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Gold and Stock Market Linkage: Pre- and Post-Covid-19 Periods

Altın ve Hisse Senedi Getirisi İlişkisi: Covid-19 Öncesi ve Sonrası Dönemleri

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Özet

Amaç: Bu çalışma altın fiyatları ile Borsa Istanbul'da hisse senedi fiyatların arasındaki ilişkiyi 2000-2021 dönemi için incelemektedir. Çalışmanın zaman dilimi Covid-19 hastalığı göz önüne alınarak Covid-19 öncesi ve sonrası olarak iki ayrı döneme ayrılmıştır. Böylece Covid-19'un altın ve hisse senedi piyasası ilişkisini etkileyip etkilemediği gözlemlenebilecektir.

Yöntem: Çalışmanın analizleri için basit doğrusal regresyon yöntemi kullanılmıştır. Ayrıca kredi temerrüt takası primleri ile piyasa getirisinin çarpımı ile elde edilen etkileşim terimi, ekonomik stressin arttığı zamandaki altın-hisse senedi ilişkisini gözlemlemek için ana *modele eklenmiştir.*

Bulgular: Çalışmanın sonucunda her iki dönemde de altın ve hisse senedi arasında negatif ve anlamlı bir ilişki buluşmuştur. Ancak etkileşim değişkeni göz önüne alındığında, Covid-19 öncesi dönemde ekonomik belirsizliğin ve stresin arttığı zamanlarda hisse senedi piyasasındaki düşüşler altın fiyatlarında artışa neden olmaktadır. Covid-19 sonrası dönemde ise hisse senedi piyasasındaki düşüşler, ekonomik kaygının arttığı zamanlarda altın fiyatlarında artışa neden olmamaktadır.

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Sonuç: Covid-19 dönemi öncesinde ekonominin durgunlaştığı zamanlarda, altın yatırımcılar tarafından güvenli bir liman olarak görülürken, Covid-19 sonrası dönemde stresin arttığı zamanlarda ise hisse senedi çeşitlendirmesi için bir önlem aracı olarak değerlendirilmediği gözlemlenmiştir.

Anahtar Kelimeler: Altın Fiyatları, Hisse Senedi Piyasası, Türkiye, Covid-19 Dönemi.

Jel Kodu: G01, G11, C01

Abstract

Purpose: This study investigates the relationship between gold and stock market returns of Borsa Istanbul for the years 2000-2021. This time period is seperated into two subsamples as pre-Covid-19 and post-Covid-19 periods in order to see whether the relationship between gold and stock prices is affected by the Covid-19 disease or not.

Methodology: The ordinary least square method is utilized for the analyses. The interaction term of credit default swap premiums with stock market returns is also included into baseline model in order to observe effect of stress in the financial markets on this link.

Findings: The empirical results mainly show that there exists a negative and significant relationship between gold and market returns in Turkey for both pre- and post-Covid-19 periods. On the other hand, the interaction term is found to be negative and significant for pre-Covid-19 period, which indicates that a decrease in the stock market return during the times of economic stress leads to an increase in the gold prices before Covid-19 disease. However, the interaction term is found to be significant and positive for the post-Covid-19 period, which points out that when economic stress upsurges in the pandemic period, a decline in the stock market return does not lead to a rise in the gold prices.

Implications: The gold is regarded as safe haven and a hedge tool against equity market investments in difficult times of economy before the Covid-19 period. However, this property of gold as a hedge instrument to be used in diversifying portfolios may not be valid during the stressful times of economy in the period after Covid-19.

Key Words: Gold Prices, Stock Market, Turkey, Covid-19.

Jel Codes: G01, G11, C01

1. Introduction

The outbreak of the Covid-19 disease as pandemic in 2020 not only resulted in health crisis but also destroyed financial markets and economies at global scale. It led to the lockdowns, closure of country borders, economic recessions and the crashes in equity markets. In these circumstances, the investors searched assets having negative correlations to hedge their portfolios so as to deal with the destructive impacts of the disease. Gold has been regarded as way of storing a value, a liquid asset and portfolio stabilizer during the difficult times of economy. Therefore, most investors also considered the gold as hedge and safe instrument against stock investments during the pandemic (Chemka et al., 2021).

The level of stress in the economies resulted from the pandemic is investigated in many researchers and most of the studies have selected credit default swap (CDS) spreads as an indicator representing the credit risk of sovereigns. CDS is a reasonable variable pointing out the financial and macroeconomic stability and other risks in the economy (Kartal, 2020). Daehler (2021) claims that soverign CDS spreads rise in emerging market economies as the number of deaths resulting from the Covid-19 disease increase due to the lower confidence in soverign credit markets triggered by long-lasting lockdowns and slow economic recovery at global level. In particular, Yıldırım et al. (2021) assert that the uncertainty stemmed from Covid-19 has risen the CDS spreads of Turkey, and in such an environment the demand for gold has increased in Turkey since gold is regarded as a safe haven once again during the crisis time as experienced before. The attitude of financial players to the gold especially in the times of financial turmoil convey the researchers to investigate the relationship between gold and stock market returns. Coudert and Raymond (2010) posit that there exist a negative relationship betwen gold and some stock market indices (France, UK and US) in the long-run, which indicates that gold can be used as hedge for equities in the long-run. On the other hand, Drake (2022) provides evidences that there exists a doubt on the negative relationship between gold and stock market returns during the times of economic stress such as 2008 Global Financial Crisis (GFC) and recent Covid-19 periods. Therefore, there is no concensus on the use of a gold as hedge against equities particularly in times of economic turmoil, and this brings the study to be revisited the gold-stock market linkage in Turkey by considering the recent Covid-19 crisis.

This study examines the stock market and gold returns association in Turkey for the pre-Covid19 (November 2000 – March 11, 2020) and post-Covid-19 pandemic (March 12, 2020-October 2021) periods. Furthermore, it is also investigated whether gold is regarded as safe haven during the times of financial and macroeconomic instability. As known aftermath of the emerge of Covid-19 disease, the countries have been struggled with the destroying impacts of the disease in social, health and economic fields. Therefore, during such risky and vulnerable social and economic environment, the gold and stock market relation is revisited by also considering the credit default swap (CDS) rates as an indicator of the riskiness and vulnerability of the countries. Therefore, this study offers a new perspective for the gold and stock market relation in Turkey, which also provides a recent empirical contribution to the existing literature.

The rest of the paper is designed as follows: Section 2 offers the literature review. Section 3 describes the data and explains methodology. Section 4 discusses the empirical results. Section 5 concludes the paper.

2. Literature Review

Gold is deemed as good investment tool to diversify the investors' portolios especially during the times of uncertainty and adverse events in financial markets. Hence the relationship between gold and stock market returns has been examined by many researchers for various countries and different time period. In the results of the studies, different views about this association are reported. Smith (2002) explores the relationship between gold prices and stock market indices for 17 European markets and Japan over the period of January 1991- October 2001. He finds the short-run correlation which is small and negative between these variables. Hillier et al. (2006) find that there exists a negative and significant relationship between gold returns and S&P500 Index returns for the time span of 1976-2004, and they infer that gold can be used as a hedge tool when diversifying investment portfolios. Furthermore, Coudert and Raymond (2010) prove that the negative long-run association between gold and stock market indices in France, US and UK. Aksoy and Topcu (2013) offer empirical evidence that gold prices and stock returns in Turkey for 2003 and 2012 years are negatively correlated. Gürgün and Ünalmış (2014) investigate whether gold is regarded as safe haven against equity market over the post-GCF period (September 2008 – April 2014) for a set of emerging and developing countries. They find that gold is found as a strong hedge/ safe haven for Brazil, Bulgaria, Chile, Hungary, Phillippiness, Malaysia, Mexico, Poland and Turkey countries by offering a negative correlation between gold and stock market returns.

There also exist arguments that gold prices and stock market returns can be positively correlated in crisis periods, which are contrary to the findings offered in the most of the literature. Choudhry et al. (2015) reveal that gold is regarded as safe haven against stock returns for the pre-Global Financial Crisis (GFC) period in US, UK and Japan, however the property of gold as hedging instrument turns to reverse during the crisis period. Gürgün and Ünalmış (2014) also provide evidence that gold is not regarded as a hedge instrument against stock returns in China, Indonesia, Russia and South Africa for the post-GFC period. Al-Ameer et al. (2018) examine the relationship between gold and stock market returns in Frankfurt Stock Exchange and offer empirical evidences that the stock returns and gold returns are found to be strong and positive correlated before the Global Financial Crisis, but this positive correlation becomes weak and low during the crisis. Drake (2022) also investigates the link between gold and stock market returns in US particularly regarding the GFC and the recent Covid-19 periods. The study concludes that gold prices and stock market returns are positively correlated when the real interest falls below zero. The negative correlation between gold and stock returns in the US economy is not reinforced by this study during the stressful times resulting from the GFC and the Covid-19 disease.

3. Data and Methodology

The study employs the daily gold returns (GOLD) in terms of gram gold prices in Turkish lira and daily BIST100 index returns (BIST) to represent Turkish the stock market. Turkey 5 year- CDS premiums are used as an indicator for the risk and uncertainty levels in the country particularly to measure the effects Covid-19 pandemic (Kartal, 2020; Yildirim et al., 2021). The pre-Covid 19 pandemic period is determined as the dates between November 2000 - March 11, 2020, whereas the post-Covid 19 time line covers the dates from March12, 2020 to end of October 2021 since the first covid case in Turkey was announced in March 11. The weekends, official holidays, missing and nontrading dates are excluded from the dataset.

The variables of GOLD and BIST are found to be stationary at their levels according to both Augmented Dickey Fuller (1979)(ADF) and Phillips-Perron (1988)(PP) unit root tests as presented in Table 1.

Table 1. Unit root test results of the key variables

	ADF Constant	ADF Constant& Trend	PP Constant	PP Constant& Trend
GOLD	-52.3442*	-52.3422*	-69.4931*	-69.4892*
BIST	-69.5480*	-69.5450*	-69.5155*	-69.5123*

Notes: *, **, *** represent %1, %5 and %10 significance levels, respectively. Both unit root tests have a null hypotheses of having a unit root.

In order to investigate the gold and stock market link in Turkey, firstly the baseline model is constructed as in Eq (1) for pre- and post-Covid-19 periods[2].

$$\mathrm{GOLD}_t = \alpha_0 + \alpha_1 \mathrm{BIST_t} + \mathrm{v_t} \ (1)$$

Secondly, in order to observe how the stress in the financial markets resulting from Covid-19 recession affects the gold and stock market relation, an interaction variable (CDS*BIST), is included into the main model by following approach of Drake (2022)[3] as in Eq (2). CDS variable takes the value 1 when the daily changes of CDS premium is positive and zero otherwise. Therefore, CDSBIST variable takes the daily market returns when the CDS premium increases and zero otherwise. If the coefficient of CDSBIST variable is found as negative and significant it indicates when the CDS rises (i.e. a rise in the stress and uncertainity in the economy), a decrase in market return result in an increase in gold prices. It may point out that gold is regarded a safe haven and the demand for the gold rises when the stock market go down in the times of economic turbalence.

$$\mathrm{GOLD}_t = \alpha_0 + \alpha_1 \mathrm{BIST_t} + \alpha_2 \mathrm{CDSBIST_t} + \mathrm{u_{t,i}} \ (2)$$

The descriptive statistics for the returns of GOLD and BIST variables are given in Table 2 and Table 3 for pre-Covid-19 and post-Covid-19 periods, respectively. The means of gold returns are higher than the returns of stock market in Turkey for both pre- and post-Covid-19 periods. The gold returns have lower daily volatility than stock market returns in terms of standard deviation during the period of before Covid-19. However, volatility of gold returns are higher than the volatility of stock market returns in the aftermath of Covid-19.

[2] All the variables are obtained from Bloomberg, Yahoo Finance and Investing.Com databases.
[3] In the study of Drake (2022), the daily changes of CBOVIX index is used in order to measure the stress in the economy in the US financial market. Likewise, an indicator expressing the tension in the financial market daily traded for Turkey is only the CDS premiums.

Table 2. Descriptive statistics of the key variables for pre-Covid-19 period

	GOLD	BIST
Mean	0.094375	0.061464
Median	0.045048	0.095061
Standard Deviation	1.522509	2.026988
Maximum	43.11683	19.44065
Minimum	-8.854609	-18.10925
Number of Obs.	4776	4776

Table 3. Descriptive statistics of the key variables for post-Covid-19 period

	GOLD	BIST
Mean	0.167848	0.136078
Median	0.158128	0.162327
Standard Deviation	1.671053	1.383049
Maximum	21.25671	8.766930
Minimum	-9.377695	-9.793393
Number of Obs.	372	372

The matrix of correlations between gold and stock market returns is presented in Panel A and Panel B of Table 4 for before and after Covid-19, respectively. There exists a negative and significant correlation between gold and stock market returns for both time periods. As considered individually, gold and stock market can be used together in the diversification of portfolios.

Table 4. The correlation matrix of the key variables for both periods

Panel A: Pre-Covid-19		
	GOLD	**BIST**
GOLD	1.000000	
BIST	-0.210272* (0.000)	1.000000
Panel B: Post-Covid-19		
	GOLD	**BIST**
GOLD	1.000000	
BIST	-0.210004* (0.000)	1.000000

Notes: *, **, *** represent %1, %5 and %10 significance levels, respectively.

4. Empirical Test Results

The empirical results for both pre- and post-Covid-19 periods are offered in Panel A of Table 5. As seen, the stock market returns and gold returns are negatively and significantly correlated for both periods. When the stock market returns in Turkey go down, the gold prices tend to increase. When the individual gold and stock market relationship is considered, this can indicate that gold can be regarded as a safe haven in Turkey. For the pre-Covid period, the result that the role of gold as an hedge instrument against stock market in Turkey is also in line with the result found in the study of Gürgün and Ünalmış (2014).

When the CDSBIST interaction variable is inserted into the basic model in order to see the role of economic stress and uncertainty in the gold and stock market link, the coefficient of this variable is found to be negative and significant for the pre-Covid-19 period as in Panel B of Table 5. As the CDS premiums rise up (the stress increases in the economy) and the stock market goes down, the gold prices increase. It may point out that before the Covid-19 pandemic, the demand for the gold tend to rise as the stock market returns decrease during the risky and uncertain times. Hence, gold is regarded as a safe haven and the hedge against equities before the pandemic. For post-Covid-19 period, the interaction term of CDSBIST is found as positive and significant. This implies that the gold becomes correlated with the stock market in Turkey as the risk stemmed from the Covid-19 pandemic increase. In short, gold is not regarded as a good hedge instrument for diversifying portfolios during the Covid-19 period as found in the study of Drake (2022) for US case.

Table 5. The empirical test results

Panel A	**GOLD (Pre-Covid19)**		**GOLD (Post-Covid19)**	
	Coefficient	P-value	Coefficient	P-value
BIST	-0.1579*	0.0000	-0.2537*	0.0000
	(0.0106)		(0.0614)	
Constant	0.1040*	0.000	0.2023**	0.0181
	(0.0215)		(0.0852)	
Panel B	**GOLD (Pre-Covid19)**		**GOLD (Post-Covid19)**	
	Coefficient	P-value	Coefficient	P-value
BIST	-0.1282*	0.0000	-0.4367*	0.0000
	(0.01550		(0.0926)	
CDSBIST	-0.0599*	0.0088	0.3366*	0.0091
	(0.0228)		(0.1284)	
Constant	0.0815*	0.0004	0.2783*	0.0002
	(0.0231)		(0.0893)	

Notes: *, **, *** denote the significance levels at 1%, 5% and 10%, respectively.

5. Conclusion

This study inspects the relationship between gold and stock market returns in Turkey over the period of November 2000 – October 2021. However, in order to see the perception of financial markets against gold aftermath of the Covid-19 pandemic, the time line of the study is separated as pre-Covid-19 and post-Covid-19 periods. Furthermore, it is also investigated how the stress in the economy resulting from the health and economic crises related to Covid-19 pandemic affects the gold and stock market linkage. In order to gauge the risk and stress in the economy, CDS premiums are included into the model examining the gold and stock market relationship. The results show that the gold and stock market returns in Turkey are negatively and significantly correlated for both pre- and post-Covid-19 periods individually. When the stress in the economy rises particularly in pre-Covid-19 period, a decrease in stock market returns results in a rise in gold prices. This indicates that gold is considered as safe haven during economic turmoil before the pandemic period. However, when the stress in the economy upsurges during post-Covid period, a downturn in stock market does not lead to an increase in gold prices. This shows that financial market participants have changed their perceptions about gold as a hedge against equity investments during the recent pandemic period.

Research and Publication Ethics Statement:

The author declare that ethical rules are followed in all preparation processes of this study. In case of detection of a contrary situation, Journal of Commercial Sciences has no responsibility and all responsibility belongs to the author of the study.

References

Aksoy, M. & Topcu, N. (2013). Altın ile Hisse Senedi ve Enflasyon Arasındaki İlişki. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi27(1), 59-78.*

Al-Ameer, M., Hammad, W., Ismail, A. & Hamdan, A. (2018). The Relationship of Gold Price with the Stock Market: The Case of Frankfurt Stock ExchangeInternational. *Journal of Energy Economics and Policy, 8(5),* 357-371.

Chemkha, R., BenSaido, A., Ghorbel, A. & Tayachi, T. (2021). Hedge and safe haven properties during COVID-19: Evidence fromBitcoin and gold. *The Quarterly Review of Economics and Finance, 82 (2021)*, 71–85.

Coudert, V. & Raymond, H. (2010). Gold and Financial Assets: Are There any Safe Havens in Bear Markets?. *CEPII*, WP No. 2010-13, 1-39.

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.

Daehler, T.B., Aizenman J., Jinjarak, Y. (2021). Emerging markets sovereign CDS spreads during COVID-19: Economics versus epidemiology news. *Economic Modelling,* 100 (2021), 105504.

Dickey, D.A. and W.A. Fuller (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association, 74*, 427–431.

Drake, P.P. (2022). The gold-stock market relationship during COVID-19. *Finance Research Letters, 44(2022),*102111.

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

Hillier, D. Draper, P. & Faff, R. (2006) Do Precious Metals Shine? An Investment Perspective. *Financial Analysts Journal, 62(2)*, 98-106.

Kartal, M.T. (2020). The behavior of Sovereign Credit Default Swaps (CDS) spread: evidence from Turkey with the effect of Covid-19 pandemic. Quantitatuive Finance and Economics, 4(3), 489–502.

Phillips, P.C.B. and P. Perron (1988). Testing for a Unit Root in Time Series Regression. *Biometrika, 75,* 335–346.

Smith G. (2002). London gold prices and stock price indices in Europe and Japan. *World Gold Council, 9(2)*, 1–30.

Yildirim, H., Boyaci Yildirim, M., & Limoncuoglu, A. (2021). Escape from COVID-19 pandemic to safe haven. *Journal of Public Affairs, 21(4)*, e2728.