Research in International Business and Finance 38 (2016) 22–34

Contents lists available at ScienceDirect

Research in International Business and Finance

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

Full length article

Dynamic correlations and hedging effectiveness between gold and stock markets: Evidence for BRICS countries

Walid Chkili [a,b]

[a] International Finance Group, Faculty of Economics and Management of Tunis, University of Tunis ElManar, Tunisia
[b] Faculty of Economics and Management of Nabeul, University of Carthage, Tunisia

ARTICLE INFO

Article history:
Received 14 June 2015
Received in revised form 23 January 2016
Accepted 29 March 2016
Available online 30 March 2016

Jel classification:
C32
G10
G11

Keywords:
Gold
Stock markets
Hedge
Multivariate A-DCC model

ABSTRACT

This paper examines the dynamic relationships between gold and stock markets using data for the BRICS counties. For this purpose, we estimate the Asymmetric DCC model for weekly stock and gold data. Our main objective is to examine the time-varying correlations between the two assets and to check the effectiveness of gold as a hedge for equity markets. The empirical results reveal that the dynamic conditional correlations switch between positive and negative values over the period under study. These correlations are low to negative during the major financial crises suggesting that gold can act as a safe haven against extreme market movements. We also evaluate the implications for portfolio diversification and hedging effectiveness for the gold/stock pairs. Our findings suggest that adding gold to a stock portfolio enhances its risk-adjusted return.

1. Introduction

The last two decades have witnessed the occurrence of several crises such as the Asian financial currency crisis in 1997, the Russian and Brazilian crises between 1998 and 1999, the global financial crisis of 2007–2008 and the European debt crisis 2010–2011. Such episodes have significantly increased the volatility of stock markets and the risk associated to portfolio investment. Therefore, investors seek to minimize the risk associated to their investment and to improve the risk-return tradeoff of asset portfolios in times of financial crises. More precisely, investors should look to a more defensive diversification strategy by choosing to invest in safe haven assets such as gold.

Some studies examine the dynamic correlations between the two assets and the role of gold as a hedging and stabilizing asset. While others test the hypothesis that gold is a safe haven for financial assets including stocks. Baur and Lucey (2010) raise the question of whether gold is a hedge or safe haven. According to the authors, an asset is considered as a hedge if it is uncorrelated or negatively correlated with another asset on average while an asset is defined as a safe haven if it is uncorrelated or negatively correlated with another asset in certain periods namely in turbulent times[1] (Baur and Lucey, 2010; p. 219). Using a data for the United States, the United Kingdom and Germany, Baur and Lucey (2010) find that gold is a hedge against stocks on average and a safe haven during times of stress. Coudert and Raymond-Feingold (2011) reveal similar results when they analyze the relationship for some developed countries.

E-mail address: walidchkili@yahoo.fr

[1] See also Baur and McDermott (2010), Hood and Malik (2013) and Gurgun and Unalmiş (2014).

http://dx.doi.org/10.1016/j.ribaf.2016.03.005
0275-5319/

Table 1
Stock market performance indicators for the BRICS countries.

	Number of listed firms		Market capitalization (billions of US$)		Market capitalization (% of GDP)		market liquidity (% of GDP)		Turnover ratio (%)	
	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012
Brazil	381	353	474.7	1229.9	53.8	54.7	26.0	37.1	38.3	67.9
Russia	296	327	548.6	874.7	71.8	43.4	20.9	36.3	39.0	87.6
India	4763	5191	553.1	1263.3	66.3	68.0	52.0	33.5	92.2	54.6
China	1387	2494	780.8	3697.4	34.6	44.9	15.2	70.8	82.5	164.4
South Africa	388	348	565.4	612.3	228.9	160.1	81.2	81.5	39.3	54.9

data Source: World Bank, World Development Indicators (WDI).

Kumar (2014) examines the return and volatility spillovers between gold prices and Indian stock sector indices. The findings show that dynamic conditional correlation varies substantially between positive and negative values during the period 1999–2011. More interestingly, the negative values are mainly observed during crisis and recession periods. Extending his analysis to hedging effectiveness, he concludes that a stock-gold portfolio provides better diversification benefits than a portfolio only composed of stocks. Ewing and Malik (2013) investigate the volatility spillover between gold and oil futures through univariate and bivariate GARCH models. They reveal a strong evidence of significant volatility transmission between the two markets. Moreover, Creti et al. (2013) examine the links between 25 commodities markets and stock market. They apply a DCC-GARCH model for a daily spot price series during the period January 2001-November 2011. They show that dynamic correlations between commodity and stock markets evolve through time and are highly volatile during the 2007–2008 global financial crisis. However, gold can be considered as a safe haven maintaining its value during financial crises.

Joy (2011), Ciner (2011), Roberdo (2013) and Capies et al. (2005) find that gold has served as a hedge asset against USD rate movements. For instance, Joy (2011) investigates the role of gold as a hedge or safe haven against the dollar using data for 16 major dollar-paired exchange rates. He points out that during the period 1986–2008, gold acts as a hedge against the US dollar and has a poor role as a safe haven.

Baur and McDermott (2010) examine the role of gold as a safe haven against stocks for major developing and emerging countries. They conclude that gold is both a hedge and a safe haven for major American and European stock markets but not for large emerging markets such as the BRIC countries. In a recent paper, Gurgun and Unalmiş (2014) analyze the hedge and safe haven properties of gold for some emerging and developing countries. Their results show that gold acts as a hedge and safe haven in a larger set of countries.

Ciner et al. (2013) examine time variation in conditional correlations between major asset classes namely oil, gold, currency, bond and stock, using data from both the US and the UK. Empirical results emphasize on the one hand, the role of bond as a hedge for equity market. On the other hand, evidence indicates that gold can be regarded as a hedge against exchange rate fluctuations. In the same vein, Hood and Malik (2013) evaluate the role of some precious metals including gold, silver and platinum as potential tools for hedging or providing a safe haven in the US stock markets. They find that gold acts as a weak safe haven and a strong hedge asset in the US stock markets. Miyazaki et al. (2012) explore the dynamic interdependence between gold and some other financial markets namely equity, foreign exchange and bond markets.[2] They conclude that dynamic correlations significantly drop during the bursting of the dot-com bubble and the occurrence of the terrorist attack between 2000 and 2001. Correlations also decline during the 2010–2011European debt crisis.

In a more recent study, Arouri et al. (2015), using the VAR-GARCH framework, explore both return and volatility spillovers between the stock market and gold prices in China. They find a significant return and volatility transmission between gold prices and China's stock market. Furthermore, their results show that adding gold to a portfolio of stocks reduces portfolio risk and enhances the hedge against stock risk.

This paper contributes to the related literature in several aspects. First, we investigate the dynamic relationship between gold and stock markets and the performance use of gold as a hedging instrument against equity asset in the BRICS countries. These countries have witnessed a significant enhancement in their financial indicators as shown in Table 1. The number of listed firms in the BRICS markets significantly increased from 7215 in 2005–8713 in December 2012. Regarding market capitalization, the BRICS stock markets reached 7677.6 billion of US$ in 2012 with a growth rate of 262.7% relative to 2005. The average value of the turnover ratio recorded 85.8% in 2012 with the highest value of 164.4% for China followed by Russia (87.6%) and Brazil (67.9%). This suggests that these markets become more attractive to domestic and international investors (see e.g. Mensi et al., 2014; Liu et al., 2013; Zhang et al., 2013). Consequently, it is interesting to investigate the dynamic volatility and hedging strategies for these markets.

Second, given our objective to investigate the role of gold as a hedge and safe haven for stock markets, we pay particular attention to the two last crises namely the global financial crisis and the European debt crisis. More precisely, we verify

[2] Miyazaki et al. (2012) use the S&P 500 index, the EURO/USD exchange rate and the world government bond index in the USA.