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Is the role of precious metals as precious as they are? Revisiting the role of precious metals for the G-7 stock markets: A multivariate vine copula and BiVaR approaches.

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Abstract

This paper revisits the international evidence on hedge, safe haven and diversification properties of precious metals, namely; gold, silver and platinum for the G-7 stock markets whereas most of the studies have focused only on gold properties. Conversely to the studies in the literature that use only bivariate copula, we use the multivariate vine copula based GARCH model. We then find that precious metals have valuable hedge and safe haven roles with different degrees. Our findings show that gold is the strongest hedge and safe haven asset, in almost all the G-7 stock markets. For silver and platinum, results show that they may act as weak hedge assets. Also, silver bear the potential of a strong safe haven role only for Germany and Italy stock markets. However, platinum provides weak safe haven role for most developed stock markets. Using the Bivariate VaR risk measure, we suggest that precious metals may offer diversification benefits in the G-7 stock markets.

Keywords: Precious metals, G-7 stock markets, hedge, safe haven, diversification, vine copula, Bivariate VaR.

***JEL classification*:** C02; C58; G1.

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1. Introduction

Since the Global Financial Crisis (GFC), the world's financial markets have seen substantial and continuous changes which have affected the worldwide economies. In this context, investors sought to minimize their potential losses by shifting from risky assets to less risky ones by holding commodities in their portfolios and especially precious metals due to their special features related to value and risk diversification. See among others (Adrangi et al., 2003 and Lucey and Tully, 2006-a-b). Since then, the demand for these metals has become increasingly important and remarkable not only for an industrial use (i.e. the metallurgic and jewellery industries) but also for a purpose of hedge in turbulent periods since their role as an investment asset and an effective store of value. In 2018, gold worth $37 billion traded in London each day.[1]In particular, gold is the oldest commodity that has served historically as a currency and still remains a monetary asset. According to Capie et al. (2005), Gold has been a key component of global monetary reserves for trading and currency hedging. Therefore, precious metals have become the main focus of research in the field of Finance.

There exists a considerable body of literature on the dynamics of precious metals which can be divided into different topics. A First main area of interest has been investigating the relationship between precious metals and other market factors such as; exchange rates (e.g., Ciner et al., 2013; Reboredo, 2013b and Bedoui et al., 2019), inflation (e.g., Hoang et al., 2016 and Salisu et al., 2019), stock market uncertainty captured by the VIX (e.g., Jubinski and Lipton, 2013), oil prices (e.g., Rehman et al., 2018), stock market indices (e.g., Hood and Malik, 2013; Mensi et al., 2015 and Ali et al., 2020) and risk aversion (e.g., Qadan, 2019). These studies are of key importance regarding the information that they may give about hedging and diversification strategies for investors. Second stand of literature highlights the stochastic properties of precious metals, their dynamic interlinkages and their volatility spillover (eg., Lucey et al., 2014; Balcilar and Ozdemir (2019) and Talbi et al., 2020).

However, most previous studies focus mainly on gold and to a lesser extent other precious metals. This suggests the need to study the role of other precious metals against equity markets movements.

[1] Source: Thomson Reuters

In this study, we examine the safe haven, hedge and diversification properties of precious metals namely; gold, silver and platinum for the G-7 countries[2] by exploring the precious metal-stock indexes nexus copula based models.

As far as we know, the academic literature on the nexus between precious metals and stock markets shows some insufficient theoretical and empirical research. Theoretically, the role of gold has been extensively studied in recent years ignoring the importance of other precious metals in terms of hedging and diversification properties. Empirically, most studies apply nonlinear models that may not fully account for extreme market dependence and bivariate copulas only, limiting the potential for real-world applications.

Therefore, in this paper we propose to apply multivariate vine copulas to study the hedging and safe haven properties of precious metals namely; gold, silver and platinum against G-7 stock markets. The use of copula in higher dimensions is challenging, where standard multivariate copulas, such as the multivariate Gaussian or Student-t copulas, suffer from inflexibility in modelling the dependence structure among larger numbers of variables and exhibit a problem of parameters restriction so they do not allow for different dependency structures between pairs of variables. The use of vine copulas overcomes such limitations since they are able to model complex dependency patterns using a variety of bivariate copulas.

By leading this research, we contribute to the existing literature focusing only on gold by examining the valuable role of several precious metals namely: gold, silver and platinum as hedges and safe haven assets in the G-7 stock markets in the multivariate scale. To overcome the limitation of the literature that uses only bivariate copula, we apply multivariate vine copulas. We then provide empirical evidence about presence of more different average and tail dependencies between each G-7 stock market index and precious metals that serve to distinguish between their hedge and safe haven properties.

The remainder of this paper is structured as follows: section 2 presents the state of the art. Section 3 develops the data and the methodology. Section 3 reports the empirical results of our analysis. Section 4 contains the discussion. And finally Section 5 concludes.

[2] The G-7 countries are Canada, France, Germany, Italy, Japan, U.K and U.S