

Chapter 37

The Impact of Gold Price Changes on Saudi Stock Market

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Abstract In investment analysis gold and stock are alternate sources of investment. Gold is a very important financial asset, and in financial crises usually investors look at gold as the safe haven for them. Stock market is one of the most important aspects of the economy, in Saudi Arabia; Tadawul All Share Index (TASI) has huge market value in the region, reaching the value 1.4 trillion in 2012.

In this paper, we have investigated the long-run relationship between gold prices and Saudi stock market, using 10-year monthly data set from 31 October 2004 to 30 November 2013 using the tool Ordinary Least Squares (OLS) method.

The investigation applying the simple regression through Ordinary Least Squares (OLS) method shows that TASI reacts negatively to gold price movement. This research also examines the relationship between gold prices and two important sector indexes, i.e., banking and financial services (TBFSI) and telecom and information sector (TTISI) form about 30 % of TASI weight; all these sectors show a negative reaction to gold price (www.tadawul.com.sa).

As the Asian as well as the global market is showing the recovery trend after the turmoil and slowdown, we carried out this research to show the investors and analysts and the researchers the impact of gold on the security market taking the Saudi perspective. It is very important to show the relationship of equity and commodity which we think tried to be addressed in this paper.

Keywords TASI • Ordinary Least Squares (OLS) • Linear regression model • Correlation • Long position and short position

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1 Introduction

Although that Kingdom of Saudi Arabia is one of the most prosperous and stable countries in the world because of its many different raw materials that are source of global energy, geographically it locates in the most disturbed area in the world.

Middle East in few decades has cited many wars and public revolutions that have huge negative, at least in the short-run period, effect on all aspects of economy and society. Recently, as the Arab spring sparks from Tunisia and goes through Libya, Yemen, and Egypt and ends with the most tragedy in the recent history in the civil war in Syria, has put the investors not only the local but even the global one at challenges and pressures of the investment options and tactics.

In light of these circumstances, we have seen that both local and global media are more focusing on the radical of price movements of stock markets with every sign of bad or good news that comes as a result of these political tensions.

Financial and economic commentators at TV and newspapers keep saying that “gold is the safe haven investment!” And make hundreds of reports about gold around the world.

Gold is one of the most precious metals, traded or used at many levels, personal as jewelry or even at international level when most of the central banks in the world show it as one of their assets in the balance sheet; it has also financial usage; it is considered as a risk diversifier, hedged against inflation, and it has other uses in different markets. Saudi stock market from the other hand, as other stock market, is risky investment due to its volatility which is in crisis becoming highly volatile and causes huge loses (Barunik et al. 2013; Ahuja et al. 2012).

In this research, we are exploring the relationship between the gold price and Saudi stock market (TASI) and its sectors from other hand, to investigate whether the stock market investors can diversify the risk by taking position in gold or not.

2 Review of Literature

Ahmed et al. (2013) examine the long-run relationship between gold prices and Karachi Stock Exchange (KSE) and Bombay Stock Exchange (BSE) in perspective of supply and demand of gold and its impact on the value of stock index. To investigate the existence of long-run equilibrium relationship among time series variables, different statistical tests are used. To analyze the lead-lag relationship in the sample, Granger causality test is used which is proposed by C. J. Granger in 1969, whereas hypotheses will be accepted based on F-test results at a significance level of 0.05 which provide the evidence of explained relationship between predictors and endogenous variables. This study is comprised with the period from 2005:1 to 2011:6. To analyze the impact of gold prices on KSE and BSE stock index, monthly data is used which is gathered from reliable and official sources of KSE and BSE statistics.

Findings of this study indicated that there is no long-run relationship that exists between monthly average gold prices and KSE-100 Index; however, BSE has long-term relation with average gold prices.

Subarna and Zadeh (2011) examine the co-movements of several macro-variables in the world economy over a period of more than 20 years from January 1989 through September 2009 with more than 5,200 observations. They find out that it seems likely that stock price and gold price are more likely to move on their own while oil price and exchange rates likely to be influenced by other variables.

Giam and Sriboonchitta (2009) focused on testing possible linkages among international gold and ASEAN emerging markets (Indonesia, Malaysia, Philippines, Thailand, and Vietnam) based on daily data from 28 July 2000 to 31 March 2009. Granger causality test for short-run interdependence of index pairs and Johansen co-integration test for long-run equilibrium relationship and short-run dynamics of the whole gold price prove reciprocal effect on Vietnam index and also influence Thailand stock but show no connection with stock exchange of Malaysia, Indonesia, and the Philippines in short run. However, gold prices are not integrated with all indexes in the long run.

Baur and Lucey (2010) first define the safe haven as the following: "A safe haven is defined as an asset that is uncorrelated or negatively correlated with another asset or portfolio in times of market stress or turmoil." The data cover a time period of 10 years from 30 November 1995 until 30 November 2005. Results show that gold is a safe haven for stocks and gold only functions as a safe haven for a limited period of time, around 15 trading days. In the longer run, gold is not a safe haven, that is, investors that hold gold more than 15 trading days after an extreme negative shock lose money with their gold investment.

Martin and Yunita (2012) took data in their research are weekly price of gold (per troy ounce) and closing price of Indonesia Composite from 4 July 1997 to 4 November 2001. Results show that gold investment is quite safe for investors and could be categorized as a safe haven.

Coudert and Raymond-Feingold (2011) have investigated if gold is a safe haven and/or a hedge against stocks, by estimating a time-varying conditional covariance between gold and stock returns from four countries (France, Germany, the USA, the UK) and the G7 countries data for gold total returns in US\$ that come from Standard and Poor's and Goldman Sachs Commodity Index (S&P GSCI) database and are extracted from Bloomberg. Three main results emerge from our estimations. First, the conditional covariance between the two types of assets generally decreases during crises, whether defined as recessions or bear markets. Second, gold qualifies for being a safe haven as it does not co-move with stock returns on average neither during recessions nor bear markets. This result holds for all the considered stock indexes. More precisely, gold is a "weak safe haven" in most cases as its correlation with stocks is not significantly different from zero during crises. Third, gold appears to be a hedge against stocks in most cases, but not all of them. Overall, gold appears as an interesting asset to diversify a portfolio away from stocks, especially in times of bear markets.

Contuk et al. (2013) analyze the effect of fluctuations in gold prices on ISE-100 Index using daily prices and the index data from 1 January 2009 to 31 December 2012. The raw data has been converted into earnings yields and analyzed. The study first determines whether or not the use of a GARCH model would be appropriate using a heteroskedasticity test. The test results show that there was an ARCH effect in both variables and that GARCH modeling could be used. The results obtained from MGARCH modeling show that gold and stock exchange yields have been affected both by their own shocks and by shocks of each other.

Abdul Basit (2013) tries to help the investor to investigate the relationship in the said investment options in Pakistan. For this purpose the researcher on the basis of available secondary data collected the KSE-100 Index, oil prices, and gold prices for the time period 2005–2011. The researcher took oil prices and gold prices as dependent variables, whereas KSE-100 Index was taken as independent variable. The researcher applied the simple regression models separately for both dependent variables and concluded that there is no obvious relationship in these variables.

3 Present Body of Knowledge/Learning from the Review of Literature

In many research and study, researchers apply many test models and analysis tools, such as Granger causality test, simple regression, multiple regression, correlations, and GARCH model, and they use different data set like, daily, weekly, monthly, and annually. In some research relation between gold and stock market does exist either negative or positive, and in many other research studies, relation does not exist.

4 Research Gap

Though there are several studies that took place taking many variables including gold to predict the stock return, the main gap we found is the lack of study of the sector-specific relationship with gold in Saudi perspective.

In this research, the main focus is to investigate the relationship between gold price and TASI and two more sectors in the Saudi Arabia Stock Exchange. Those sectors are banking and financial services and telecom and information sector.

5 Objectives

- To study the relationship between Tadawul All Share Index (TASI) and the gold price movement.

- To study the relationship between two different sectors in the market, i.e., TBFSI (banking and financial services sector) and TTISI (telecom and info sector), and the gold price movement.
- The result will help a lot the investors to know whether the gold will diversify away the risk of the equity market.

6 Methodology and Data Description

We have used the monthly price data from years 2004 to 2013, gold price, and Tadawul All Share Index (TASI) and two important sectors: banks and financial services and telecom and info sector. The independent variable is the monthly gold price. The dependent variables are the TASI, banking and financial services index, and telecommunication and information technology index. All the data are of secondary nature and monthly index imported from Thomson Reuters. The tool to be used is simple regression. The computer packages/software that we used is Microsoft Excel and EViews (Table 37.1) (Sarbpriya, 2012; Sujit and Rajesh, 2011; Sharma, 2010; Subarna and Zadeh, 2011; Wang, 2012).

6.1 In Our Research We Have Proposed the Testing of the Following Three Hypotheses

- Gold price changes have negative impact to the stock market index:
 $H_0: \beta = 0$ There is no negative impact on stock market.
 $H_1: \beta \neq 0$ There is a negative impact on stock market.
- Gold price changes have negative impact to the banks and financial services index:
 $H_0: \beta = 0$ There is no negative impact on banks and financial services index.
 $H_1: \beta \neq 0$ There is a negative impact on banks and financial services index.

Table 37.1 Sector analysis

Sector	No. of companies	Index weight	Code and name
Banking and financial services	11	22.4 %	TBFSI – banking and financial services sector
Telecommunication and information technology	5	10.9 %	TTISI – telecom and info sector
TASI	161	100 %	TASI – Tadawul All Share Index

Index weight as of November 2013 based on Tadawul.com

- Gold price changes have negative impact to telecommunication and information technology index:

$H_0: \beta=0$ There is no negative impact on telecommunication and information technology index.

$H_1: \beta \neq 0$ There is a negative impact on telecommunication and information technology index.

7 Economic Model, Discussion, and Analysis

In order to investigate the relation between gold price and TASI and other sectors in TASI (banks and financial services, telecom and info sector, cement sector), we used the Ordinary Least Squares (OLS) method, which is used usually for estimating the unknown parameters in a linear regression model.

So our research will examine the following simple linear modes:

7.1 Gold Effect on All Share Index (TASI)

$$\text{TASI} = \alpha + \beta \text{ gold}$$

where TASI is the monthly stock index in the Kingdom of Saudi Arabia, α is the constant (or the intercept), β is the slope of the regression (which represents the strength and the direction of the relationship between the dependent variable and the independent variable), and gold is the monthly price of gold.

The regression functions of TASI:

$$\text{TASI} = \beta_1 + \beta_2(\text{gold}).$$

The dependent variable is Tadawul All Share Index (TASI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$\text{TASI} : \beta_1 + \beta_2(\text{gold}) + \mu.$$

Estimated equation result:

$$\text{TASI} = 12,500 - 4.03 \text{ GOLD} + \hat{u}_t.$$

(7.149)

The negative sign of the coefficient of gold indicates that there is a negative relation between TASI and gold. Numerically, it means that an increase in gold price by 100 \$ will lead to decrease in the TASI by 403 points, which we think is a very

logical conclusion; in case of bad news, investors will short on equity and long in gold market to be in the safe side.

By looking at the t-statistic (7.150), it is greater than the critical value ($T_c = 1.96$) and falls in the rejection region, which leads to rejecting the null hypothesis and confirming the significant relation between gold and TASI. Moreover, this result is supported by the P -value = $(0) < \alpha$ at level 5 % confidence.

Significance of the whole model:

By looking at the value of R square, it shows that 32.1 % of the variability of TASI, the dependent variable, is explained by the variation of the independent variable, which is the gold price. The F-statistic is high and its probability is less than 5 % by far, which indicates for the significance of the model.

7.2 Gold Effect on Telecom and Info Technology (TTISI)

The regression functions of TTISI:

$$TTISI = \beta_1 + \beta_2 (\text{gold}).$$

The dependent variable here is telecom and info technology (TTISI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$TTISI : \beta_1 + \beta_2 (\text{gold}) + \mu.$$

Estimated equation result:

$$TTISI = 4,853 - \frac{2.026}{(9.629)} \text{GOLD} + \hat{u}_t.$$

The negative sign of the coefficient of gold indicates that there is a negative relation between TTISI and gold which supports our assumption.

The model suggests that an increase in gold price by 100 \$ will lead to decrease in the TTISI by 203 points, which we think is a very logical conclusion; which implies that in case of bad events, investors will short on TTISI and long in gold market to be in safe side.

In t-statistic (9.629), it is greater than the critical value ($T_c = 1.96$) and falls in the rejection region, which obviously rejects the null hypothesis and confirms the significant relation between gold and TTISI; this result is also supported by the P -value = $(0) < \alpha$ at level 5 % confidence.

Significance of the whole model:

R^2 indicates that 46.2 % of the variability of TTISI, the dependent variable, is explained by the variation of the independent variable, which is the gold price.

7.3 Gold Effect on Banking and Financial Services (TBFSI)

The regression functions of TBFSI:

$$TBFSI = \beta_1 + \beta_2 (\text{gold}).$$

The dependent variable here is the banking and financial services (TBFSI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$TBFSI : \beta_1 + \beta_2(\text{gold}) + \mu.$$

Estimated equation result:

$$TBFSI = 33,021 - 11.780 \text{ GOLD} + \hat{u}_i.$$

(8.897)

The negative sign of the coefficient of gold indicates that there is a negative relation between TBFSI and gold. Numerically, it means that an increase in gold price by 100 \$ will lead to decrease in the TBFSI index by 1,178 points, which we think is a very logical assumption; in case of bad events, investors will short on TBFSI and long in gold market to be in safe side.

By looking at t-statistic (8.897), it is greater than the critical value ($T_c = 1.96$) and falls in the rejection region, which leads to rejecting the null hypothesis and confirming the significant relation between gold and TBFSI; moreover, this result is supported by the $P\text{-value} = (0) < \alpha$ at level 5 % confidence.

Significance of the whole model:

By looking at the value of R square, it shows that 42.3 % of the variability of TBFSI, the dependent variable, is explained by the variation of the independent variable, which is the gold price.

7.4 Correlation Between Stock Market Sectors and Gold

We found that significant negative correlation exists between gold and TASI and other three important sectors taken here. The correlation table also suggests that the highest negative correlation exists between gold and telecommunication and information technology, i.e., -0.62, followed by banking and financial services, i.e., -0.41. The joint effect is experienced with TASI where the correlation with gold is -0.39 (Tables 37.2, 37.3, 37.4, and 37.5).

Table 37.2 Gold effects on All Share Index (TASI)

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: TASI									
Method: Least Squares									
Date: 01/09/14 Time: 22:05									
Sample: 2004M10 2013M11									
Included observations: 110									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	12499.80	632.9440	19.74867	0.0000					
GOLD	-4.027936	0.563388	-7.149488	0.0000					
R-squared	0.321246	Mean dependent var		8317.032					
Adjusted R-squared	0.314962	S.D. dependent var		3060.739					
S.E. of regression	2533.283	Akaike info criterion		18.53043					
Sum squared resid	6.93E+08	Schwarz criterion		18.57953					
Log likelihood	-1017.174	Hannan-Quinn criter.		18.55035					
F-statistic	51.11519	Durbin-Watson stat		0.124429					
Prob(F-statistic)	0.000000								

Table 37.3 Gold effects on telecom and info technology (TTISI)

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: TTISI									
Method: Least Squares									
Date: 01/10/14 Time: 20:09									
Sample (adjusted): 2004M10 2013M11									
Included observations: 110 after adjustments									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	4853.631	236.3775	20.53338	0.0000					
GOLD	-2.025937	0.210401	-9.628918	0.0000					
R-squared	0.461926	Mean dependent var		2749.817					
Adjusted R-squared	0.456944	S.D. dependent var		1283.815					
S.E. of regression	946.0729	Akaike info criterion		16.56053					
Sum squared resid	96665834	Schwarz criterion		16.60963					
Log likelihood	-908.8292	Hannan-Quinn criter.		16.58045					
F-statistic	92.71606	Durbin-Watson stat		0.104433					
Prob(F-statistic)	0.000000								

Table 37.4 Gold effects on banking and financial services (TBFSI)

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: TBFSI									
Method: Least Squares									
Date: 01/10/14 Time: 20:17									
Sample: 2004M10 2013M11									
Included observations: 110									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	33021.32	1487.543	22.19856	0.0000					
GOLD	-11.78003	1.324073	-8.896811	0.0000					
R-squared	0.422933	Mean dependent var		20788.47					
Adjusted R-squared	0.417590	S.D. dependent var		7801.416					
S.E. of regression	5953.715	Akaike info criterion		20.23943					
Sum squared resid	3.83E+09	Schwarz criterion		20.28853					
Log likelihood	-1111.169	Hannan-Quinn criter.		20.25935					
F-statistic	79.15325	Durbin-Watson stat		0.147678					
Prob(F-statistic)	0.000000								

Table 37.5 Correlations with gold

Sectors	Correlation with gold
Banking and financial services	-0.41
Telecommunication and information technology	-0.62
TASI	-0.36

8 Conclusion

As we have mentioned in several literatures which support that gold and equity are very important sources of alternate investment, therefore this research has been carried out between gold and Tadawul All Share Index (TASI) as well as gold and two important sectors, i.e., banking and financial services (TBFSI) and telecommunication and information technology (TTISI) of Saudi Economy to test the relationship so that it will help the investors and financial analysts to make the financial and portfolio decisions.

The correlation of gold with TASI as well as the other two important sectors shows significant negative relationship which strengthens our hypothesis of the negative relationship of gold and stock market.

The negative sign of the coefficient of gold indicates that there is a negative relation between TASI and gold, which we think is a very logical conclusion; in case of bad news, investors will short on equity and long in gold market to be on the safe side. The negative sign of the coefficient of gold indicates that there is a negative relation between TTISI and gold which supports our assumption. The model suggests that an increase in gold price by 100 \$ will lead to decrease in the TTISI by 167 points, which we think is a very logical conclusion; in case of bad events, investors will short on TTISI and long in gold market to be in safe side. The negative sign of the coefficient of gold indicates that there is a negative relation between TBFSI and gold. Numerically, it means that an increase in gold price by 100 \$ will lead to decrease in the TBFSI index by 1178 points, which we think is a very logical assumption; in case of bad events, investors will short on TBFSI and long in gold market to be in safe side.

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