An Analysis of Gold and US Equity

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Abstract

This paper investigates the relations between gold and US equity by focusing on the period for the recent five years from 2017 to 2022, which is during and after the COVID-19 crisis, and derives the following findings. First, for the five years during and after the COVID-19 crisis, gold and US equity returns were little correlated. Second, during the five years, US equity returns were higher than gold returns. Third, during the five years, US equity volatilities were clearly higher than gold volatilities.

Keywords

COVID-19 Crisis, Gold, Return, US Equity, Volatility

1. Introduction

Recently, there seems to be a growing concern amongst academicians and industry practitioners about alternative investment assets like gold. There are indeed interest existing studies concerning gold (e.g., Liu et al., 2016; Lucey et al., 2017; Schmidbauer & Rösch, 2018; Huang et al., 2019; Dichtl, 2020; Salisu et al., 2020; Xu et al., 2021; Yildirim et al., 2021; Ding et al., 2022; Kombo, 2022). However, empirical research exploring the relations between gold and US equity by focusing on the period during and after the COVID-19 crisis seems to be limited. Therefore, given and motivated by this, our current study empirically examines the relations between gold and US equity by focusing on both their returns and volatilities in the period for the recent years during and after the COVID-19 crisis.

As a result, the present study derives the following new findings that contribute to the existing body of research. First, 1) for the five years during and after the COVID-19 crisis of 2017 to 2022, gold and US equity returns were little correlated. Second, 2) during the recent five years, US equity returns were higher than gold returns. Third, 3) during the five years, US equity volatilities were much higher than gold volatilities. We consider that these findings shall be

beneficial for not only academic researchers but also industry practitioners as research results of the relations between gold and US equity for recent years are useful. The rest of this paper is organized as follows. Section 2 first documents the data and our methodology, Section 3 explains our results, and Section 4 presents our conclusions.

2. Data and Methodology

This section describes our data and methodology. The data for this study are gold and US equity time series. More specifically, SPX denotes the price series of S&P 500, which is adjusted to 100 in November 2017, and USG denotes the price series of gold futures, which is also adjusted to 100 in November 2017. In addition, SPXR denotes the return series of S&P 500, and USGR denotes the return series of gold futures. All data are provided by Nikkei Inc.

Moreover, the samples we analyze in this study are basically monthly data and our return (price) sample period is from November (October) 2017 to October 2022. We note that our analyzing term is a recent five-year period during and after the COVID-19 crisis. Figure 1 and Figure 2 exhibit the time-series evolutions of the levels of US equity and gold prices during this period. More concretely, Figure 1 displays the dynamic evolutions of the actual price levels of S&P 500 (in point), and Figure 2 presents those of gold futures (in US dollars), respectively. As seen, the time-series trends of both asset prices seem to be similar at first glance.
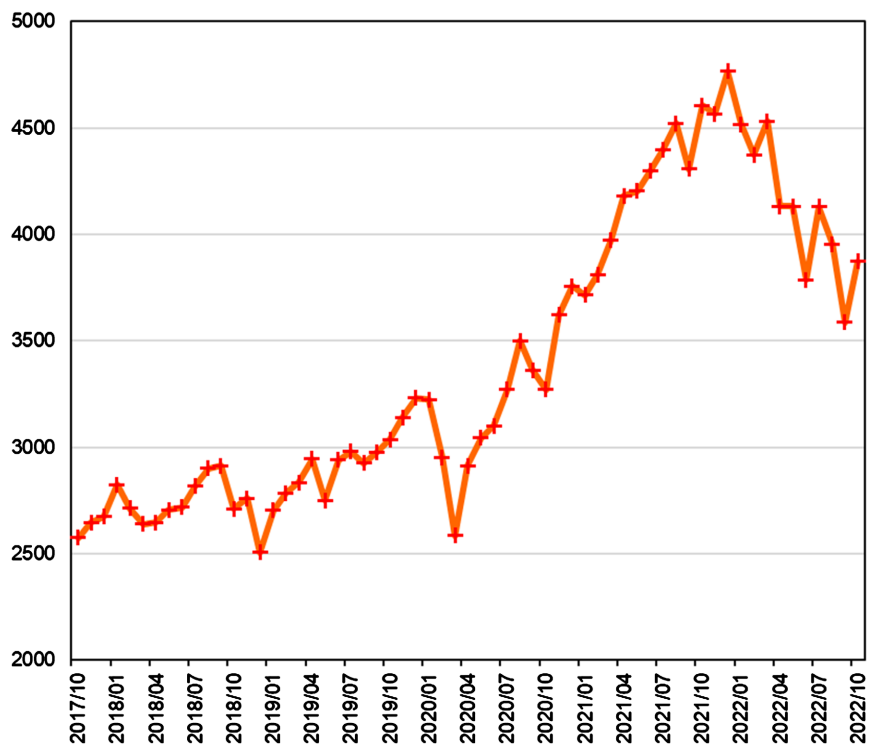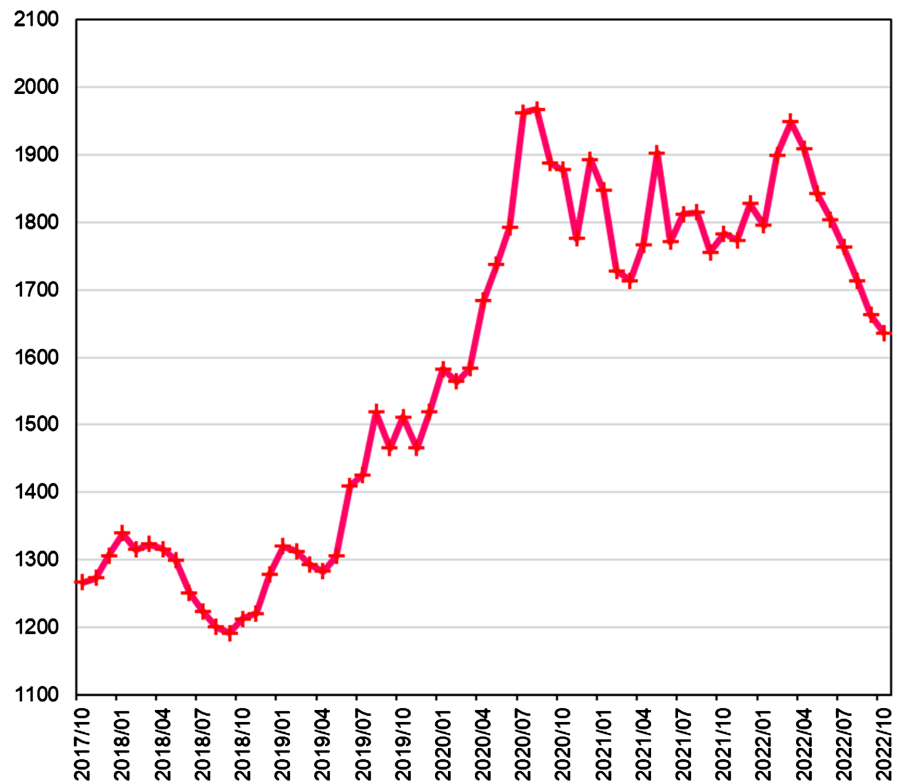

S&P 500 price series are monthly and displayed in point.

Figure 1. Time-series evolution of the S&P 500: October 2017 to October 2022.

Furthermore, Table 1 provides the descriptive statistics as to SPXR and USGR for our sample period, November 2017 to October 2022. Table 1 indicates that the mean values of SPXR and USGR are both positive in our period. In addition, this table also shows that the skewness value of SPXR is negative while that of USGR is positive, and the kurtosis values of these two series take close values to three, that of normal distributions, during the period.

As regards our methodology, we first test the relations of gold and US equity returns for the recent five-year period by a simple linear regression. After that, we

Gold price series are monthly and displayed in US dollars.

Figure 2. Time-series evolution of gold prices: October 2017 to October 2022.

Table 1. Descriptive statistics for US equity and gold returns: November 2017 to October 2022.

	SPXR	USGR
Mean	0.821	0.490
SD	5.295	3.600
Min.	−12.512	−6.922
Max.	12.684	9.470
Skewness	−0.395	0.377
Kurtosis	2.904	2.752

SD: standard deviation value; Min.: minimum value; Max.: maximum value. SPXR: return of the S&P 500; USGR: return of gold.

further investigate the returns of gold and US equity during the period by examining their return spreads. Finally, we also investigate the magnitude of volatilities of gold and US equity during the period by examining their volatility spreads.

3. Results

This section explains our results. We first provide the result of a univariate regression, which regresses gold returns on US equity returns by using monthly data from November 2017 to October 2022 in Table 2. As this table shows, the intercept and slope coefficient are not statistically significant. This indicates that there is little linkage between gold and US equity returns in the recent five-year period, which is during and after the COVID-19 crisis. We can also recognize this little-correlated relation between two asset returns graphically by viewing Figure 3,

Table 2. Regression result for gold on US equity: November 2017 to October 2022.

	Intercept	Slope coefficient	Adj.R²
Estimate	0.398	0.112	0.010
t-stat.	0.834	1.548	
p-value	0.408	0.127	

t-stat.: t-statistic value; Adj.R^2: adjusted R-squared value. The result is from a univariate linear regression using five-year monthly return data.
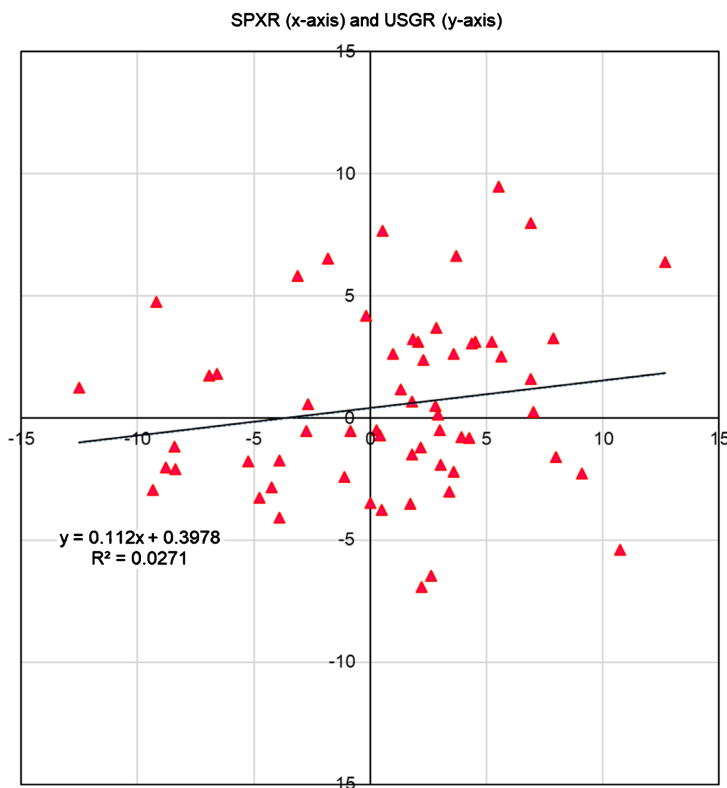

SPXR: return of the S&P 500; USGR: return of gold. All returns are monthly and displayed in percent.

Figure 3. Relations of US equity and gold returns: November 2017 to October 2022.

which plots the realized pairs of gold and US equity returns for this five-year period.

Next, to more deeply understand the relations of gold and US equity returns during our five-year period, we plot the dynamic evolutions of gold prices (USG) and US equity prices (SPX) and their spreads in Figure 4. Note again that USG and SPX are set to 100 in November 2017. As this figure shows, gold (cumulative) returns were higher than US equity (cumulative) returns during about one year of 2020, while US equity (cumulative) returns were higher than gold (cumulative) returns from about the beginning of 2021 to October 2022.

To obtain clearer evidence, we further show the annualized average returns of US equity (SPXR) and gold (USGR) and their spread for the five-year period in Table 3. As this table shows, we understand that on average, US equity returns
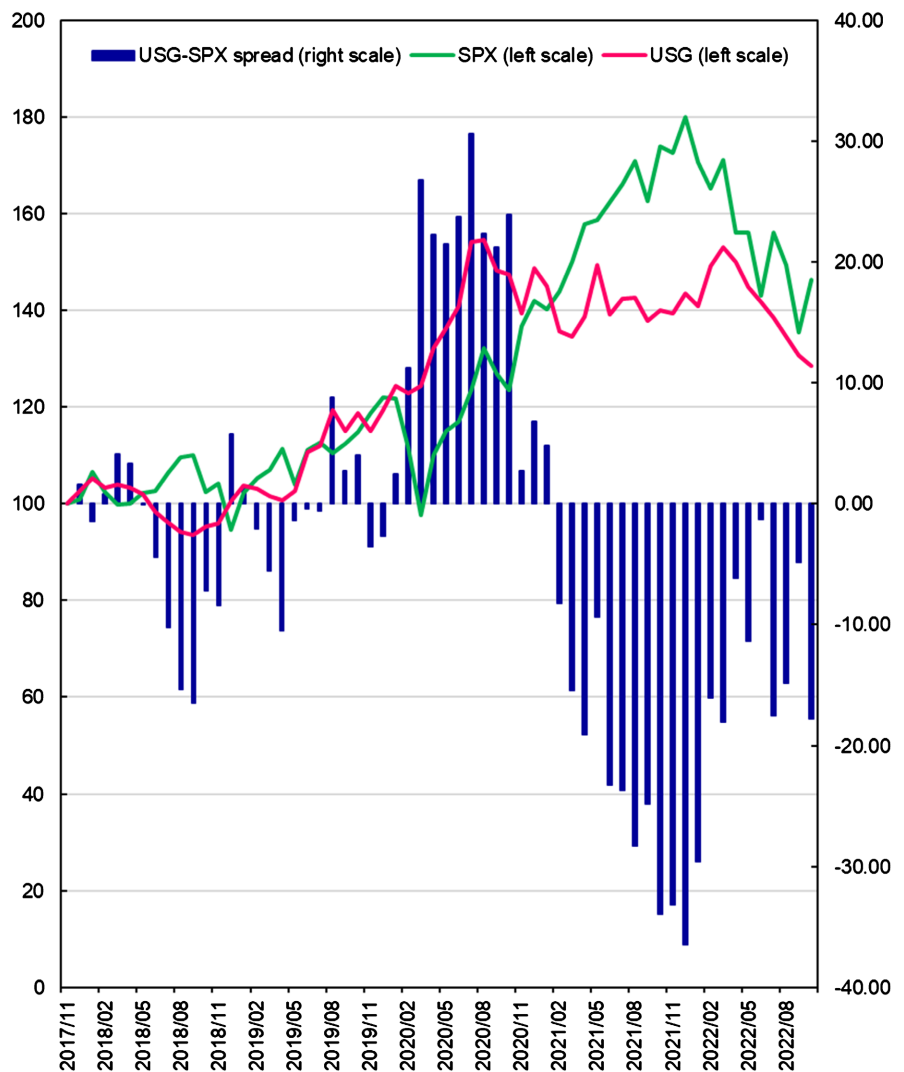
SPX: price of the S&P 500; USG: price of gold; USG-SPX spread: price spread between USG and SPX. All series are monthly and SPX and USG are set to 100 in November 2017.

Figure 4. Evolution of gold and US equity prices and their spreads: November 2017 to October 2022.

Table 3. Annualized average returns for US equity and gold and their spread: November 2017 to October 2022.

	SPXR	USGR	Return spread
Annualized average return	9.853	5.877	3.976

SPXR: return of the S&P 500; USGR: return of gold; Return spread: return spread between SPXR and USGR. All return and spread values are annualized.

Table 4. Annualized average volatilities for US equity and gold and their spread: November 2017 to October 2022.

	SPXR	USGR	Volatility spread
Annualized average volatility	18.341	12.472	5.869

SPXR: return of the S&P 500; USGR: return of gold; Volatility spread: volatility spread between volatilities of SPXR and USGR. All volatility and spread values are annualized.

were higher than gold returns for the recent five years.

Furthermore, to understand the magnitude and relations between gold and US equity volatilities, we also provide further information in Table 4. That is, Table 4 shows the annualized average volatility values for US equity and gold and their spreads for the recent five years during and after the COVID-19 crisis. From this table, we understand that on average, US equity volatilities were clearly higher than gold volatilities for the period.

4. Conclusion

This paper has investigated the relations between gold and US equity by focusing on the recent five-year period during and after the COVID-19 crisis, which is from November 2017 to October 2022. As a result, we derived the following interesting findings.

First, 1) for the recent five years during and after the COVID-19 crisis, gold and US equity returns were little correlated, indicating that gold was an effective hedging vehicle for US equity during the period. Second, 2) during the recent five years, US equity returns were higher than gold returns. Third, 3) during the five years, US equity volatilities were much higher than gold volatilities. We consider that these findings shall be beneficial for not only academic researchers but also industry practitioners as our research results of the latest relations between gold and US equity should be useful.

As above, regardless of the COVID-19 pandemic, we also understand that during the recent five years, US equity performances were relatively steady. We note that the evidence concerning the relations between equity and gold derived from our current study would be regarded as a case result for the US, hence further broader research shall be one of our future tasks.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

Dichtl, H. (2020). Forecasting Excess Returns of the Gold Market: Can We Learn from Stock Market Predictions? *Journal of Commodity Markets, 19,* Article ID: 100106. https://doi.org/10.1016/j.jcomm.2019.100106

Ding, Q., Huang, J., Gao, W., & Zhang, H. (2022). Does Political Risk Matter for Gold Market Fluctuations? A Structural VAR Analysis. *Research in International Business and Finance, 60,* Article ID: 101618. https://doi.org/10.1016/j.ribaf.2022.101618

Huang, X., Jia, F., Xu, X., & Shi, Y. (2019). The Threshold Effect of Market Sentiment and Inflation Expectations on Gold Price. *Resources Policy, 62,* 77-83. https://doi.org/10.1016/j.resourpol.2019.03.014

Kombo, S. B. (2022). Testing for the Asymmetric Impacts of Gold Price on India and South Africa Stock Market: An Asymmetric ARDL Model Approach. *Open Journal of Business and Management, 10,* 1116-1125. https://doi.org/10.4236/ojbm.2022.103059

Liu, C. S., Chang, M. S., Wu, X., & Chui, C. M. (2016). Hedges or Safe Havens—Revisit the Role of Gold and USD Against Stock: A Multivariate Extended Skew-*t* Copula Approach. *Quantitative Finance, 16,* 1763-1789. https://doi.org/10.1080/14697688.2016.1176238

Lucey, B. M., Sharma, S. S., & Vigne, S. A. (2017). Gold and Inflation(s)—A Time-Varying Relationship. *Economic Modelling, 67,* 88-101. https://doi.org/10.1016/j.econmod.2016.10.008

Salisu, A. A., Raheem, I. D., & Ndako, U. B. (2020). The Inflation Hedging Properties of Gold, Stocks and Real Estate: A Comparative Analysis. *Resources Policy, 66,* Article ID: 101605. https://doi.org/10.1016/j.resourpol.2020.101605

Schmidbauer, H., & Rösch, A. (2018). The Impact of Festivities on Gold Price Expectation and Volatility. *International Review of Financial Analysis, 58,* 117-131. https://doi.org/10.1016/j.irfa.2018.03.006

Xu, Y., Su, C. W., & Ortiz, J. (2021). Is Gold a Useful Hedge Against Inflation Across Multiple Time Horizons? *Empirical Economics, 60,* 1175-1189. https://doi.org/10.1007/s00181-019-01807-0

Yildirim, H., Alola, A. A., & Sengelen, H. E. (2021). The Causal Nexus of Interest Rate Policy and Gold Market: The Case of Turkey. *Journal of Public Affairs, 21,* e2142. https://doi.org/10.1002/pa.2142