

Chapter 18

Hedging Effectiveness of the VIX ETPs: An Analysis of the Time-Varying Performance of the VXX

Özcan Ceylan

 <https://orcid.org/0000-0003-2924-2903>

Özyeğin University, Turkey

ABSTRACT

This study introduces basic concepts about hedging and provides an overview of common hedging practices. This theoretical introduction is followed by an empirical application in which the hedging effectiveness of the VIX ETPs is evaluated. The iPath Series B S&P 500 VIX Short Term Futures ETN (VXX) and the SPDR S&P 500 Trust ETF (SPY) are taken for the empirical application. Dynamic conditional correlations between the VXX and SPY are obtained from DCC-GARCH framework. Based on the estimated conditional volatilities of the SPY and the hedged portfolio, a hedging effectiveness index is constructed. Results show that the hedging effectiveness of the VXX increases in turbulent periods such as the last three months of 2018 marked by the plummeting oil prices, increasing uncertainties about the Brexit deal, and rising federal funds rates and the month of March 2020 when the COVID-19 pandemic became a global concern.

INTRODUCTION

Investors need to secure their holdings against adverse price movements in financial markets. Hedging is a common practice followed by informed investors to reduce their exposure to risk. Options and futures are widely used to hedge against the variability in their underlying asset returns. Futures have very high positive correlation with underlying assets. In this case, hedging strategy consists of taking opposite positions, i.e., going long in futures and short in the underlying or vice versa. This strategy may provide a nearly perfect hedge, but that does not come without a cost: the hedged portfolio would

DOI: 10.4018/978-1-7998-8609-9.ch018

generate considerably lower returns. It may be desirable for investors to set a lower target hedging level to earn higher portfolio returns. Alternatively, commodities like gold and silver are also used for hedging and diversifying equity portfolios provided that these commodities are weakly correlated with equities.

Since the Long Term Capital Management hedge fund collapse in 1998, financial instabilities have become a growing concern for investors as the financial markets have frequently gone through several crises. The global financial crisis in 2008 (GFC) and the recent global pandemic of Covid-19 have been the most devastating ones, and compared to the GFC the latter had more severe impacts on the financial markets (Sharif et al., 2020). In March 2020, large and sudden drops in the U.S. stock and futures markets triggered circuit breaker mechanism four times in ten days, while trading was never halted during the GFC (Zhang et al., 2020). Although during both crises the volatility spiked to similar extremely high levels, the crisis evolved much faster in 2020 (Löwen et al., 2021). This fact is also reflected by significantly higher volatility of volatility levels observed during the Covid-19 pandemic (Brenner and Izhakian, 2021). In such turbulent periods, investors need to reconsider the effectiveness of hedging instruments. It is now well known that correlations between different asset classes tend to increase during financial crises. During the GFC, significant increases in correlations between stocks, bonds and commodities cast doubt on standard risk management practices (Szado, 2009). In high volatility periods, spot-futures relationship may also be weakened leading to a deterioration in hedging effectiveness of futures (Ait-Sahalia and Xiu, 2016).

Baur and Lucey (2010) distinguished diversifier, hedge, and safe haven properties of assets. A diversifier has a weakly positive correlation with other assets. To be classified as a hedge, an asset should be uncorrelated or negatively correlated with a portfolio on average. Given that the correlations between assets are time-varying, a hedge may also have positive correlations with other assets during a subperiod of an investment horizon. Thus, a hedge is not necessarily effective during periods of market stress. A safe haven is an asset that has negative correlations with a portfolio in times of market turmoil. During financial crises, investors realize that a hedging instrument should have safe haven properties to offset extreme losses in their portfolios (Hasan et al., 2021). Gold, for instance, is conventionally considered a safe haven. Areal et al. (2015) and Beckmann et al. (2015) showed that gold was an effective hedge for equities during the GFC. On the other hand, Lucey and Li (2015) found that gold acts as safe haven against U.S. equity with a significant lag after the GFC, in the last quarter of 2009. Moreover, important proportions of funds need to be allocated to gold to construct optimally hedged portfolios of stocks (Shrydeh et al., 2019). Several studies argued that gold is likely to lose its safe haven property in the post-GFC period (Baur and Glover, 2012; Bekiros et al., 2017; Klein, 2017). Safe haven property of gold remained disputable also in the Covid-19 period. While Ji et al. (2020) and Salisu et al. (2021) asserted that gold is a safe haven in that period, Cheema et al. (2020) and Akhtaruzzaman et al. (2021) showed that it has lost this property by March 2020. Tanin et al. (2021) found that when the Covid-19 pandemics unfolded, sharp increases in volatilities considerably repressed gold prices inhibiting its appeal as a safe haven in the short run. Several unconventional assets such as green bonds (Haq et al., 2021) and soybean futures (Ji et al., 2020) are also proposed as alternative hedges for the Covid-19 era. Cryptocurrencies were considered a valuable hedge against stock markets due to their low correlation with traditional assets classes in the pre-Covid 19 period (Baur et al., 2018). Chemkha et al. (2021) found that this property does not hold anymore during the Covid-19 pandemic. Conlon and McGee (2020) found that Bitcoin is not a safe haven against the S&P500, as both decrease in value during the bear market in 2020. Thus, in this highly instable and fragile conjuncture, finding an efficient hedge with safe haven property remains a crucial question that still needs a prompt answer.

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/hedging-effectiveness-of-the-vix-etps/296062

Related Content

Risk Analysis Using Simulation Software Applied on a Road Infrastructure Project

Vijaya S. Desai (2018). *Risk and Contingency Management: Breakthroughs in Research and Practice* (pp. 99-109).

www.irma-international.org/chapter/risk-analysis-using-simulation-software-applied-on-a-road-infrastructure-project/192371

Risk Mitigation Planning, Implementation, and Progress Monitoring: Risk Mitigation

Yadwinder Kaur and Satvir Singh (2018). *Analyzing the Role of Risk Mitigation and Monitoring in Software Development* (pp. 1-20).

www.irma-international.org/chapter/risk-mitigation-planning-implementation-and-progress-monitoring/204098

Structuring of Information for Understanding: An Aid to Planning

(2018). *Business Architectures for Risk Assessment and Strategic Planning: Emerging Research and Opportunities* (pp. 53-65).

www.irma-international.org/chapter/structuring-of-information-for-understanding/191140

Six Sigma

(2019). *Six Sigma Improvements for Basel III and Solvency II in Financial Risk Management: Emerging Research and Opportunities* (pp. 1-9).

www.irma-international.org/chapter/six-sigma/213275

Impact of Risk Assessment Models on Risk Factors: A Holistic Outlook

K. Madhu Kishore Raghunath, S. L. Tulasi Devi and Chandra Sekhar Patro (2018). *Research, Practices, and Innovations in Global Risk and Contingency Management* (pp. 134-153).

www.irma-international.org/chapter/impact-of-risk-assessment-models-on-risk-factors/196070