ANALYZING THE HEDGING EFFICACY OF NIFTY AND BULLION INDEX: DCC APPROACH

Dr. Sachin Kumar

Assistant Professor, P.G. Department of Commerce, S.D. College, Hoshiarpur

Dr. Nishi Bala

Principal and Professor, Ludhiana Group of Colleges, Ludhiana

Ms. Dimple

Assistant Professor, P.G. Department of Commerce, S.D. College, Hoshiarpur

ABSTRACT

Over the course of the past decade, Indian investors have begun to include commodities in their portfolios as a new asset class, with the intention of hedging against other asset classes. This study examines the relation between the MCX bullion index returns and the Nifty returns. To investigate the interrelationship of these two market groups, EGARCH is used. When the Bullion index was used as the dependent variable, the link was examined, and the findings indicate that volatility persists and clusters. More power is exerted by positive shocks than by negative ones. When Nifty was used as the dependent variable, the link was examined once more. This time, volatility clustering and persistence were demonstrated, but negative news had a greater effect than positive news. The DCC GARCH method was used to determine the spillover impact. DCC Alpha and Beta values added together were less than 1. DCC beta and DCC alpha were significant, suggesting a long-term spillover impact between the equities and bullion markets. The risk associated with the equities market might be managed by using the bullion market. To protect the portfolio against the risk associated with the equities market, consider adding bullion.

Keywords: Bullion, Equity NIFTY, Volatility

INTRODUCTION

Since the inception of derivative commodity exchanges in India in 2003, the commodity market has experienced remarkable expansion. Commodities are viewed by commodity market investors as a distinct asset class that should be included in a portfolio. To achieve risk-adjusted returns, investors and portfolio managers combine equities with commodities like gold and energy. When a bad economic catastrophe occurs, investors and portfolio managers convert their holdings to bullion because they view it as a secure investment and this may be the cause of the gold price increase throughout the COVID time. When it comes to investments, gold is a safe haven because it may stabilize the financial system by lowering losses from adverse market shocks Baur and McDermott,(2010). The pre- and post-COVID price fluctuations in the equities and bullion markets may have altered the dynamics between these two market segments, which may have had an impact on investor and portfolio manager behavior. India is a big importer of gold, and changes in the price of gold and silver can have a big effect on the equities market, currency rate, and both. It is customary for Indians to purchase gold and silver during auspicious events like as a daughter's marriage, Dhan teras, and Akshaya Tritya. Foreign portfolio investments have made a substantial contribution to the Indian equities market since its deregulation. Foreign investment flows up when Indian markets do well, strengthening the Indian currency, and vice versa when the market performs poorly. Significant gold imports devalued the Indian rupee and economy. Thus, it is crucial for regulators as well as investors and portfolio managers to understand the dynamic characteristics of the equity and bullion markets. This paper aims to investigate the dynamic relationship that exists in the post-COVID era between the equity and bullion markets. The dynamic relationship between the bullion market and the equities market is captured by the EGARCH and DCC GARCH techniques.

LITERATURE REVIEW

Numerous studies have been conducted on the relation between gold and the equity market (Cinar et al., 2013; Hood et al., 2013; Beckmann et al., 2015). The safe haven qualities of four precious metals—gold, silver, platinum, and palladium are examined over the course of time by Lucey and Li (2015). Findings from the US indicate that gold is not always the strongest or safest asset and that silver, platinum, and palladium function as safe havens when

gold does not. The study by Coudert and Raymond,2011 finds the correlation between gold and stock returns across the G7 and four other nations. According to the results, gold is typically a "weak safe haven" during times of crisis because of its connection with stocks, which is essentially unchanged from zero. In most situations, gold also seems to be a hedge against stocks, although not always. The nonlinear dynamic co-movements between stock market volatility, gold returns, and stock market returns during the global financial crisis are investigated by Choudhry et al, (2015). They examine these links in multivariate contexts and explore the association between gold returns and stock market returns and volatility. Due to the bidirectional connection between gold returns and stock returns, the results indicate a nonlinear feedback effect across variables, raising the possibility that gold may not be a safe haven during the crisis. From the standpoint of Indian industrial sectors, this research by Kumar (2014) looks at portfolio designs, hedging efficacy, and return and volatility spill over in the gold and Indian stock markets. The research demonstrates a sizable return spillover from gold to Indian industrial sectors using the VAR(1)-ADCC-BVGARCH(1,1) model. The report also emphasizes how important portfolio diversity is in times of recession and crisis. The results imply that shorting gold futures markets can be an inexpensive way to manage investment risk in Indian industrial sectors. When it comes to enhancing risk-adjusted performance and serving as a buffer against macroeconomic and market fluctuations, gold is a valuable asset class. Gürgün and Ünalmış (2014) explore the hedge and safe haven properties of gold in emerging and developing countries' equity markets. They aim to fill the gap in literature by analyzing gold's role for domestic and foreign investors. The results show that gold serves as both a hedge and safe haven for domestic investors in most countries, even post-2008 crisis. Additionally, gold acts as a safe haven in a larger set of countries when equity market falls. Baruník et al. (2016) used wavelet methodology and a time-frequency approach to investigate dynamic relations between significant traded assets. Realized volatility and DCC GARCH techniques are contrasted. The study examines S&P 500, gold, and oil prices during a 26-year period, from 1987 to 2012. Both daily and intra-day data are used in the analysis. The results demonstrate the superior performance of wavelet analysis over traditional benchmarks, indicating the presence of heterogeneous patterns in asset values. Wavelet analysis displays diverse patterns in asset linkages over time and across investment horizons better than typical benchmarks, according to the study. Asset correlations are primarily diverse during recessions and financial instability. This is especially noticeable in the correlations between oil and equities and gold, where

homogeneous relationships were noted from the early 1990s until the 2008 financial crisis. All three asset correlations and homogeneity correlations increased significantly after the crisis. These modifications follow structural fractures found in particular correlation series. The correlations between asset pairs became uniform and did not change at different investment horizons, despite significant fluctuations in amplitude. This implies that, contrary to popular belief, not all three assets might be utilized as frequently in a well-diversified portfolio. Iqbal (2017) looks at how gold can be used as a hedge against changes in the stock market, inflation, and exchange rates in the US, India, and Pakistan between 1990 and 2013. The study employs a quartile regression approach to examine the possibility for gold hedging in both bullish and bearish gold market conditions, and it uses daily and monthly data to explain average gold returns using an EGARCH model. The findings indicate that while gold does provide a safe haven from exchange rate risk in Pakistan and India, its effectiveness varies depending on the state of the gold market. In Pakistan and India, gold also serves as a safe haven against declining domestic currencies. . Lean and Wong (2015) use the stochastic dominance (SD) approach to investigate how gold contributed to portfolio diversification in France between 1949 and 2012. Findings indicate that stock portfolios containing gold do better than those without, indicating that risk-averse investors can profit from incorporating gold. This is particularly true in erratic or emergency situations. That being said, risk-free or bond portfolios are exempt from this. The study also discovered that London portfolios containing gold had comparable outcomes to Parisian portfolios. The results of mean-variance performance measures support earlier research showing that gold helps diversify stock portfolios but not bond portfolios. In order to comprehend the intricate relationships between stock markets and gold prices, Nguyen et al. (2016) use copula methodologies to investigate the function of gold in international stock markets. Both parametric and nonparametric copulas are used to examine data from seven different nations between 1999 and 2010. The findings indicate that while gold may not be a safe haven asset in Indonesia, Japan, or the Philippines, it may be in Malaysia, Singapore, Thailand, the UK, and the US during market crises. The co-movements of the BRICS, gold prices, crude oil prices, and emerging stock markets are examined by Mensi et al. (2018). The findings indicate that the returns of the BRICS index, especially during the global financial crisis, co-move at low frequencies with the price of WTI crude oil. Nevertheless, there are no proof that gold prices and BRICS stock markets are related, indicating that gold cannot serve as a safe haven asset or hedge for BRICS against volatile market fluctuations. The results imply that the co-

movements of the oil and stock markets have an impact on portfolio risk. The impact of gold, crude oil, and stocks on equity portfolios is examined by Maghyereh et al. (2017). The DCC-GARCH model was used to predict dynamic correlations and hedge ratios using data spanning from 2004 to 2016. The findings demonstrated a strong spillover from oil to equities, highlighting how heavily local economies rely on oil. The lack of significant gold spillovers suggests that decisions about equity investments are not always influenced by changes in the price of gold. The two commodities were not greatly impacted by stocks because of their limited exchange capitalization. Gold and oil are inexpensive, but expensive, stock hedges. Due of the COVID-19 pandemic's significant effects on the financial markets, investors are looking for investment strategies. An analysis of gold's function as a hedge or safe-haven asset during various stages of crises makes use of intraday data was initiated by Akhtaruzzaman (2021). To paint a more accurate picture, the impact of high-frequency trading on pricing efficiency and price discovery is investigated. The findings steer investors and governments toward efficient risk management strategies by offering them information. According to the study, during the first phase of the COVID-19 pandemic, gold was a safe-haven asset for equity indexes. However, during the second phase, because of government stimulus packages, gold lost its status as a safe-haven asset. Phase II saw an increase in the ideal weights of gold, suggesting a "flight-to-safety assets" phenomena. For the Euro Stoxx 50, China FTSE A50, and WTI crude oil, gold was a good hedging strategy during Phase I; but, during Phase II, hedging costs soared. The efficiency of gold and silver as hedges against equity in various national markets was investigated by the researchers using data from the 2008 post-crisis period. This article is innovative in that it tests the relationship between the MCX bullion index and the NSE stock index during the COID-19 post-crisis period, rather than using individual gold or silver contracts.

RESEARCH METHODOLOGY

This study investigates the connection between the Nifty return and the bullion index. A distinct contract for gold and silver that is traded on MCX is included in the bullion index. Both the pre-COVID and post-COVID periods are included in the data. The period of data collection was January 2016–April 2024. Information about the regular daily closing price data of MCX bullion was available on MCX website from January 2016 till April 2024 so the data was collected for specific period. The MCX provided the gold index, and the NSE's official website provided the Nifty statistics. The data from both exchanges were reconciled

because one of them was closed on a holiday for a few days; therefore the closing price from that day was used. For time series analysis, the series needs to be stationary. By using the ADF unit root test to verify stationarity, it was found that both series were stationary at first difference. When the series' dependent variable was bullion, EGARCH was applied; when the series' dependent variable was nifty, EGARCH was applied once more. To evaluate the spillover effect between NIFTY and MCX BULLDEX, DCC GARCH was utilized.

RESULTS

Dependent Variable: MCX BULLDEX

		P-value
ARCH Term	0.037844	0.0000
GARCH Term	0.995829	0.0000
EGARCH	0.034635	0.00000

The ARCH term is 0.037844is significant at 1% which indicates that the NIFTY returns have a volatility clustering effect on the BULLDEX of MCX. GARCH term 0.995829 is significant with a P-value of 0.0000. This indicated the persistence of volatility from the NIFTY to the BULLDEX of MCX. EGARCH term 0.050517 is also significant with a p-value of 0.00000. EGARCH term is positive and significant which shows that BULLDEX volatility and nifty volatility have positive and significant. Positive news from the NIFTY has more impact on the BULLDEX than negative news.

Dependant Variable: NIFTY

		P-value
ARCH Term	0.133937	0.0000
GARCH Term	0.975933	0.0000
EGARCH	-0.097311	0.0000

ARCH term 0.133937 is significant at 1% which shows that BULLDEX returns have a volatility clustering effect on Nifty. GARCH term 0.975933 is also significant with a P-value of 0.0000 which indicated the past volatility from the BULLDEX has an impact on the

volatility Nifty. EGARCH term -0.097311 is also significant with a p-value of 0.00000. EGARCH term is negative and significant which shows that BULLDEX volatility and NIFTY volatility has negative and significant relationship. Negative news from the BULLDEX has more impact on the NIFTY than Positive news. The investor hedge and shift position in nifty and bullion due to which the positive and negative news effect can be witnessed in the cross section of the markets.

DCC GARCH

		P-value
DCC Alpha	0.0099432	0.03708
DCC Beta	0.9761600	0.0000

The combined value of DCC alpha and DCC beta is less than 1 so the stability condition is fulfilled. DCC Alpha is 0.0099432 significant and DCC beta 0.9761600 is also significant which implies that the long-term spillover effect is there in BULLDEX and NIFTY. Bullions can be used to hedge against the equity market.

CONCLUSION

This essay aims to investigate the connection between NIFTY and the MCX Bullion Index. EGARCH is used to evaluate the connection. When the Bullion index was used as the dependent variable, the link was examined, and the findings indicate that volatility persists and clusters. More effect is produced by positive shocks than by negative ones, When Nifty was used as the dependent variable, and the link was examined once more. This time, volatility persistence and clustering were demonstrated, but negative news had a greater influence than positive news. The DCC GARCH method was used to determine the spillover impact. DCC Alpha and Beta values added together were less than 1. The bullion market and the equities market appear to have a long-term spillover impact, as seen by the strong DCC Alpha and DCC Beta values. The risk associated with the equities market might be managed by using the bullion market. Bullion can be a part of a portfolio to reduce equity market risk. The results hold importance for both portfolio managers and investors. The investors can hedge their positions across two markets. The results affirm the research by Baruník et al. (2016) the nifty and bullion index can be used for inter market hedging. The research

conclusions may vary when a longer period of data is used, as the paper's limited period data from BULLDEX and NIFTY is employed in the analysis.

REFERENCES

Akhtaruzzaman, M., Boubaker, S., Lucey, B. M., & Sensoy, A. (2021). Is gold a hedge or a safe-haven asset in the COVID–19 crisis?. *Economic Modelling*, *102*, 105588, 1-26.

Baruník, J., Kočenda, E., & Vácha, L. (2016). Gold, oil, and stocks: Dynamic correlations. *International Review of Economics & Finance*, *42*, 186-201.

Baur, D.G., & Lucey, B.M. (2010). Is gold a hedge or a safe haven? An analysis of stocks,bonds and gold. *Financial Review 45*, 217-229.

Baur, D.G., & McDermott, T.K. (2010). Is gold a safe haven? International evidence. *Journalof Banking and Finance 34*, 1886-1898.

Beckmann, J., Berger, T., & Czudaj, R. (2015). Does gold act as a hedge or a safe haven for stocks? A smooth transition approach. *Economic Modelling*, *48*, 16-24.

Bredin, D., Conlon, T., & Potì, V. (2015). Does gold glitter in the long-run? Gold as a hedge and safe haven across time and investment horizon. *International Review of Financial Analysis*, *41*, 320-328.

Choudhry, T., Hassan, S. S., & Shabi, S. (2015). Relationship between gold and stock markets during the global financial crisis: Evidence from nonlinear causality tests. *International Review of Financial Analysis*, *41*, 247-256.

Ciner, C., Gurdgiev, C., & Lucey, B. M. (2013). Hedges and safe havens: An examination of stocks, bonds, gold, oil and exchange rates. *International Review of Financial Analysis*, *29*, 202-211.

Coudert, V., & Raymond, H. (2011). Gold and financial assets: are there any safe havens in bear markets. *Economics Bulletin*, *31*(2), 1613-1622

Gürgün, G., & Ünalmış, İ. (2014). Is gold a safe haven against equity market investment in emerging and developing countries?. *Finance Research Letters*, *11*(4), 341-348.

Hood, M., & Malik, F. (2013). Is gold the best hedge and a safe haven under changing stock market volatility?. *Review of Financial Economics*, *22*(2), 47-52.

Iqbal, J. (2017). Does gold hedge stock market, inflation and exchange rate risks? An econometric investigation. *International Review of Economics & Finance*, *48*, 1-17.

Kumar, D. (2014). Return and volatility transmission between gold and stock sectors: Application of portfolio management and hedging effectiveness. *IIMB Management Review*, *26*(1), 5-16.

Lean, H. H., & Wong, W. K. (2015). Is gold good for portfolio diversification? A stochastic dominance analysis of the Paris stock exchange. *International Review of Financial Analysis*, *42*, 98-108.

Lucey, B. M., & Li, S. (2015). What precious metals act as safe havens, and when? Some US evidence. *Applied Economics Letters*, *22*(1), 35-45.

Maghyereh, A. I., Awartani, B., & Tziogkidis, P. (2017). Volatility spillovers and cross-hedging between gold, oil and equities: Evidence from the Gulf Cooperation Council countries. *Energy Economics*, *68*, 440-453.

Mensi, W., Hkiri, B., Al-Yahyaee, K. H., & Kang, S. H. (2018). Analyzing time–frequency co-movements across gold and oil prices with BRICS stock markets: A VaR based on wavelet approach. *International Review of Economics & Finance*, *54*, 74-102.

Nguyen, C., Bhatti, M. I., Komorníková, M., & Komorník, J. (2016). Gold price and stock markets nexus under mixed-copulas. *Economic Modelling*, *58*, 283-292.