9.8%

This calculation uses a percentage of roll volume based on history that equates to new Jun-24 open interest and is subject to change

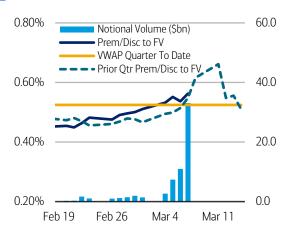
Exhibit 1: SPX futures (ES) intraday roll cost on 7 MarThe ES roll richened in the morning and then traded around 57bps rich to Fed Funds for most of the rest of the day



Source: BofA Global Research. Intraday day measured in 15-minute intervals

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Exhibit 2: SPX futures (ES) quarter-to-date VWAP roll costThe roll richened to 56bps vs. Fed Funds today



Source: BofA Global Research. Daily data based off intraday prices.

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Exhibit 3: Mar-24/Jun-24 Roll Progress Summary

Based off intraday data, vs. Fed Funds, bottom-up divs

Contract	Mar 7	Quarter to Date
E-mini S&P 500 (ES)	0.56%	0.52%
E-mini Russell 2000 (RTY)	0.30%	0.29%
E-mini NASDAQ-100 (NQ)	0.53%	0.49%
E-mini S&P Midcap 400 (FA)	0.18%	0.21%
E-mini DJ Indus. Avg. (DM)	0.62%	0.55%
E-mini Russell 1000 (RSY)		
S&P/TSX 60 (PT)	-0.29%	-0.29%

Source: BofA Global Research. PT financing vs. CDOR 3M rates.

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Exhibit 4: Mar-24/Jun-24 North America Equity Index Futures Roll Progress SummaryData as of 7 Mar

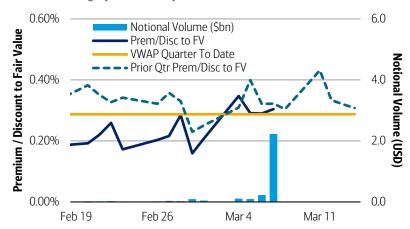
		Annualized Roll Cost				N	Notional Roll Volume Traded (\$mn)				Number of Contracts Traded			
Contract	Roll Pace	Mar 7	Quarter to Date	Last Quarter	Last Year	Mar 7	Quarter to Date	Last Quarter	Last Year	Mar 7	Quarter to Date	Last Quarter	Last Year	
E-mini S&P 500 (ES)	10.5%	0.56%	0.52%	0.59%	0.41%	33,089	91,736	817,210	742,384	128,453	363,332	3,534,150	3,426,674	
E-mini Russell 2000 (RTY)	5.2%	0.30%	0.29%	0.36%	0.11%	2,224	3,335	125,439	114,430	21,333	32,266	662,237	619,146	
E-mini NASDAQ-100 (NQ)	6.8%	0.53%	0.49%	0.58%	0.40%	3,842	12,163	143,261	131,288	10,528	34,039	441,049	448,579	
E-mini S&P Midcap 400 (FA)	3.1%	0.18%	0.21%	0.38%	0.15%	273	350	13,334	12,693	931	1,193	50,363	49,768	
E-mini DJ Indus. Avg. (DM)	5.8%	0.62%	0.55%	0.63%	0.42%	533	1,564	26,703	24,946	2,748	8,093	146,084	145,331	
E-mini Russell 1000 (RSY)	0.0%			0.64%	0.44%	0	0	175	379	0	0	688	1,610	
S&P/TSX 60 (PT)	4.6%	-0.29%	-0.29%	-0.50%	-0.66%	2,579	2,911	73,560	78,127	9,829	11,105	299,742	324,400	

Source: BofA Global Research. All roll costs are calculated as their volume weighted averages over the respective period. All notional volumes are measured in USD Millions with the exception of the S&P/TSX60 which is measured in CAD Millions. The roll cost for the last year is over all contracts traded in the prior four completed quarters. Last year's volume and contracts traded are the averages of the prior four quarters' values when available. Roll pace is defined as the open interest of the second contract plus a percentage of the number of spreads traded divided by the combined open interest of the front and second contracts.

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Exhibit 5: Russell 2000 E-mini (RTY) quarter-to-date VWAP roll cost

The Russell 2000 roll slightly richened today

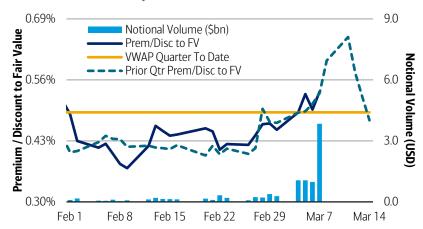


Source: BofA Global Research. Daily data based off intraday prices.

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Exhibit 6: NASDAQ-100 E-mini (NQ) quarter-to-date VWAP roll cost

The NQ roll richened on Thursday



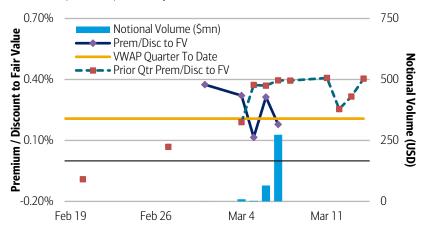
Source: BofA Global Research. Daily data based off intraday prices.

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Exhibit 7: S&P Midcap 400 E-mini (FA) quarter-to-date VWAP roll cost

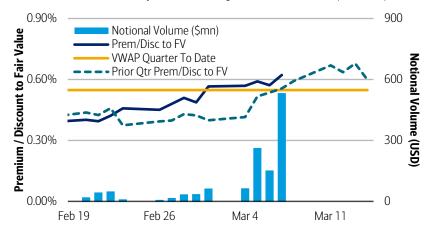
The S&P Midcap 400 cheapened today



Source: BofA Global Research. Daily data based off intraday prices.

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Exhibit 8: Dow Jones Industrials Average E-mini (DM) quarter-to-date VWAP roll costThe Dow roll richened on Thursday and is still trading richer than it did at this point last quarter



Source: BofA Global Research. Daily data based off intraday prices.

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Roll Cost Methodology

Our roll cost for all futures with the exception of the S&P/TSX60 is based on Fed Funds implied of forward rates and our index dividend forecasting model. The S&P/TSX 60 uses the three month Canada Bankers Acceptance futures instead of Fed Funds.

Our methodology assumes that Fed Funds is the funding rate for the futures arbitrage. An assumption of the 3m LIBOR would generally cheapen the roll cost statistics. Our index dividend forecasts are obtained via a proprietary algorithm that forecasts the dividends of each index constituent and aggregates these forecasts to the index level. We use gross forecasted dividends which may differ from the amount actually realized for investors that are subject to withholding taxes. An unavoidable roll risk arises as the forecasted dividends may differ from those that are actually realized.

Our reported roll cost is the spread between the interest rate that would force the spread transaction price to fair value and the actual interest rate implied by Fed Funds. The futures fair value depends on the price of the underling cash index and its dividend forecasts. A positive (negative) roll cost implies that the futures are trading at a premium (discount) to fair value.

The roll cost is reported as an annualized cost.

Intraday Roll Cost Calculation

In our calculations we match the roll spread price with (1) the immediately preceding Fed Funds forward rate, (2) the immediately preceding underlying cash index price, and (3) our dividend forecasts over the duration of the two nearest month futures contracts computed before the beginning of trading each day.

Volume Weighted Average (VWAP) Roll Cost Calculation

Intraday VWAPs are volume weighted for all trades that day. This methodology gives the largest weight to the trades of the largest size. Quarter-to-date VWAPs are computed as a VWAP of the individual intraday VWAPs using each day's total volume as weights.

Notional Volume Calculation

The "notional volume traded" is an estimate of the dollar volume of futures that were rolled. Intraday, this is calculated as the number of spreads traded in each 15 minute interval from 9:30AM EST to 4:00PM EST multiplied by both the contract multiplier and the last cash index price in that interval. For daily aggregated values, the total volume of spread each day is multiplied by the last cash index price and the contract multiplier.



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