

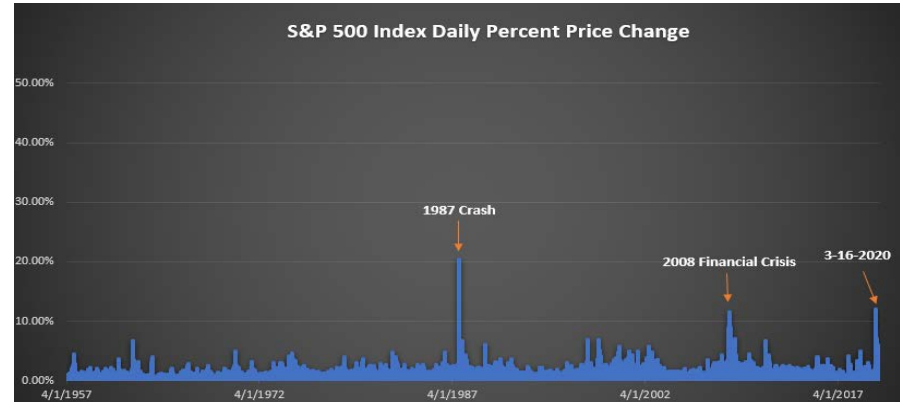
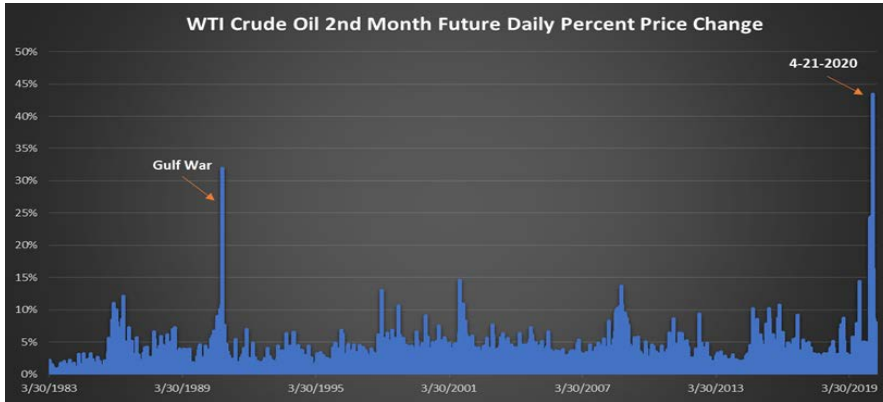
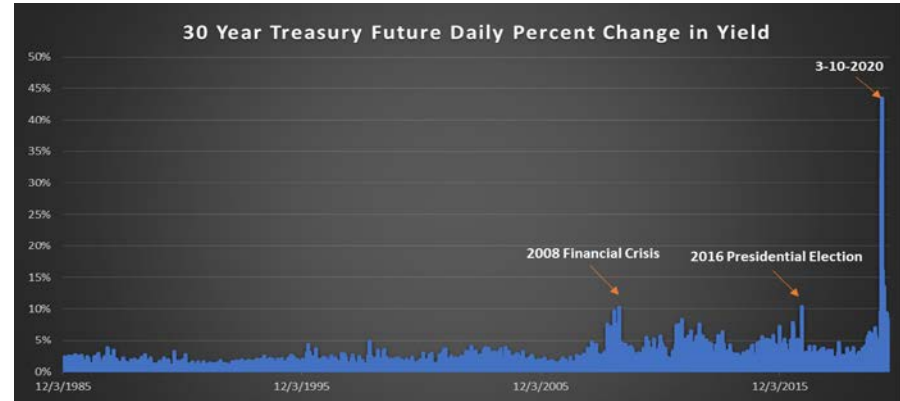
CME Clearing's Margining Practices: CoVid Pandemic

December 2020

CME Clearing's Markets During the CoVid Pandemic

CME Clearing's Margining Practices: CoVid Pandemic

- **Treasuries:** Treasury yields saw their largest daily percent shifts and lowest absolute levels ever, with the entire cash yield curve out to 30 years dropping below 1% for the first time in history
- **Equities:** The 9 largest dollar moves in history of the S&P 500, the 10 largest for the Dow Industrial Average, and the 7 largest for the Nasdaq 100 occurred in March and April 2020
 - S&P 500 and Nasdaq 100 saw their second highest percentage down moves in price ever during this period
- **Crude Oil:** WTI Crude Oil saw its two largest dollar and percentage price moves ever and went negative for the first time



Overview of Margining Practices

CME Clearing's Margining Practices: CoVid Pandemic

Despite the volatile markets, CME Clearing did not implement any new rules, policies, processes, or procedures in managing the CoVid pandemic

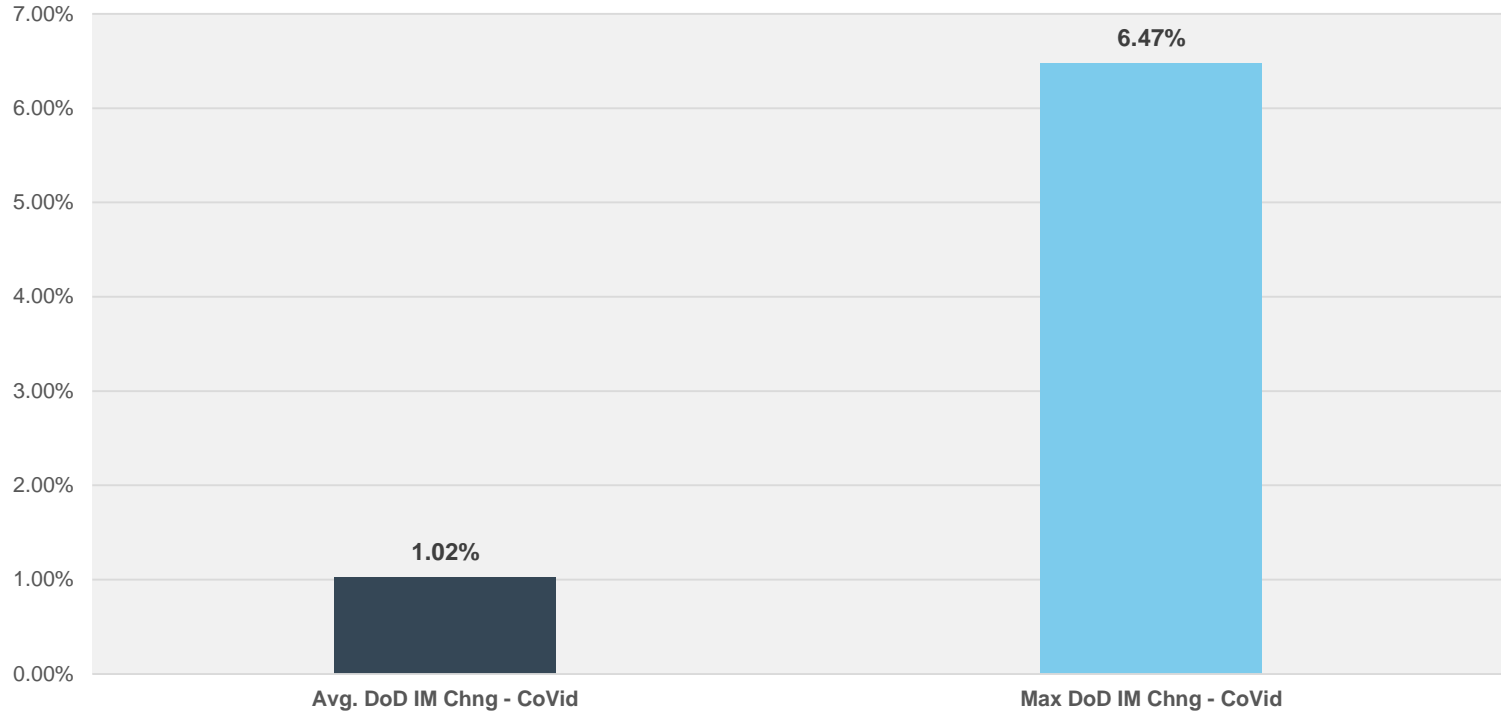
- CME Clearing made appropriate step-change increases to its initial margin requirements, giving the market **at least 24-hours' notice** before increases became effective
- CME Clearing did **not** run any ad hoc settlement cycles – in line with its business-as-usual practices it ran its standard settlement cycles at intraday and end-of-day
 - During each of its settlement cycles CME Clearing collects initial margin and collects and **pays out** settlement variation

Initial Margin Model Performance

- The absolute size of the initial margin increases were relatively modest, which is particularly true relative to the extraordinary volatility observed, including as demonstrated by the settlement variation flows
- Asset classes observed repeated, significant price movements, which suggests that the anti-procyclical characteristics of CME Clearing's margin models worked accordingly, while maintaining appropriate backtesting coverage
- CME Clearing's portfolio coverage level for the twelve months from the end of Q1 2019 to the end of Q1 2020 stands at 99.97% for Base (i.e., primarily futures and options) products and 99.87% for IRS products

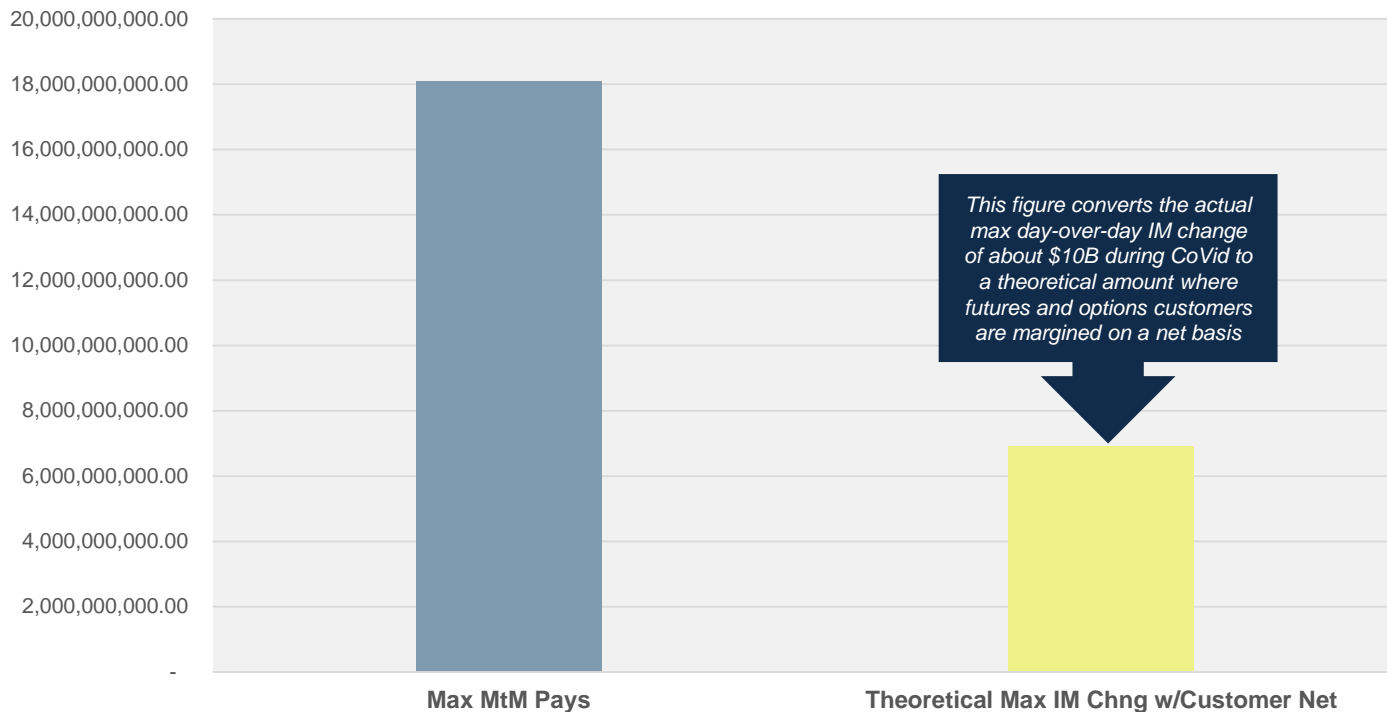
Day-over-Day Percent Change in Initial Margin Required*

CME Clearing's Margining Practices: CoVid Pandemic



Max Day-over-Day Initial Margin Changes vs. Max Variation Payments*

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Notably, initial margin is called on a gross basis for customers (i.e., one customer's exposures cannot offset another customer's exposures for margining purposes which generally results in the U.S. DCO holding at least 2X of customer net margin requirements), whereas settlement variation is collected on a net basis. In addition, changes in initial margin during this period were significantly impacted by market participants changing their exposures.

Changes in Open Interest

CME Clearing's Margining Practices: CoVid Pandemic

Futures & Options	2020Q1-End	2019Q4-End	% Chng	Initial Margin Required as of 2020Q1-End
Rates	84,692,756	78,587,968	7.77%	\$58,577,185,512
Equities	9,779,945	7,723,067	26.63%	\$85,076,818,637
Metals	2,840,060	2,990,465	-5.03%	\$10,962,244,362
Energy	16,096,575	14,267,236	12.82%	\$21,543,026,448
FX	2,172,450	2,442,776	-11.07%	\$5,961,299,963
Ags	7,553,196	7,323,884	3.13%	\$8,388,589,435
Total	123,137,503	113,338,802	8.65%	\$190,515,873,951
Key Products	2020Q1-End	2019Q4-End	% Chng	Initial Margin Required as of 2020Q1-End
E-Mini S&P	5,466,408	4,136,189	32.16%	\$67,986,925,948*
10-Year U.S. Treasury	6,908,146	6,740,730	2.48%	\$45,301,119,131
WTI	5,110,968	3,937,546	29.80%	\$10,468,652,250
COMEX Gold	2,071,772	2,046,097	1.25%	\$7,864,944,324

Stability of CME Clearing's Margin Requirements

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All of CME Clearing's initial margin increases were issued with at least 24-hours' advance notice

1-day Max Initial Margin Increase

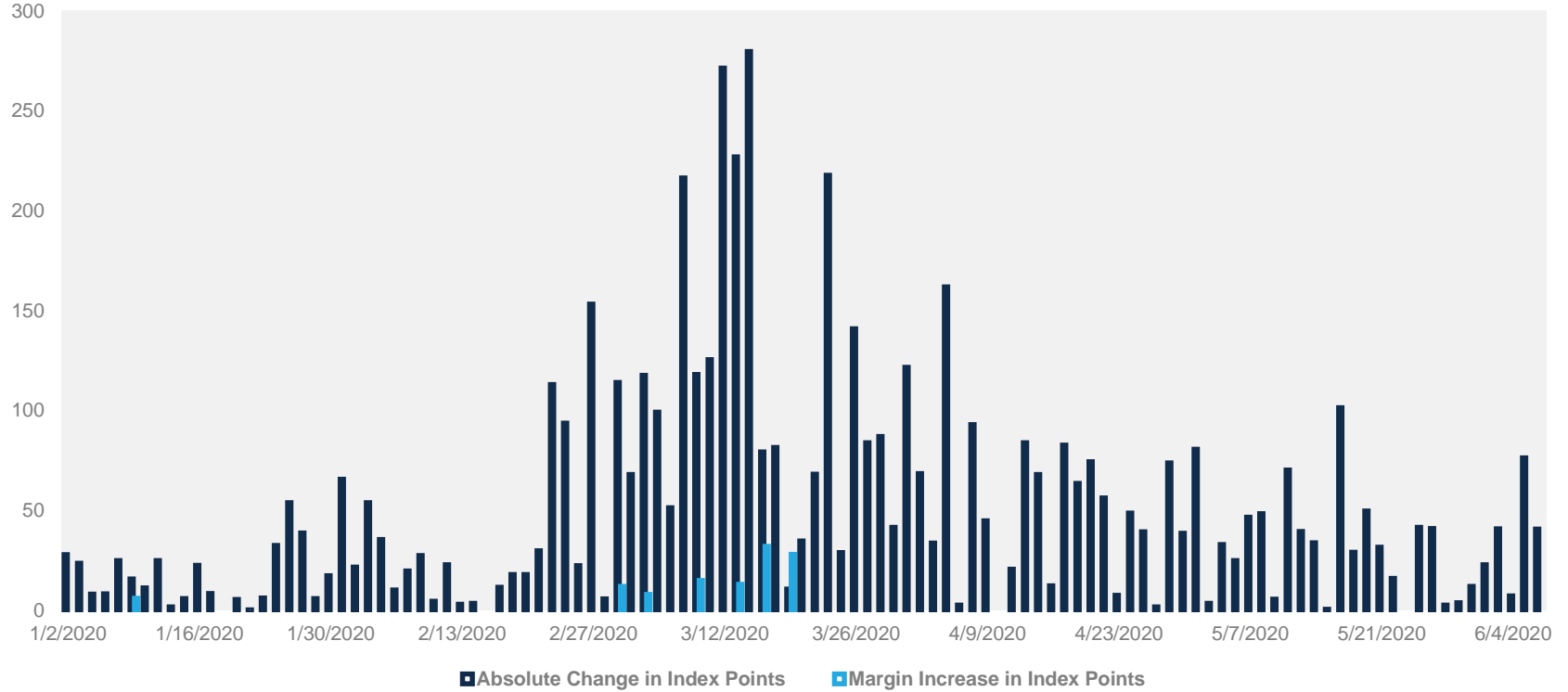
	CME Clearing	12 month 99% Confidence Interval + 25%
S&P	17.8%	32.4%
10-Year Treasury Note	16.4%	17.3%
WTI Crude Oil	20.4%	26.3%
COMEX Gold	19.3%	23.0%

30-day Max Initial Margin Increase

	CME Clearing	12 month 99% Confidence Interval + 25%
S&P	81.8%	219.0%
10-Year Treasury Note	60.9%	89.1%
WTI Crude Oil	115.1%	124.8%
COMEX Gold	67.0%	133.3%

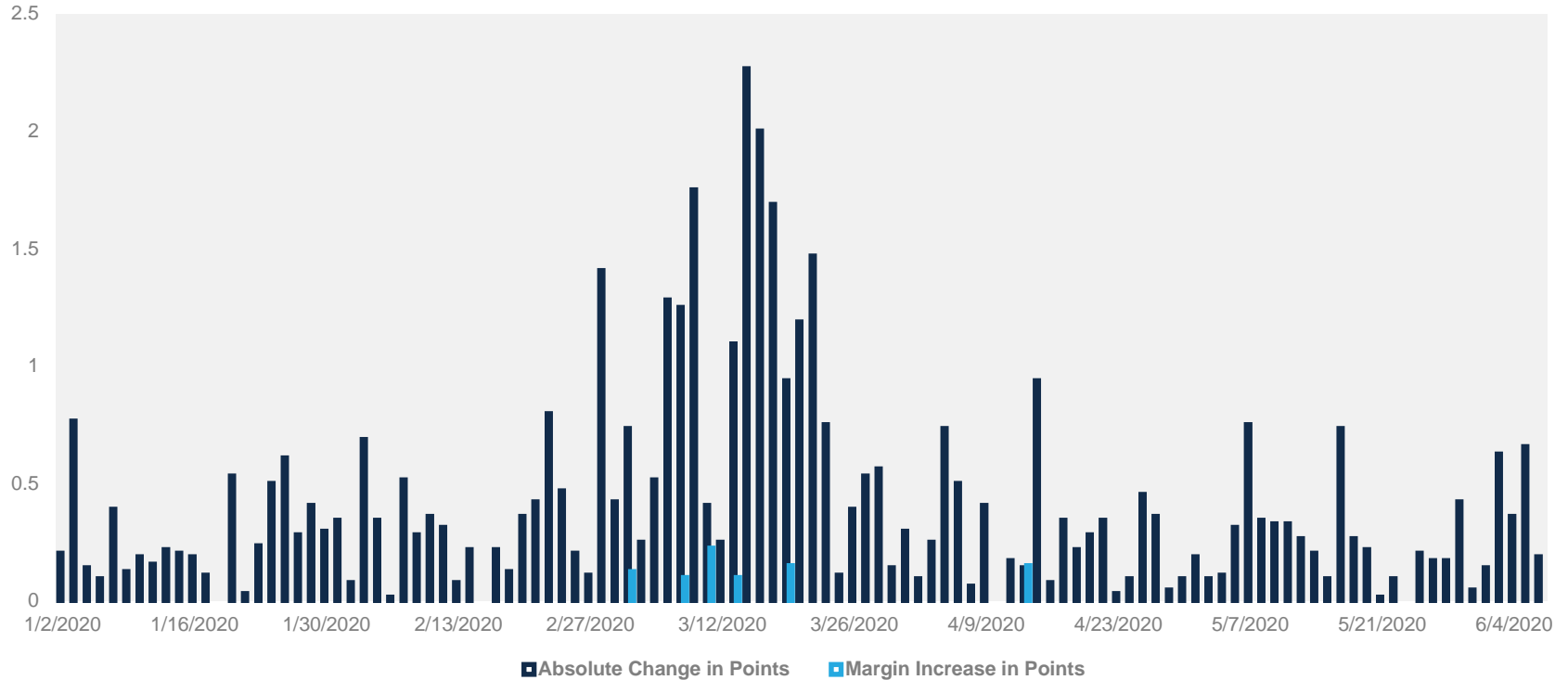
Margin Increases vs. Market Moves: E-Mini S&P 500

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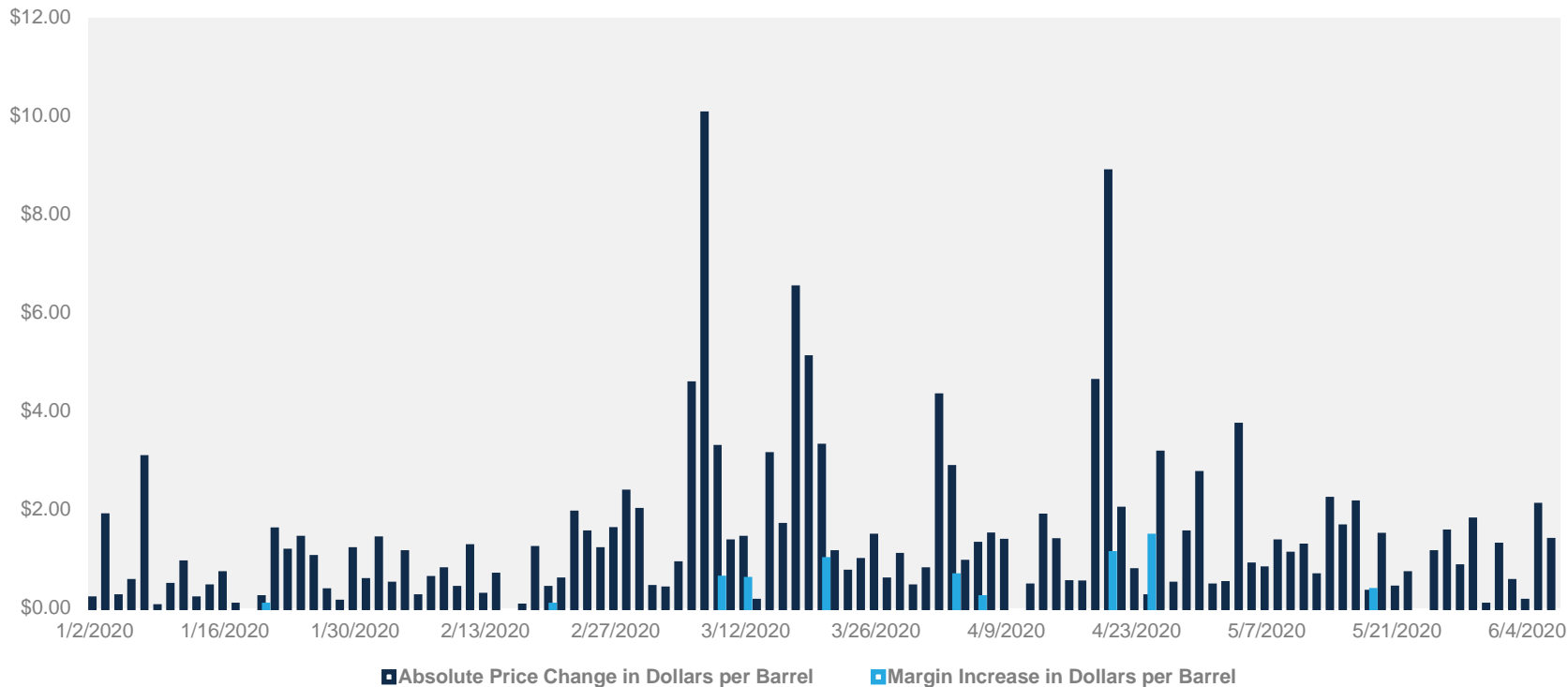
Margin Increases vs. Market Moves: 10-Year U.S. Treasury Note

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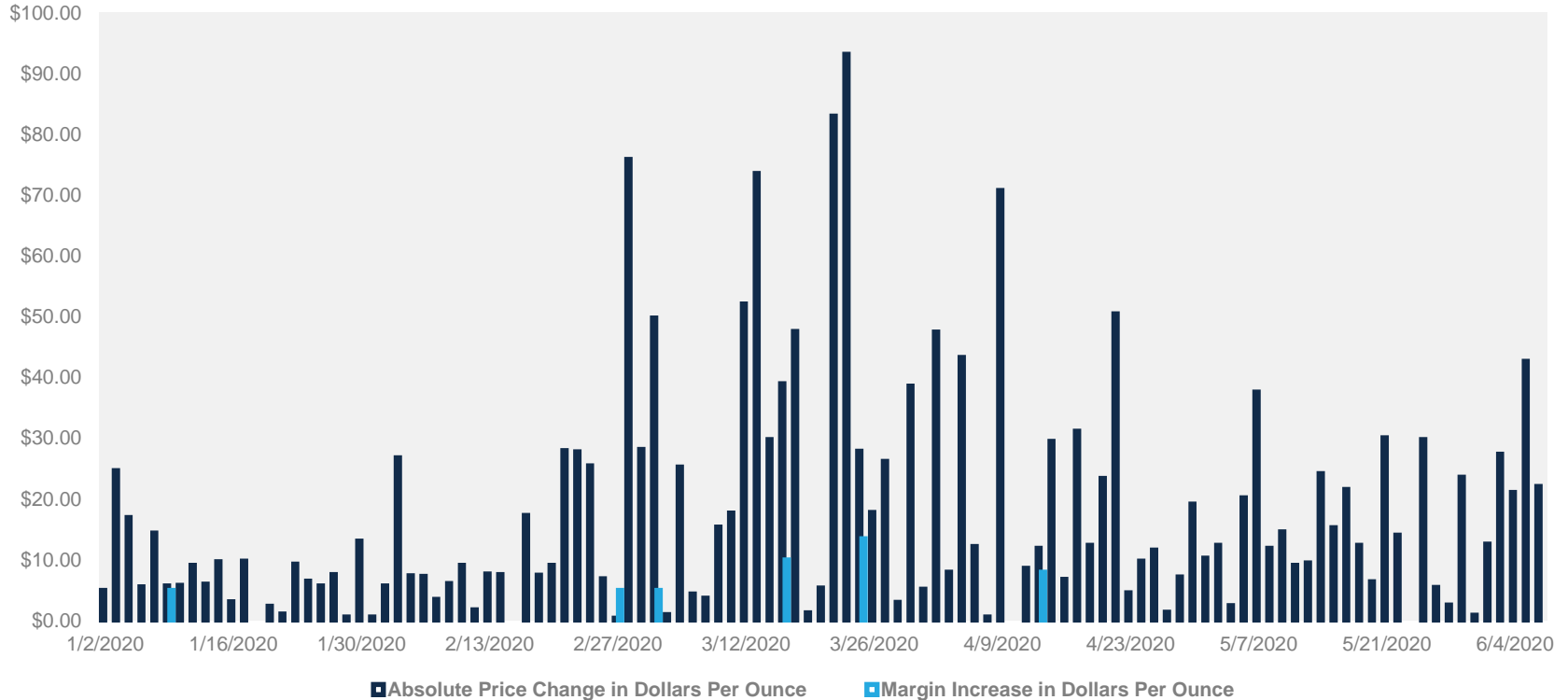
Margin Increases vs. Market Moves: WTI Crude Oil 2nd Month

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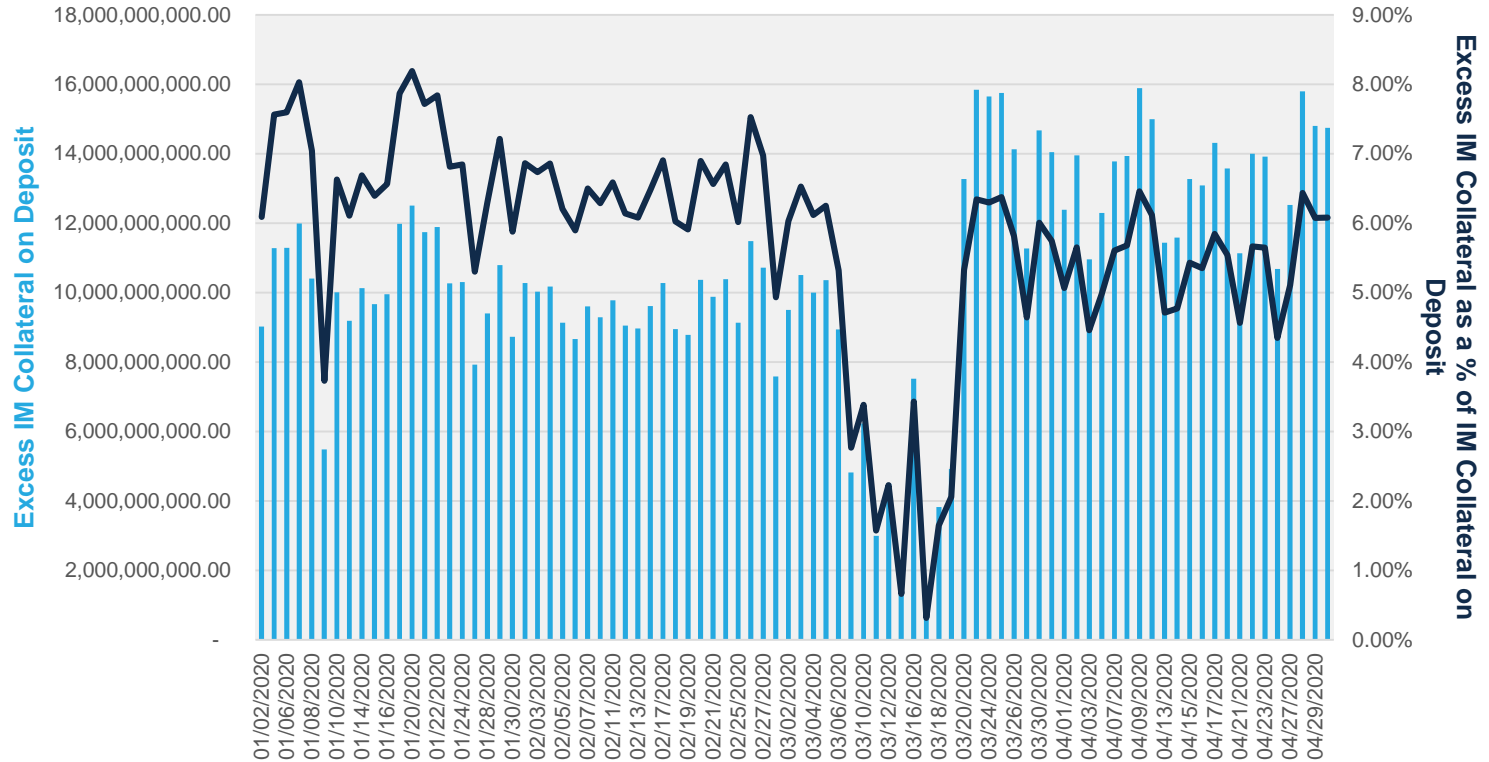
Margin Increases vs. Market Moves: COMEX Gold

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Trend in Excess Initial Margin Collateral on Deposit

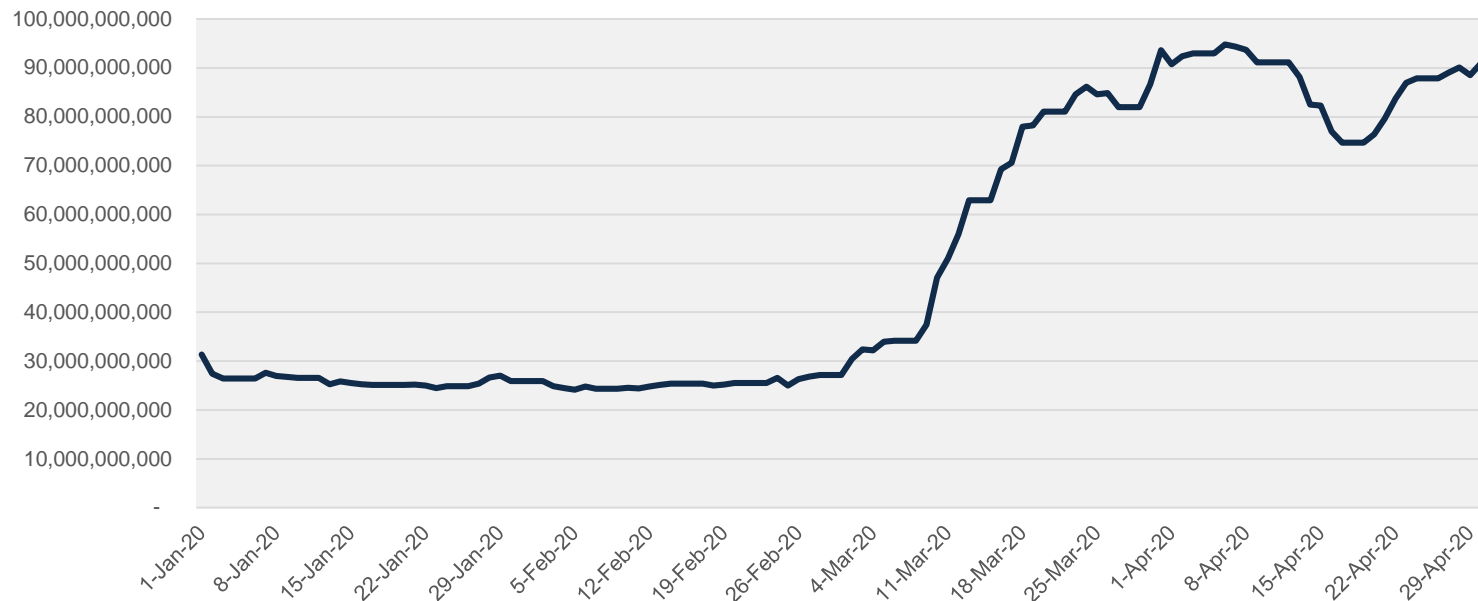
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Trend in U.S. Dollar Cash Deposited as Initial Margin

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CME Clearing accepts a diverse set of collateral and does not impose any minimum U.S. Dollar cash requirements



Base & IRS	
Avg. Cash %	24.70%
Max Cash %	38.53%

Thank you

