

# Probability Analytics and Transactions Costs in the Era of Event Risk

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**CME Group**

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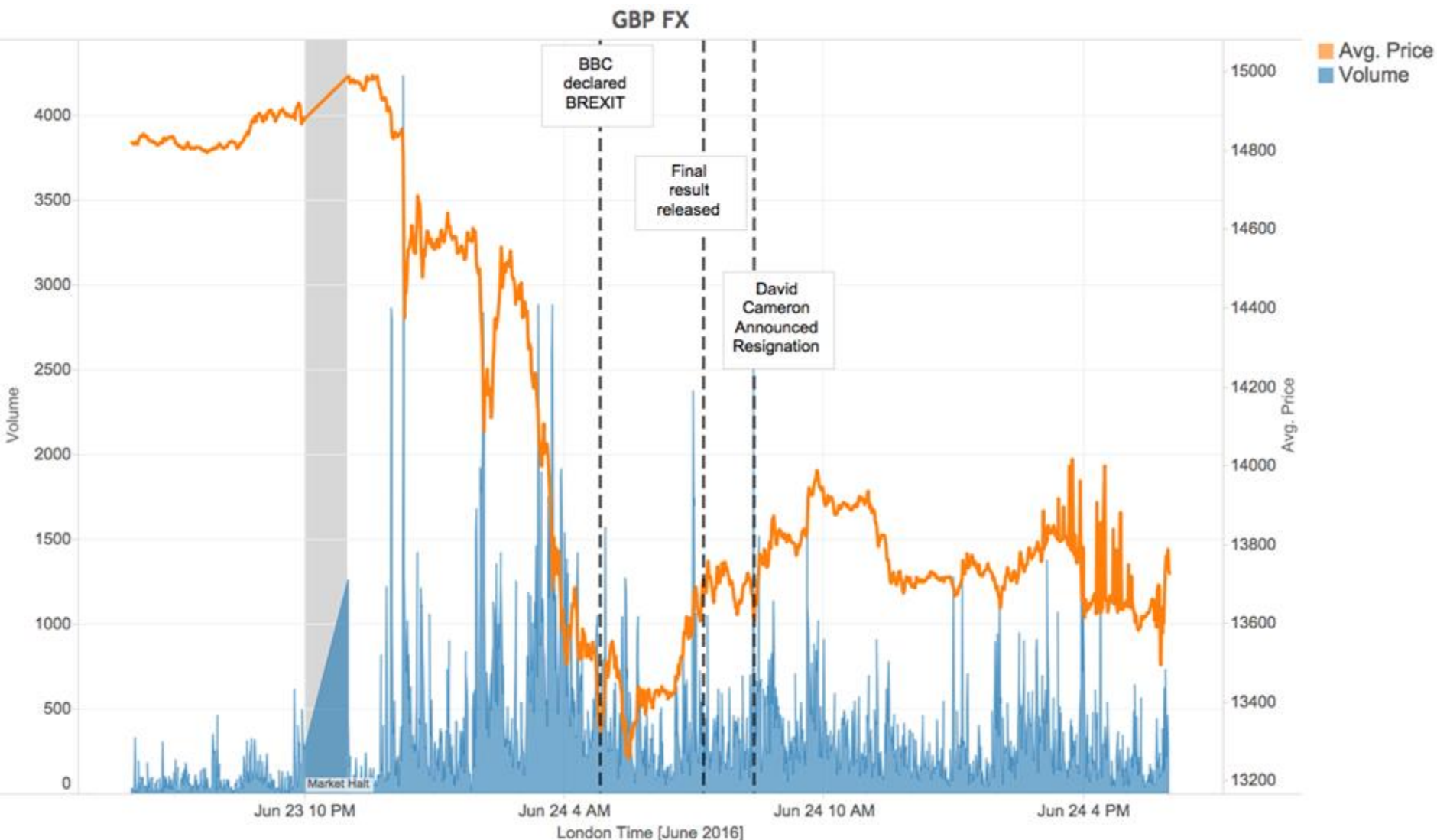
# Investment advice is neither given nor intended

The research views expressed herein are those of the author and do not necessarily represent the views of CME Group or its affiliates.

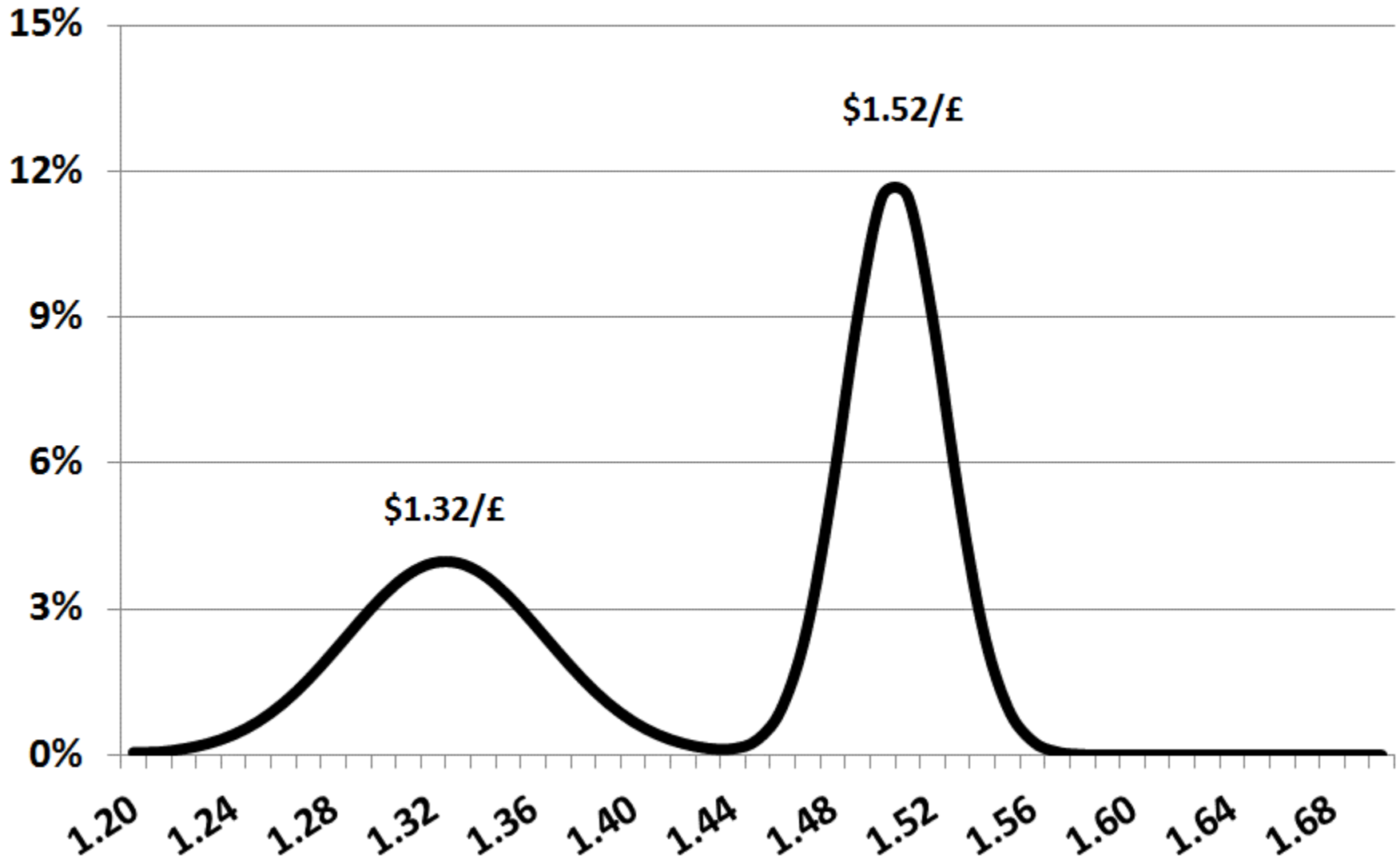
All examples in this presentation are hypothetical interpretations of situations and are used for explanation purposes only.

This report and the information herein should not be considered investment advice or the results of actual market experience.

# Brexit: Price and Volume (CME) of British Pound on 24 June 2016



# Pre-Brexit Vote: USD per GBP Expected Probability Distribution

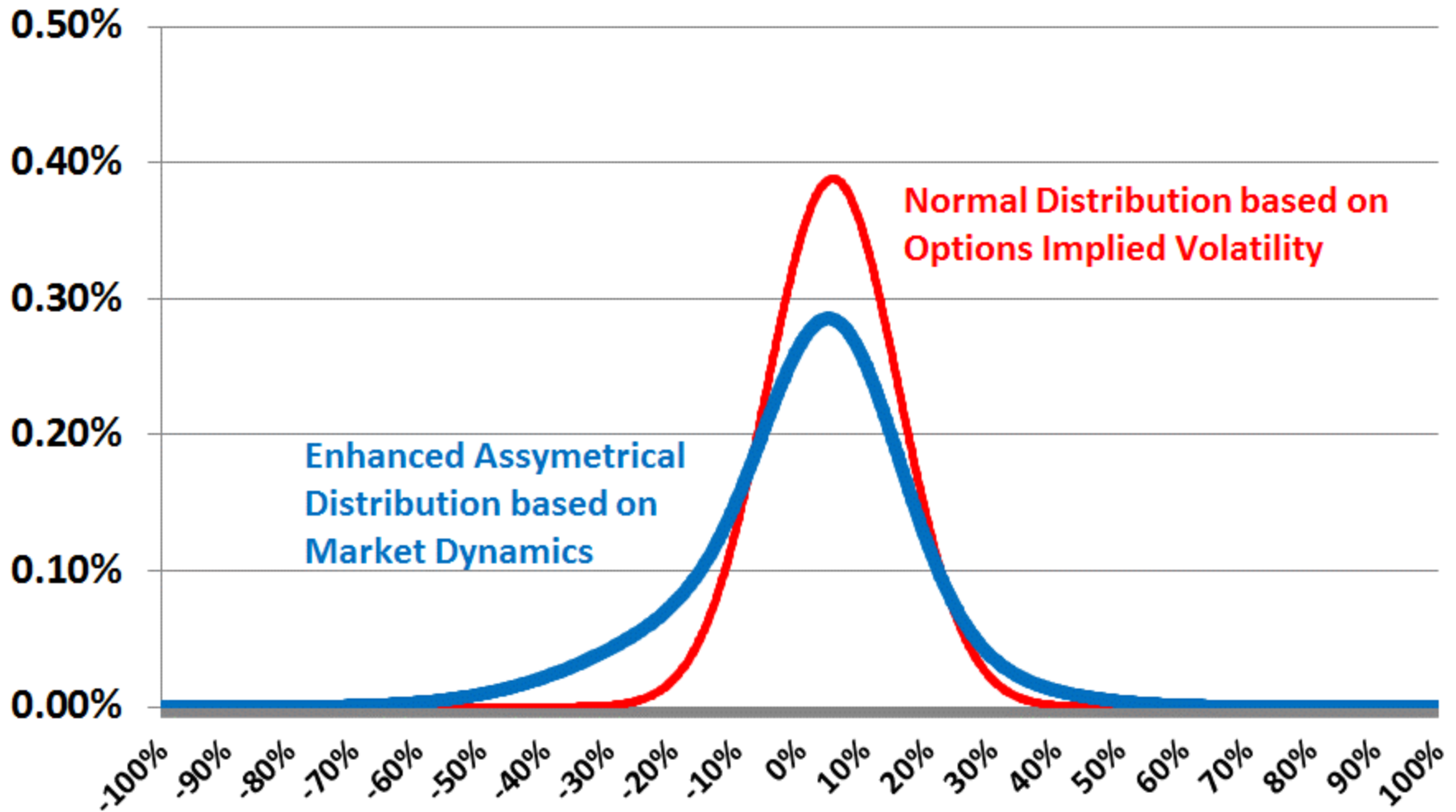


# E-mini S&P500, Night of US Election (Nov 8-9)



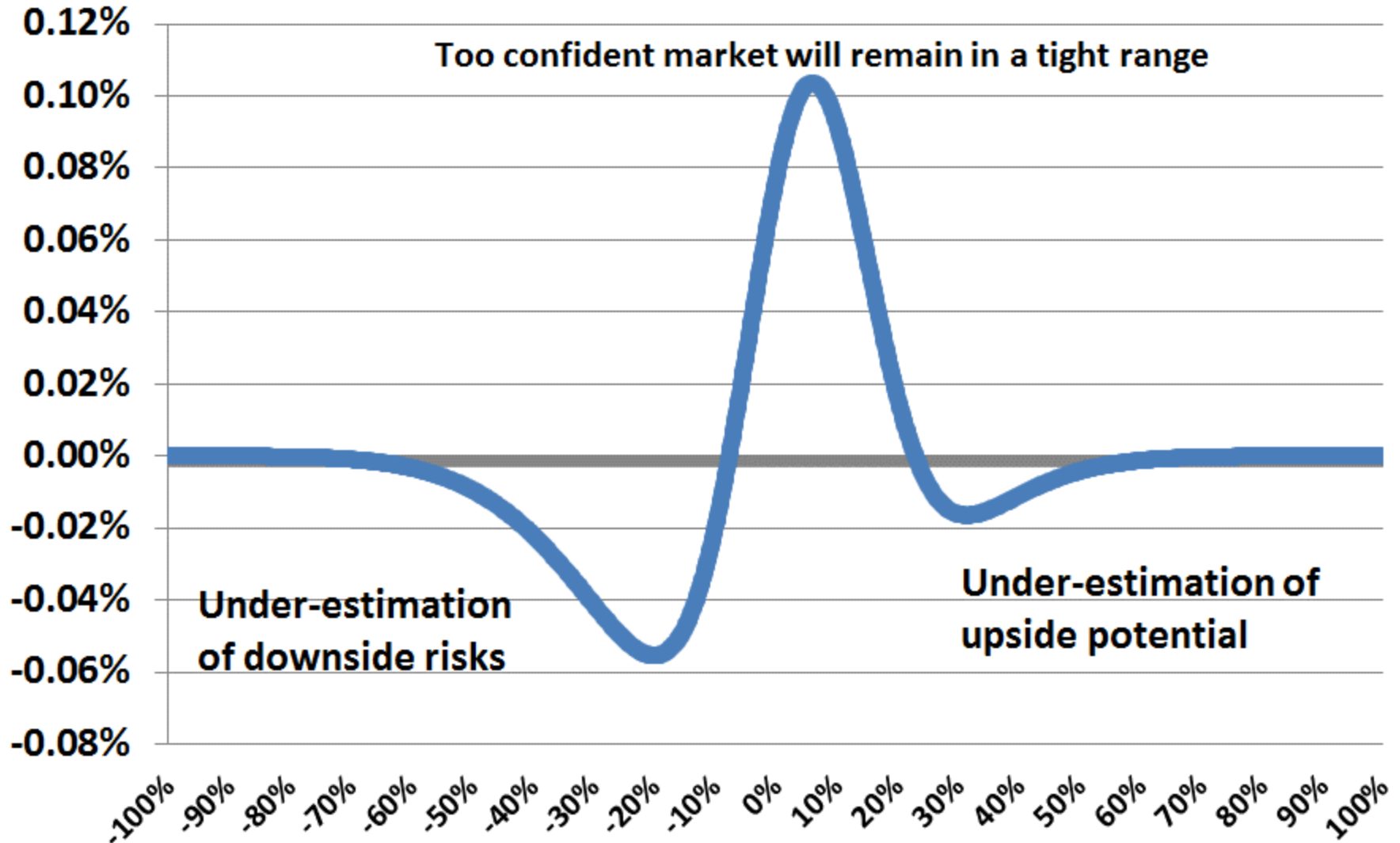
- **CME Group Record Daily Volume**
- **CME Group Record Overnight Daily Volume**

# Current S&P500<sup>®</sup> Expected Return: Implied Volatility vs Enhanced Risk Analysis

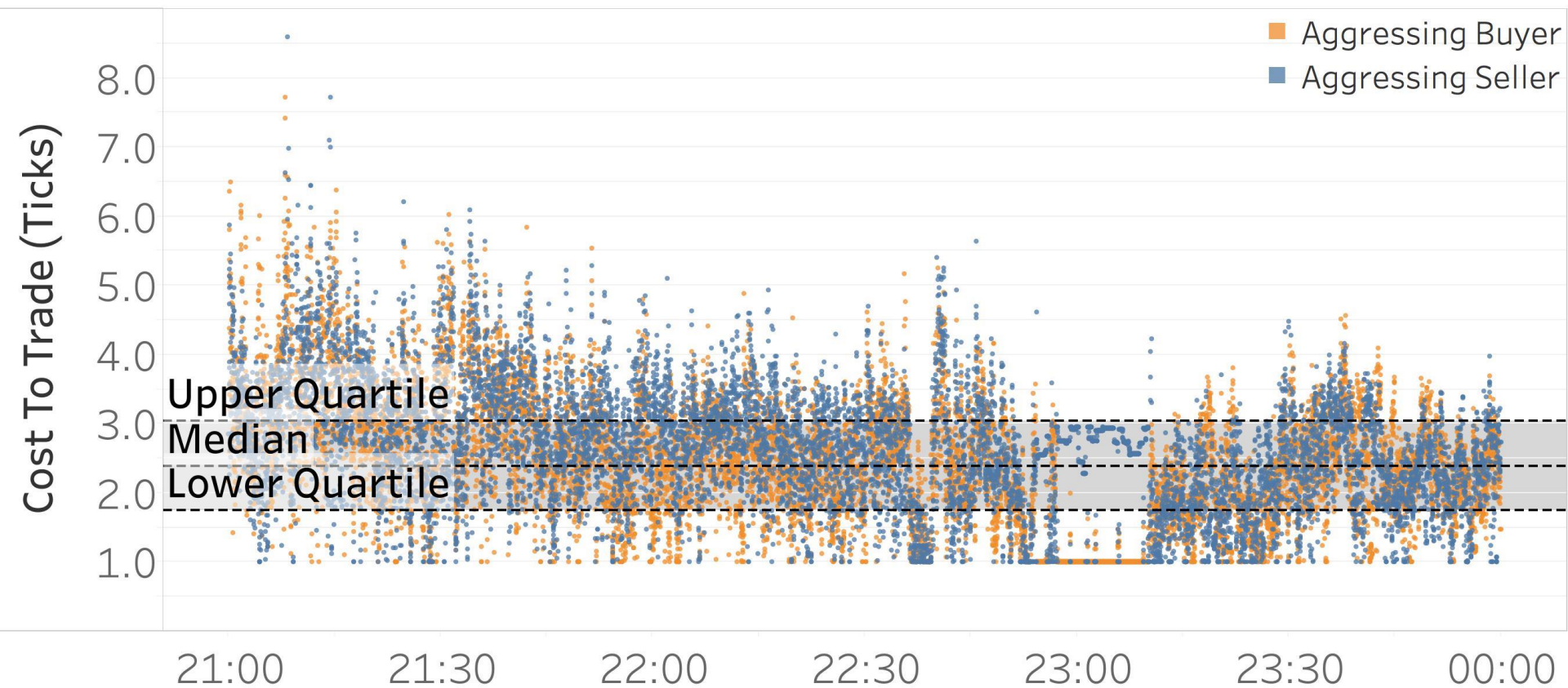


Source: CME Group Data Science Team.

# Probability Analysis Comparison (Current): Over and Under Estimation

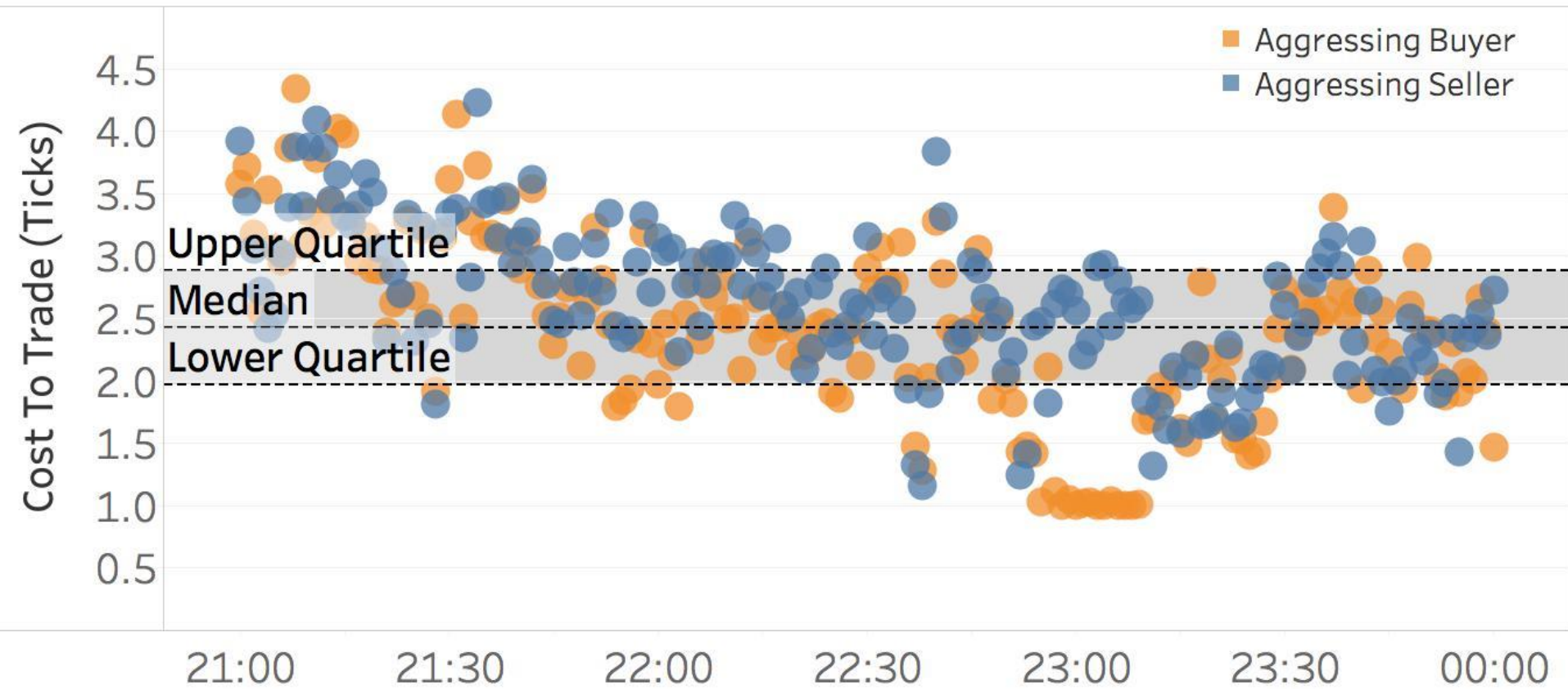


December E-Mini S&P 500 Futures (ESZ6)  
Nov 8, 2016 9PM-Midnight CT  
Cost to Trade 100 Lots

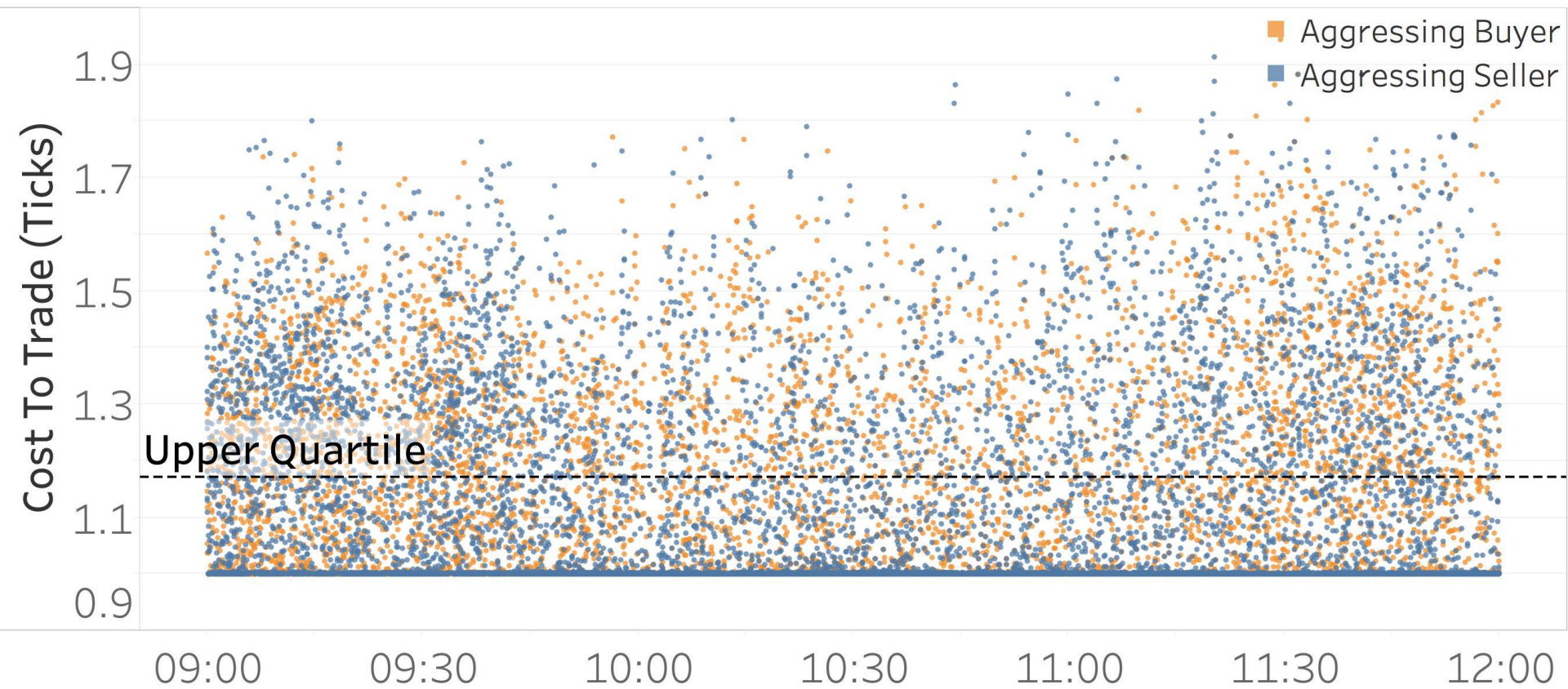




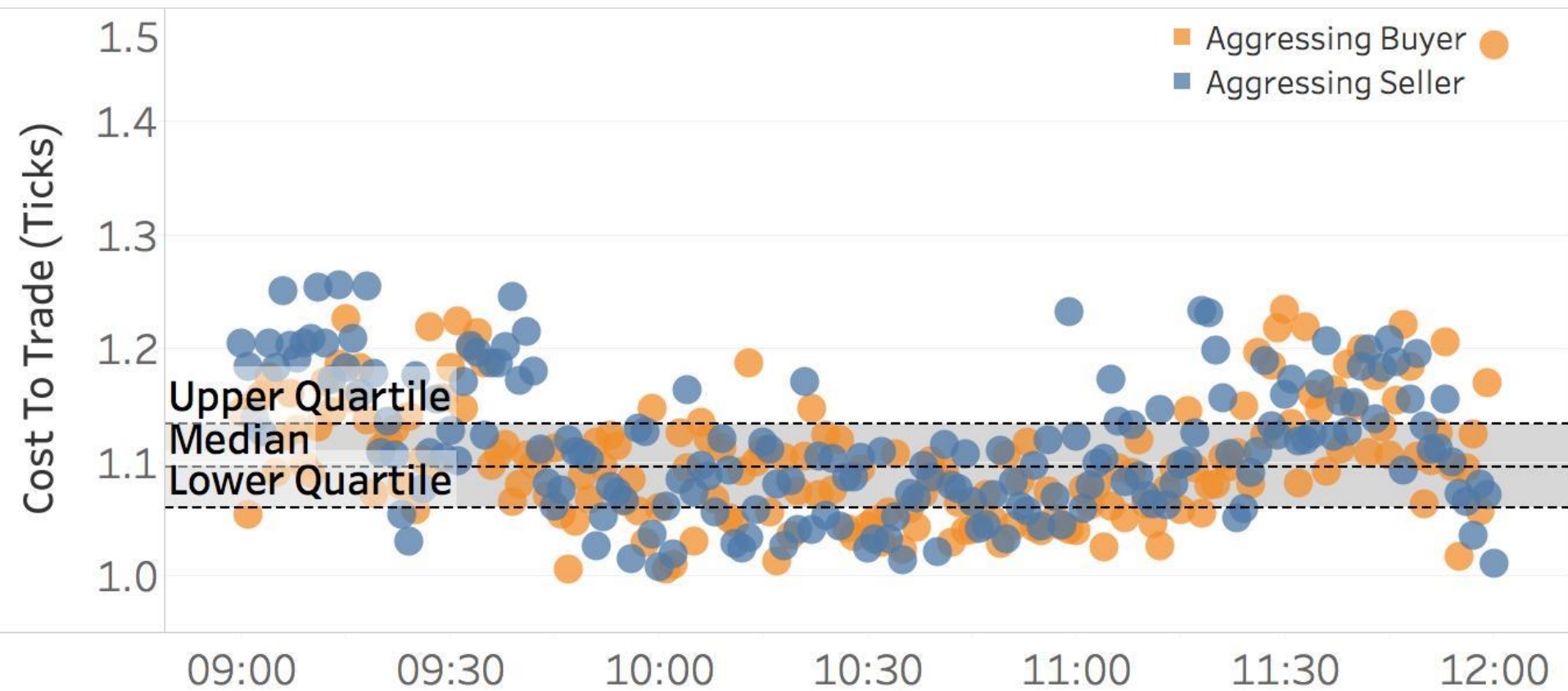
December E-Mini S&P 500 Futures (ESZ6)  
Nov 8, 2016 9PM-Midnight CT  
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December E-Mini S&P 500 Futures (ESZ6)  
Nov 9, 2016 9AM-Noon CT  
Cost to Trade 100 Lots



December E-Mini S&P 500 Futures (ESZ6)  
Nov 9, 2016 9AM-Noon CT  
Cost to Trade 100 Lots



# Thank you