

# Consistency of the S&P 500 and VIX Option Markets

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Abstract: We conduct a joint analysis of the information contained in S&P 500 and VIX option prices. The underlying indices are related in that the VIX volatility index, also known as the investor fear gauge, tracks the implied volatility of the S&P 500 stock market index. Previous research finds that both markets are integrated during tranquil periods while inconsistencies arise in times of financial turmoil. However, these results are based on explicit structural assumptions for the process dynamics. Based on recent theoretical advances in the field of discretisation-invariant pay-offs we derive a unique model-free relationship between S&P 500 and VIX option portfolios, which makes it possible to disentangle inconsistencies in market prices from the model specification. An empirical evaluation shows that pricing errors are within the bid-ask range and hence both markets are in fact well integrated under all market conditions. This is joint work with Andreas Kaeck.