Resources Policy 49 (2016) 290–301

Contents lists available at ScienceDirect

Resources Policy

journal homepage: www.elsevier.com/locate/resourpol

Asymmetric impact of gold, oil prices and their volatilities on stock prices of emerging markets

Naveed Raza [a], Syed Jawad Hussain Shahzad [a], Aviral Kumar Tiwari [b,*], Muhammad Shahbaz [c,d]

[a] Universiti Malaysia Terengganu, Malaysia
[b] IBS Hyderabad, a Constituent of IFHE (Deemed to be) University, Hyderabad, Telangana, India
[c] COMSATS Institute of Information Technology, Lahore, Pakistan
[d] Montpellier Business School, Montpellier, France

ARTICLE INFO

Article history:
Received 10 April 2016
Received in revised form
25 June 2016
Accepted 28 June 2016

Keywords:
Gold prices
Oil prices
Stock prices
Nonlinear ARDL

ABSTRACT

This paper examines the asymmetric impact of gold prices, oil prices and their associated volatilities on stock markets of emerging economies. Monthly data are used for the period January 2008 till June 2015. The nonlinear ARDL approach is applied in order to find short-run and long-run asymmetries. The empirical results indicate that gold prices have a positive impact on stock market prices of large emerging BRICS economies and a negative impact on the stock markets of Mexico, Malaysia, Thailand, Chile and Indonesia. Oil prices have a negative impact on stock markets of all emerging economies. Gold and oil volatilities have a negative impact on stock markets of all emerging economies in both the short- and the long-run. The results indicate that the stock markets in the emerging economies are more vulnerable to bad news and events that result in uncertain economic conditions.

1. Introduction

Since the last few decades, the stock markets of emerging economies have shown rapid growth in terms of value and volume, creating investment opportunities and significant capital inflows have also been witnessed from developed to emerging markets (Beckmann et al., 2015). However, the stock markets of emerging economies are vulnerable to the global news and events resulting in a volatile and uncertain environment. Historical fluctuations in the crude oil prices show that the world will enter into the era of high oil price volatility in the near future. Ji (2012) argues that the global financial crisis of 2007-08 has disturbed the crude oil market mechanism and the synchronized casualty between crude oil prices and equity market has strengthened after the crisis period.

The investments in gold are regarded as an inflation hedge, store of value, mean of exchange, a source of wealth and a safe haven asset for stock markets during the periods of stock market troubleness (Baur and Lucey, 2010). Gold investment gives the sense of certainty to the investors during financial downturns and can be considered as an alternative and attractive investment due to simplicity of gold market (Baur and McDermott, 2010). Moreover, gold is also a good instrument of inflationary hedge because of its positive correlation with inflation (Bampinas and Panagiotidis, 2015). The investment in gold can at least retains its purchasing power during the periods of high inflation (Goodman, 1956). Gold can also be viewed as a portfolio diversifier because of its low correlation with other assets and therefore lowers the overall portfolio risk (Ciner et al., 2013). Notably, the central banks also retain gold for diversification purposes and to safeguard from economic uncertainties (Chen and Lin, 2014; Ciner et al., 2013; Kaufmann and Winters, 1989; Kumar, 2014).

Despite the role of gold investments in portfolio diversification and hedging, volatility in gold prices has a negative impact on stock markets. Lower volatility in gold prices indicates safe investment conditions (Baur, 2012). It is therefore important to understand the volatility behavior of gold markets for making hedging decisions (Ewing and Malik, 2013). The increased volatility of gold prices is an alert for the investors and exposes them to risk which in turn enhances investors' interest to understand the reaction of stock markets to the gold price volatility (Tully and Lucey, 2007).

The stock markets are impacted by various interrelated economic factors and a complex connection between these factors. However, macroeconomic variables such as gold prices, crude oil prices and their volatilities have a more profound impact on stock

* Corresponding author.
E-mail addresses: naveedrazza@gmail.com (N. Raza), Jawad.kazmi5@gmail.com (S. Jawad Hussain Shahzad), aviral.eco@gmail.com (A.K. Tiwari), shahbazmohd@live.com, Muhammad.shahbaz@ipag.fr (M. Shahbaz).

http://dx.doi.org/10.1016/j.resourpol.2016.06.011
0301-4207/

prices. Previous studies on this topic (Beckmann and Czudaj, 2013; Kanjilal and Ghosh, 2014; Shahbaz et al., 2014; Wang et al., 2011) have mainly analyzed the stock, gold and oil linkages in a linear setting. Anoruo (2011) argues that one basic shortcoming of linear modeling is that it assumes that time series are linear while in real times they are non-linear. Gao et al. (2012; 2015) argue that prior studies have paid little attention on the existing nonlinearities between oil, gold and stock nexuses. Prior studies have also examined the volatility relationships in a linear setting (Arouri et al., 2011a, b; Chang et al., 2010; Hammoudeh and Yuan, 2008; Lin et al., 2014; Sadorsky, 2014) and found that commodities volatilities can explain the stock prices. Moreover, significant volatility transmission is also witnessed from commodities to stock markets.

We argue that analyses of the relationship between the variables in a nonlinear setting have at least two important reasons: (1) a time series can have hidden cointegration if positive and negative components of a series are cointegrated (Granger and Yoon, 2002) and (b) asymmetry and structural breaks (e.g. major credit events, and bankruptcy etc.) are types of nonlinearities that affect the market dynamics, especially when the sample period is marked with the financial crises e.g. global financial crises of 2007-08. To achieve these purposes, we employ the nonlinear ARDL (NARDL) approach which allows testing the long-run and short-run asymmetries. In the presence of asymmetries, the dynamic multipliers quantify the respective responses of the stock markets to positive and negative changes in each of the explanatory variables by taking positive and negative partial sum decompositions of these variables. Moreover, unlike the standard cointegration techniques, this method permits time series to have different orders of integration (Shin et al., 2014).

Our findings show that gold prices, oil prices and their associated volatilities have a non-linear impact on the emerging stock markets in both short and long-run. Gold prices have a positive impact on the emerging BRICS stock markets and a negative impact on stock prices of Mexico, Malaysia, Thailand, Chile and Indonesian markets. Oil prices have a negative impact on all emerging stock markets. Moreover, gold and oil price volatilities negatively impact emerging stock markets in both short and long-run.

We organize the rest of the study as follows. Section 2 provides a review of the related literature. Section 3 presents the methodology. Section 4 discusses the data used and empirical findings and Section 5 concludes the study.

2. Related literature

There is widespread evidence in prior literature emphasizing the importance of nonlinear modeling. For instance, Lee and Lin (2012) depict that macroeconomic variables are impacted by the structural breaks and oil and gold prices follow a nonlinear pattern. On the other hand, Naifar and Al Dohaiman (2013) document that linear models fail to detect the existing nonlinearities in the relationship between stocks, oil and gold prices. Bildirici and Turkmen (2015) find that the explanatory power of nonlinear models is higher than the linear models. Anoruo (2011) examines the testing procedure of linear and non-linear models and states that one basic shortcoming of linear modeling is that it fails to capture the asymmetry in variables' behavior over time. Furthermore, Gao et al. (2012, 2015) argue that prior studies paid little attention on oil-gold-stock nexuses under nonlinear specifications. Notably, positive and negative oil price shocks have a different impact on the economies (Gao et al., 2014) and these nonlinearities also impact the stock markets (Huang et al., 2015; Manimaran et al., 2009). An et al. (2014), Ma et al. (2013) and Vacha and Barunik (2012) suggest that the nonlinear relationship between commodity and stock prices is mainly due to the operations of various market agents with heterogeneous expectations and beliefs.

Several studies have examined the cointegration between commodities and stock prices due to their irreplaceable role in the economy. Oil and gold are the two highly liquid commodities and are synchronized in their movements (Tiwari and Sahadudheen, 2015). However, a series of crises, e.g., economic crisis of 1970, ERM Crisis, OPEC decisions in 1994, Russian Crisis in 1997, Asian financial crisis in 1998 and global financial crisis in 2007-09 have encouraged the investors to evaluate the alternate investment assets for diversification during economic downturns. Narayan and Sharma (2011) suggest that gold has emerged as a desirable asset to safeguard portfolios during turmoil market conditions because of its low correlation with stocks. Arouri et al. (2015) conclude that the volatilities of oil and gold differ during the periods of extreme market declines and therefore investors prefer gold investments due to its safe haven properties. Furthermore, profitable trading strategies can be devised with the investment in gold (Daskalaki and Skiadopoulos, 2011).

Chan et al. (2011) utilize MSIAH specification to collectively examine the return distributions of stocks, T-bills, gold, oil and other real assets. They document that oil prices are positively correlated with other assets during turmoil market conditions. During the flight to quality, investors prefer assets other than oil for diversification and protection against losses due to their low correlation with each other. Morana (2013) also documents that during bad financial conditions, the correlation between oil prices and stock markets increases. Chen et al. (2014) with similar results argue that financial shocks have increased the oil price volatility over the period. These findings invite researcher to further investigate the role of financial conditions while linking the stock and commodity prices. The introduction of commodity indices has not only increased the financializaliation of commodities, but the volatility in these markets as well, which is finally transmitted to financial markets (Delatte and Lopez, 2013).

In the existing energy literature, GARCH models are widely used to model the asset volatilities. For instance, Chang et al. (2010) employ the CCC-GARCH to study the volatility spillover from oil and gasoline spot prices in their respective futures. Arouri et al. (2011a, b) utilize a bivariate GARCH model to determine the volatility transmission and spillovers effects from oil to stock markets. Arouri et al. (2012) apply a VAR-GARCH model to account for volatility spillovers between crude oil and stock returns. Lin et al. (2014) investigate the volatility dynamics between oil and stock markets of Ghana and Nigeria using VAR-GARCH and DCC-GARCH. The volatility dynamics of oil, wheat, copper and emerging markets are examined by Sadorsky (2014a, b) using MGARC-DCC models.

More recently, Basher and Sadorsky (2016) utilize DCC, ADCC and GO-GARCH models to examine the conditional correlation between gold, oil and the price index presenting emerging stock markets. Notably, volatility estimation utilizing GARCH-type models for a large data set is a challenging task due to the curse of dimensionality i.e., tradeoff between feasibility and generality. The estimations through multivariate GARCH models, e.g., BEKK allow parameters to grow rapidly and other specifications such as DCC, CCC and GO-GARCH only capture the time varying correlation, but fail to capture the spillover and transmission effects between commodities volatilities and stock prices. Contrary to previous studies where the volatility is estimated through GARCH-type models, we use oil and gold price volatilities readily tradable at the Chicago Board Options Exchange to determine the nonlinear impact of prices and volatilities on emerging stock market.