CME Clearing Margining Practices

December 2023

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CME Clearing Overview

Risk management is key for DCOs to be able to enhance market stability and counterparty protections; CME Clearing supports a series of risk management processes to designed to ensure prudent risk management

- CME Inc. operates a clearing house ("CME Clearing" or "the Clearing House") that is registered with the CFTC as a Derivatives Clearing Organization ("DCO"). CME Inc. is a wholly-owned subsidiary of CME Group.
  - The CFTC operates as the Supervisory Agency of CME Clearing and conducts annual examination required by Title VIII of the Dodd-Frank Act
  - As a systemically important derivatives clearing organization ("SIDCO"), CME Clearing is subject to extra regulatory obligations and enhanced risk management standards
- CME Clearing utilizes a variety of risk management tools including novation and netting, real-time risk monitoring, facilitating the exchange of mark-to-market payments, collection of performance bond, stress testing, and back-testing, among others.

Performance Bond (Margin)

- Good faith deposits to guaranty performance of open positions
- Performance bond requirements provide coverage for 99% of market moves on an ex-post basis within a defined period of risk
- Requirements are recalculated twice daily for most products, and at least once daily for all products
- Clearing members collect performance bond from their customers and CME collects performance bond from clearing members

Daily Mark-to-Market Settlement Variation

- Prevents the accumulation of exposures on positions
- Positions are marked-to-market at each clearing cycle, resulting in the movement of cash to reset gains and losses on clearing member and customer portfolios
- Requirements are recalculated at least once a day for all products and twice daily for exchange-traded derivatives products

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Overview of Initial Margining

Methodologies and Process

- CME Clearing's risk-based margin methodologies are designed to achieve a minimum portfolio coverage level of 99% on an *ex-post* basis.
- CME Clearing's portfolio coverage level for the twelve months ending Q3 2023 stands at 99.97% for Base (i.e., primarily futures and options) products.
- All performance bond requirements for exchange-traded derivatives products are set using a minimum margin period of risk of at least one day.
- CME Clearing's SPAN and SPAN 2 margin methodologies are VaR based and are designed to account for a variety of market conditions and to avoid procyclical changes in performance bond requirements. There are a number of practices embedded in the methodologies to avoid large and sudden changes in performance bond requirements, such as:
  - Seasonality factors (e.g. new crop and old crop dynamics)
  - Volatility floors which prevent margins from going too low in low volatility periods
  - Margin buffers above the baseline margin level
  - Various lookback periods
  - Incorporating implied volatility data from options markets
- CME Clearing also accounts for event risk which may not be reflected in historical data.
- If futures settle at limit (as applicable) CME Clearing may also utilize synthetic prices derived from option markets.

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Overview of Initial Margining

Methodologies and Process

- With the SPAN methodology, CME Clearing calibrates margin parameters at the product level by utilizing varying weighted lookback periods dependent on the asset class, accounting for various periods of volatility and seasonality conditions (as applicable). Weights may be applied to observations across one month, three months, six months, one year, four years, 10 years or longer, depending on the product.
- For example, a one-year lookback period incorporates the day-over-day settlement price changes for a certain product over a one-year period (in $ terms) and then CME Clearing would require margin covering the market move on at least a 99% confidence level.
- In Q3 2023, CME Clearing began utilizing the SPAN 2 methodology for certain energy products.
- The SPAN 2 methodology incorporates similar practices however achieves it dynamically at the portfolio level.
- CME Clearing may also require additional margin from Clearing Members based on exposures at the Clearing Member level (in addition to the margin required at the individual portfolio level).

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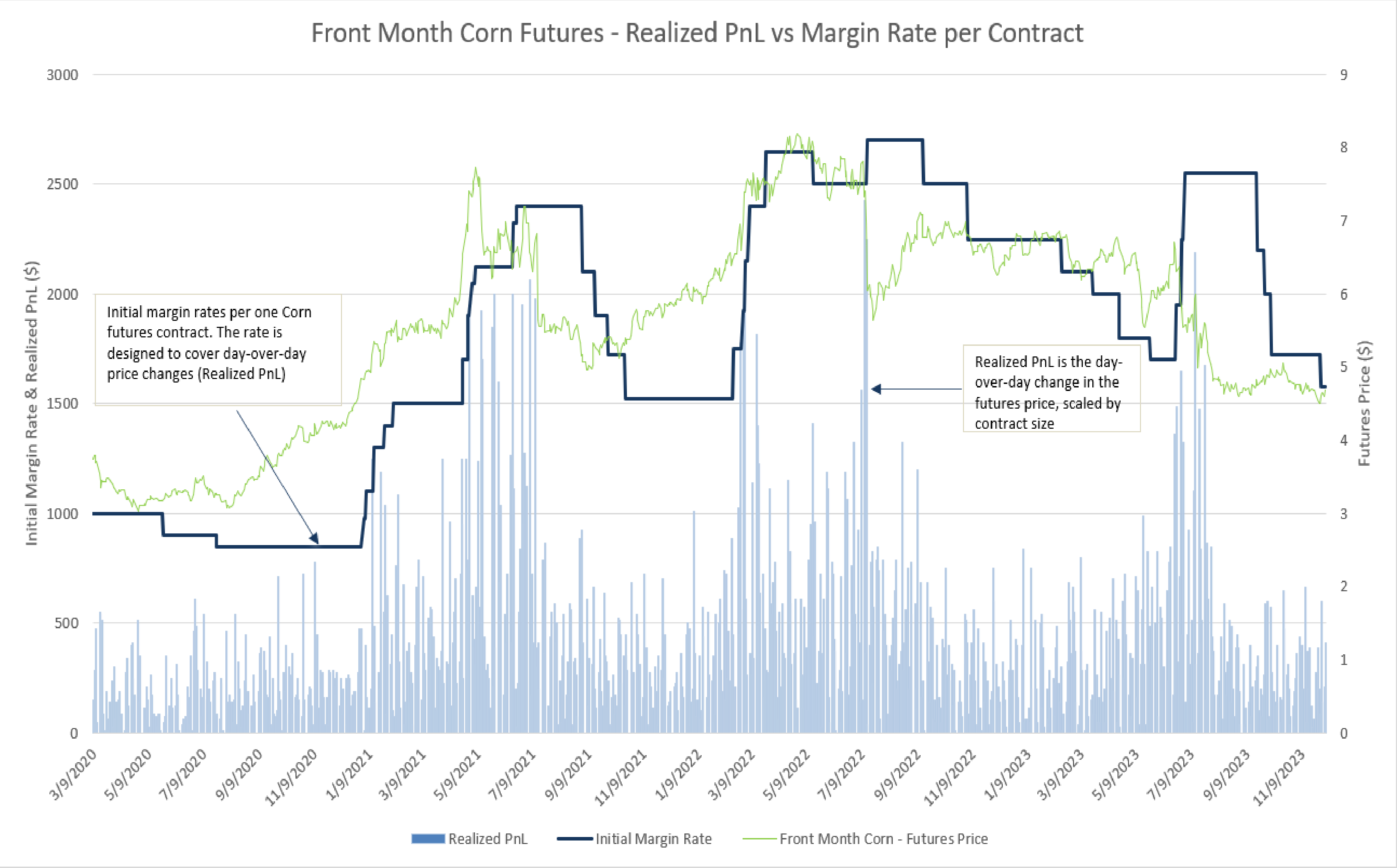
Margin Levels vs. Market Moves – Corn Futures

- The chart to the right reflects a time series of the daily profit & loss and margin required for the front month Corn Futures contract. The profit & loss and margin figures are represented in $ terms (left axis).
- Margins will increase during times of increased volatility and decrease during times of subdued volatility.
- Holding volatility fixed, margins may also change based on changes in notional of the contract. For example, if the price of Corn doubles over a certain time period, all else equal, margins would also double. See the price of front month Corn futures (right axis).



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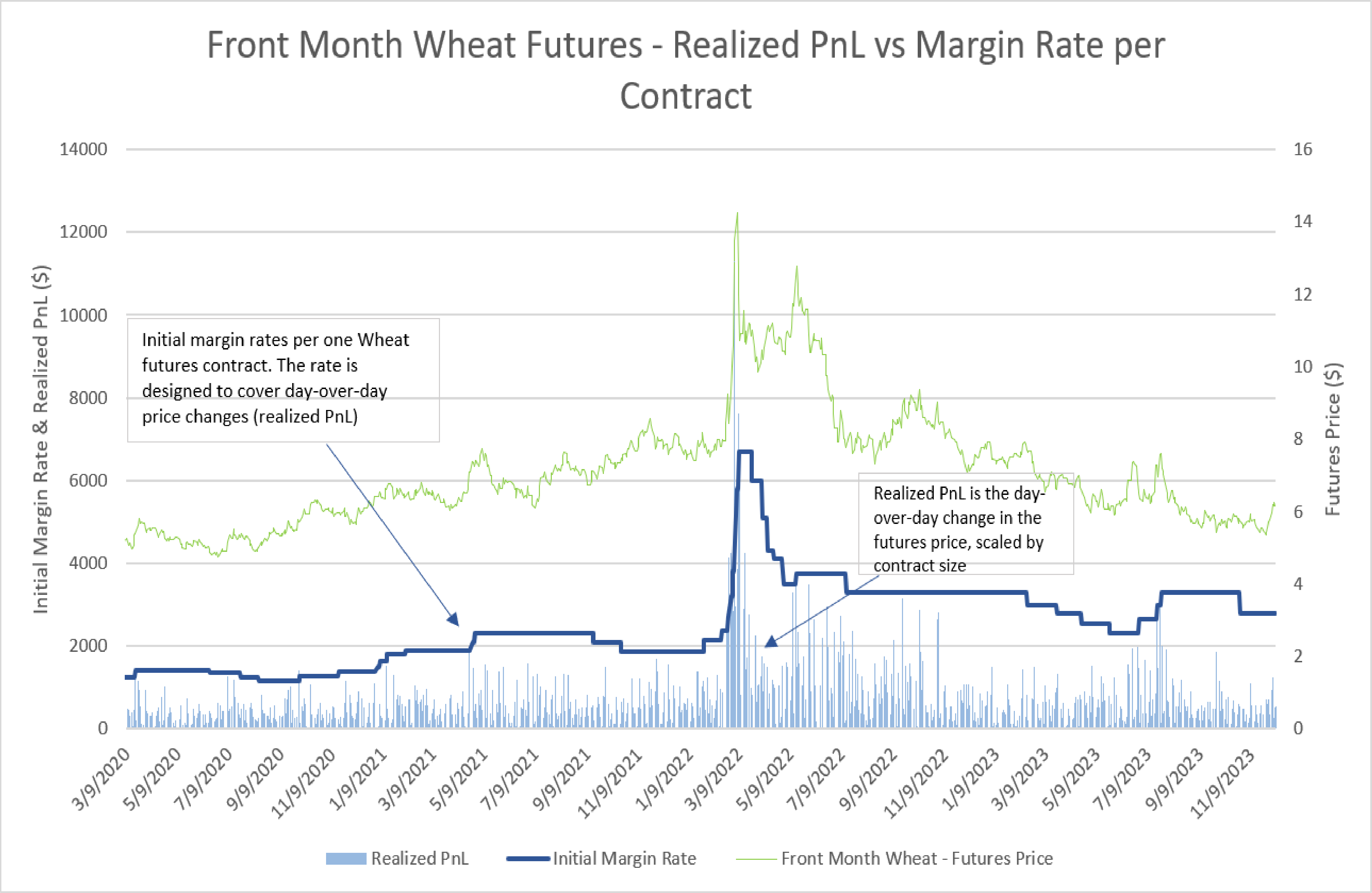
Margin Levels vs. Market Moves – Wheat Futures



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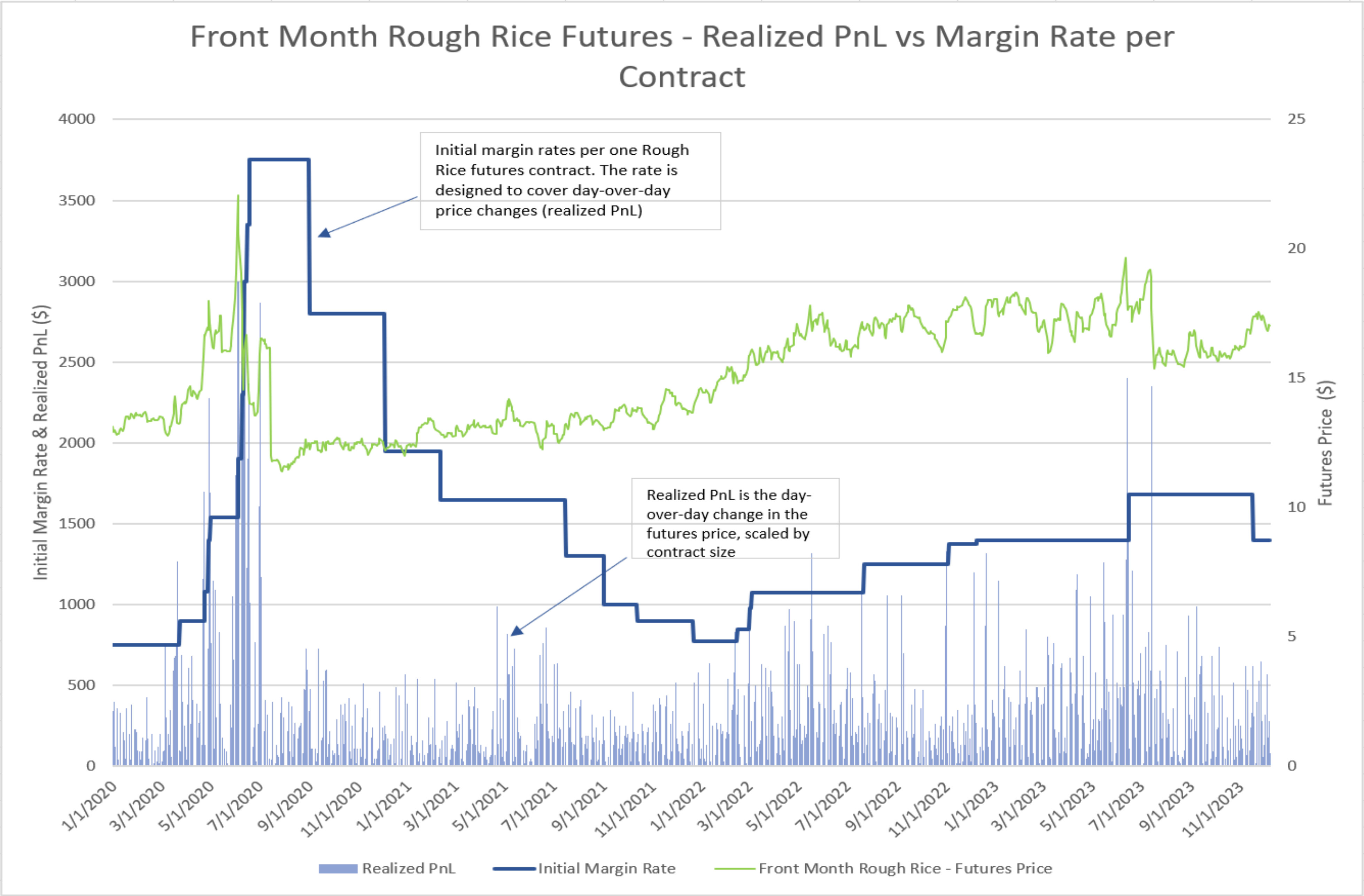
Margin Levels vs. Market Moves – Rough Rice Futures



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SPAN 2 Methodology

Framework and Rollout

- The SPAN 2 methodology is designed to preserve the current risk appetite and forecasting capabilities of the SPAN methodology, while incorporating new modelling and self-adjusting capabilities.
- CME Clearing continues to publish daily SPAN 2 margins at the product level on its website.
- The SPAN 2 methodology consists of the following components:
  - Historical Risk: scenarios based on historical movements
  - Stress Risk: persists historical scenarios from stressed periods outside of the historical component's lookback, and includes hypothetical scenarios
  - Liquidity and Concentration: captures the anticipated cost to hedge/liquidate a portfolio in the event of a default
- SPAN 2 Migration Timeline
  - Completed: Energy Products
  - Q2 2024: Equity Products
  - Q3-Q4 2024: Interest Rate and FX Products
  - **Q3-Q4 2025: Agriculture** and any Remaining Products
- Significant customer engagement leading up to each asset class migration
  - What-if margin reporting
  - Understand SPAN 2 methodology
  - Understand margin services tools which are available

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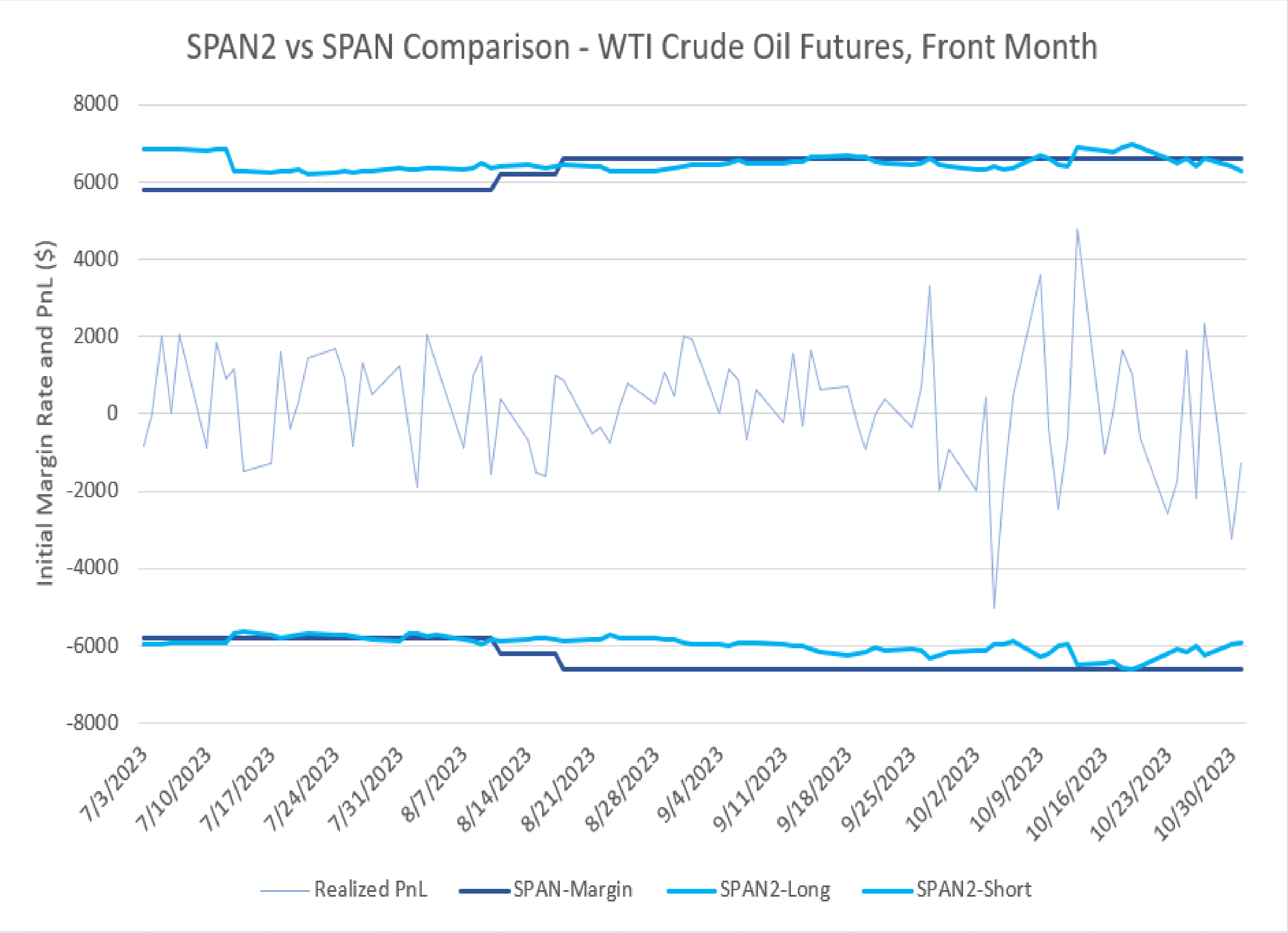
SPAN 2

WTI Crude Oil Futures Margin Differences between SPAN and SPAN 2 methodologies

- Clearing Members and market participants transitioned to the SPAN 2 methodology for core energy products throughout the 2nd half of 2023.
- The chart to the right shows the comparison for the front month WTI Crude Oil futures contact between SPAN and SPAN 2 outright margin levels, along with the daily profit & loss.
- Although margins change daily under the SPAN 2 methodology (for a fixed portfolio), margin levels are similar under the two methodologies.
- CME Clearing produces information which allows market participants to anticipate margin changes occurring next day.
- Any changes to parameters imbedded in the SPAN 2 methodology impacting margin requirements will be communicated via CME Clearing Advisory Notices. Market participants will be able to assess margin impacts in advance of these changes via SPAN 2 what-if risk parameter files.



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