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Article

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The Price Volatility of Precious Metals in Times of Economic and Geopolitical Crisis

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Abstract *People perceive gold, silver and platinum as jewellery and massive ingots, but their rarity and physicochemical properties recommend them as being suitable for a wide range of uses. The value of gold has led many states to diversify their economic portfolio by creating sovereign reserves. By buying massive amounts of gold, countries like China, Russia, India, Brazil and Turkey suggest that the purchase of precious metals is the best investment during the crisis. Research results show that the value of precious metals greatly increases at times of crisis because buying precious metals indemnifies states against international currency devaluation.*

Key words Gold, silver, platinum, economic crises, geopolitics

JEL Codes: Q31, Q34, Q38

1. Introduction and literature review

What we consider as being precious metals are gold, silver and platinum metals (ruthenium, rhodium, palladium, osmium, iridium, and platinum). More than silver, gold and platinum fall into the category of the rarest metals in the earth crust.
Regarding the platinum metals, they are in-kind native, compact, and in very small quantities. Platinum was discovered as a chemical element in 1735 even if it has been since ancient times. In nineteenth century, due to platinum being mistaken for silver, Russia has coined platinum. Of the six platinum metals, ruthenium is the least common and most abundant platinum. The durability and hardness of platinum metals that are all white to gray, is much higher than gold and silver (Mionel *et al*., 2015).
The other two precious metals, gold and silver, basically the best known, were discovered in ancient times. Similar to platinum metals, they are found in nature in their native state. According to Santimbreanu (2005), gold seems to be the first known metal, about 20 000 years ago. Its geographical spread is very wide and the minerals which contain gold may also include other metals.
Unlike gold, silver is found in small amounts in its natural state. But when this occurs, it takes the form of thin filaments (Santimbreanu, 2005). Among the physicochemical properties of gold, the most important are: the best electrical conductivity of all metals, the highest thermal conductivity of all the elements and the highest reflection (Emsley, 2011). In ancient Egypt silver was considered more valuable than gold due to its scarcity in native form.
All the above have tempted humanity, thus explaining the chase after its possession. Each of these rare metals plays a vital industrial and monetary part and that is why they are so cherished. Many of the frequently used idioms such as „golden wedding", „silver wedding" or „platinum wedding", golden age", and so on refer to a supreme value and to the idea of improvement. Therefore, there is an inner connection between precious metals and concepts such as value, good luck and achievement (Mionel *et al*., 2015).
Starting from the premise that rare metals are goods whose value is great by nature and they represent the safest investment in times of crisis, we shall demonstrate that the price of precious metals is, like other natural resources, influenced by economic and geopolitical crises. However, unlike other resources and assets, the value of precious metals increases. Moreover, the results of this research show that the price of precious metals increases greatly during the crisis (especially when it is an economic crisis), because the purchase of precious metals (gold, mostly) harbours states on currency devaluation.
Thus, the following sections present the role and economic importance of precious metals; it evaluates the strategic importance of sovereign gold reserves and, finally, it examines the evolution of gold, silver and platinum prices during the economic crises and geopolitical heft of the last forty years.

2. Methodology of research

The methodology applied for the analysis of economic and geopolitical crises on the value of precious metals is structured so as to answer the following questions: (1) what is the effect of crises on the precious metals market?; (2) what are the reasons and the forces acting on the behaviour of actors on the gold, silver and platinum market?; (3) how volatile is the precious metal's price?; (4) and why is gold preferred as sovereign backup instead of international currencies?
Reading the literature from many fields of study represented the first pillar of research. At this stage we have highlighted the role and economic importance of precious metals, specifically to show the reason behind its market value. Subsequently we

have appealed to the sovereign gold reserves statistics, with emphasis on the wealthiest states in this regard. And finally, using data provided by the retailer *Kitco Metal*, the analysis has presented a graph to show the dynamics of the volatility of precious metals prices for the three envisaged. The value of metals was then correlated with economic events, geopolitical and key international manufacturers, to identify the possible causal relationship between economic and geopolitical phenomena and price developments.

3. The precious metals' role and importance

People in general are tempted to imagine gold, silver and platinum as jewellery. Hence their most common form of economic use of their industry. About 75% of the gold produced globally is used to create jewellery. We are also inclined to perceive it under the form of massive ingots. Thus we only associate precious metals with wealth and with the general idea of wealth, but if we are to break this cliché we shall get to their true value and usefulness.

The aerospace industry uses a lot of gold as it is involved in the manufacture of parts needed for artificial satellites and astronauts' activity. The construction of the space shuttle Columbia has used 41 kg of gold. Astronauts' helmets are coated with a thick layer of gold to protect them from outer lethal radiation when they work outside the International Space Station. In constructions, gold is used in the manufacture of windows, its role being to reflect heat and keep the rooms cool in the summer and warm in winter (Stănescu, 2011). Promising gold development is recorded in the aircraft industry in the form of extremely thin films, almost transparent glass which protects aircraft cabins against frost.

More recently, the global environmentalist trend determined experts in various industries to find more efficient solutions to reduce emissions of greenhouse emissions from cars. Here palladium, platinum, rhodium and gold have found a very practical application. They are used to reduce noxae by means of catalytic converters that accelerate oxidation processes of compounds present in the exhaust gas pollutants. The precious metals are preferable because they are resistant to high temperatures. Catalytic converters are used within 2 to 3 grams of rare earth metals, usually platinum, is then largely recovered. Other uses of platinum include: oil refining, optic fiber cables, making hard drives, fertilizers, paints, medicines to treat cancer, pacemakers and medical laboratory equipment (Mionel, 2015).

Precious metals are used in dentistry. More than 60 tons of gold are used in dentistry over the world. Fillings, crowns and teeth made of gold are preferred by the Germans and Japanese. Gold is mainly used in making these dental items, but it is always an alloy with silver, palladium and zinc (Emsley, 2011).

Silver, is the second precious metal that is used in various ways. Silver iodide, which is a salt of silver, can be used in photography (together with gold), medicine and meteorology. In medicine, silver iodide acts as an antiseptic, while in meteorology it is used for cloud seeding to generate large quantities of precipitation. Very thin silver fibers are used in the making of sports equipment used by cyclists. The paint containing nanoparticles of silver is used in hospitals – it is shown that it stops the growth of mold and kills 99.99% of the bacteria deposited on the surface coated with it. Outer surfaces coated with the paint reflect up to 90% of sunlight while maintaining the low internal temperature (Mionel, 2015).

Precious metals are very helpful in telecommunications. The development of telecommunications and electronic devices has recently spread among the population leading to a growing demand for precious metals. Consequently, far from *only denoting* wealth, precious metals nowadays mean development, advanced technologies and, above all, progress, development and protection against economic crises.

4. The value of precious metals in times of crisis

4.1. Sovereign gold reserves – the anti-crisis protection

Almost all the world's countries are trying to diversify their portfolio by creating economic gold and foreign exchange reserves (*Figure 1*). As long as the major currencies of the world economy have all depreciated, gold has gained a strong geostrategic importance. After Alan Greenspan, gold is money "in extremis" (*apud* Popescu, 2014), i.e. it may be used at any time to get cash. This is why gold is part of most central banks reserves. In other words, precious metals do not represent debt and are not devalued by inflation, unlike the currencies mentioned which, says Alasdair Macleod (2013), have problems.

With over 8.133 tons of gold, the United States stands out worldwide, as its federal reserve is comparable to that of Germany, Italy and France altogether, which are the following three in the world hierarchy. On the other hand, China's reserves (1054.1 tons), the world's second largest economy, although among the highest in the world are not comparable to the US's. Lately, following Russia, China has greatly increased its gold production (Mionel *et al*., 2015). Since 2006, Russia has been building its gold reserves for portfolio diversification and has strengthened its rouble currency (Badkar, 2012). But unfortunately, the economic war that began in 2014 and which was directed on the American-European sanctions has greatly affected the Russian rouble, which hopes to become an international currency. This situation also prompted Russian authorities to discard the euro and the dollar by gold acquisitions. In 2014, Russia's central bank has purchased significant quantities of gold, exceeding Switzerland and China at a world ranking (Holodny, 2014).

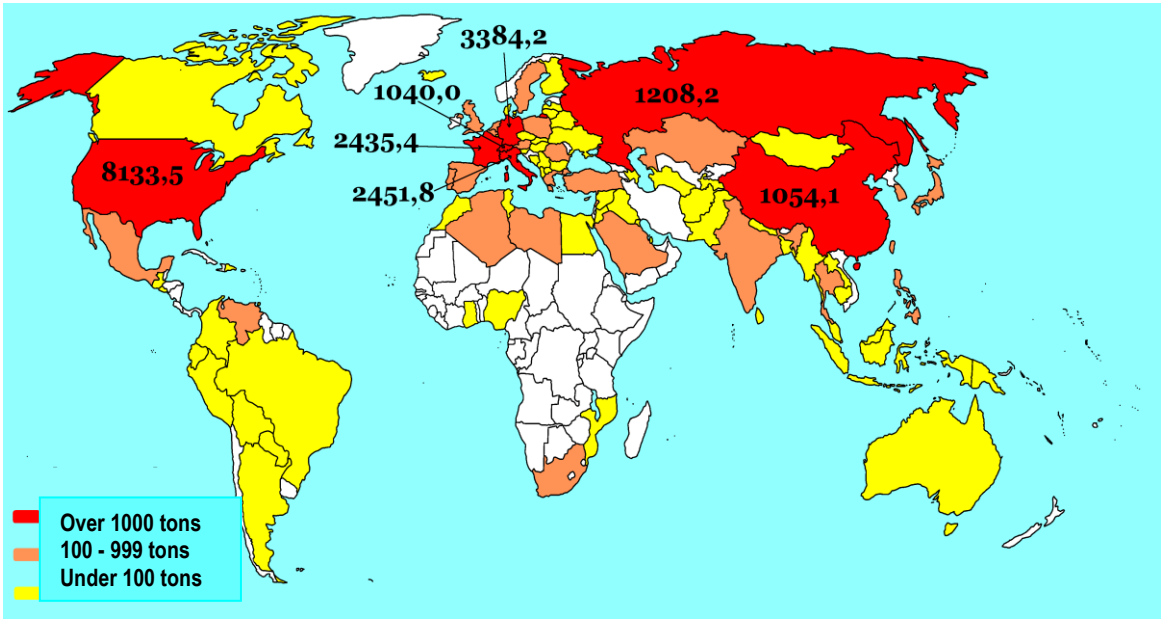

Figure 1. Sovereign gold reserves in February 2015
Source: Mionel *et al*., (2015, p. 88)

The two largest US rivals have changed large amounts of dollars into gold, as a way of limiting inflation. Between July 2009 and July 2010, the official repositories of China's US Treasury securities fell by almost 10% (Ferguson, 2011). Such movements, says economist Michel Chossudovsky, are a geopolitical variable of the confrontation between the great powers. China started to buy more and more gold to increase its reserves, ensuring that such huge reserves will gradually replace the dollar (Chossudovsky, 2013). India, on the other hand, follows China closely in gold purchase, as, compared to foreign currencies, gold is the safest investment.
Disposing of dollars in exchange for the purchase of gold is especially interesting, as the global crisis increases the price of precious metals. Since 2008, Western central banks have stopped selling gold, and those of China, India, Russia, Brazil and Turkey have accelerated buying gold. The extreme indebtedness of Western economies, combined with the resumption of emerging economies destabilized much of the international monetary system which was based on an increasingly weakened US dollar (Popescu, 2014).

4.2. Price dynamics in times of crisis

Unlike other commodities, precious metals are only minimally affected by consumption. Almost all of the precious metals ever extracted are still available today. As a result, demand has a much greater impact on prices than supply. The fact that gold and other precious metals are a hideaway in times of trouble decreases the risks of possible economic and geopolitical crises, affecting pretty much the price. The international political-economic climate is an indicator that is taken into account for the dynamics and evolution of precious metals prices.
Similar to oil, precious metals are sensitive to the emergence and development of conflicts. However, unlike it, which is often the engine of economic crisis, they are much more influenced by economic depressions and slowing or stagnant growth rates. *Figure 2* captures this very well. Precious metals have had roughly the same price oscillations during the same time periods, suggesting that the same causal force has increased their economic value. Since 1975, the first year highlighted in the chart, and by 2014, precious metals rose in ranges:

- *1979-1980* (with price reverberations even until 1983), when prices registered record values. Gold reached $ 612/ounce (in 1980), an increase of over 200% from 1978; Silver reached almost 22 $/ounce (in 1979), with 250% more than the year before, and platinum reached in 1980 $ 677/ounce, which meant an increase in price of up to 150% compared to the year before the *Iranian Revolution* and *the Soviet invasion of Afghanistan*, the two major events that led to major international crises, which impacted other markets;
- *1985-1989,* an interval which overlaps several international *events. The international sanctions which were imposed by the UN on South Africa because of apartheid* (Levy 1999) represented by far the most important factor that determined the increase, mainly in gold and platinum. South Africa is one of the most important players in the precious metals market due to its huge reserves. As a result, prices began to rise sharply, but not as much as in the period before;

- *2001-2006.* Several events led to the steady increase in this price range: *the terrorist attacks of 11 September 2001*, *the war in Afghanistan* (since 2001) and *the war in Iraq* which started in 2003. The prices of all precious metals have doubled in this period;
- 2007-2013, a period that coincided to the global financial and economic crisis caused by the collapse of lending, primarily in the US and then elsewhere in the world. More intense than in the previous time lapses and having made steady progress in terms of prices since the early 2000s, the three precious metals reached another historic peak. Comparing the price rise to the value of the year before the onset of the economic crisis (2006), the gold price rose by almost 200% ($ 1.668/ounce); the silver price rose by over 200% ($ 35.11/ounce) and platinum by almost 35% (1721, 86 $/ounce).

Both Russia and South Africa are, according to the website *Liberty Gold and Silver*, countries with a high geopolitical risk – Russia because of the conflict in Ukraine and Western sanctions (including Russia's removal from G8) and South Africa due to increasingly frequent protests of miners. But it is precisely these two countries that cover over 80% of global palladium production and the metal is very important for the industry. 2/3 of auto catalysts use palladium, hence the automobile manufacturers concern on rising prices amid tensions within Russia and South Africa. Russia is the main supplier of palladium for the car industry in Europe and China and a possible political response of Russia could be to reduce exports to these markets, with direct effects on the automobile market (Cheung, 2014). However, palladium is just as important in the manufacture emissions control equipment at power plants and as it is for water purification. China, India and Southeast Asia are areas where the demand for PGM is increasing, because of their use in water purification and reducing pollution.

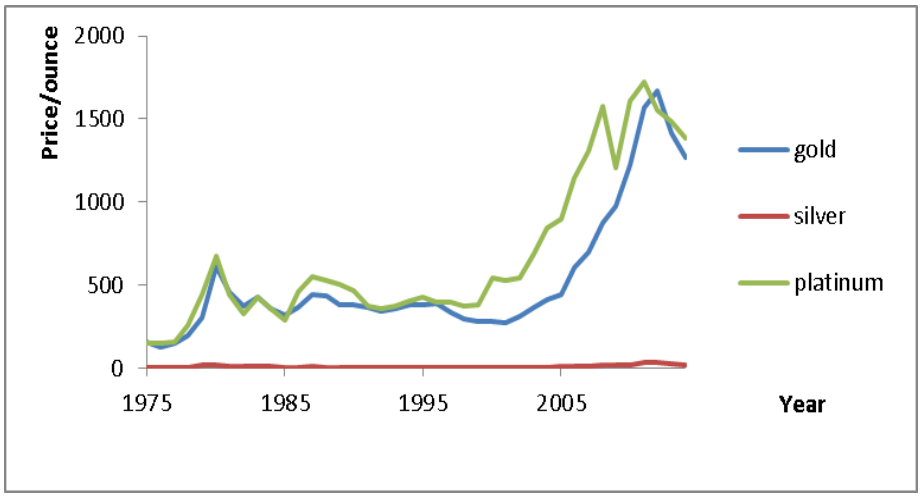

Figure 2. The price of precious metals during 1975-2014

Data source: *Kitco Metals*

5. Conclusions

Apparently, starting from 2013 there has been a relaxation time period. But will it stay the same for long? Most specialists warn that it is not so, because several other international events can cause an increased appetite for gold. If we were to quote Jeff Berwick, a specialist in the gold market who was invited to debate on different talk shows, he would say that "in times of political conflict, especially military conflicts, precious metals are doing well".

In other words, precious metals have gradually become more valuable. And as a *new Cold War* between the West and Russia began to emerge, and the Middle East Islamic State (ISIS) are gaining ground in Iraq and Syria, creating trouble in this area that is rich in hydrocarbon reserves, it is expected that prices rise again. The most affected will be the platinum metals, particularly palladium and platinum. Tensions in eastern Ukraine and Russia's imposed economic sanctions will weigh down the value of these strategic metals. Russia is the second most important player in terms of production (25% of world total) after South Africa, which is not doing too well either.

As long as precious metals are the life preserver of states to regulate economies and, respectively, the means by which they are trying to shelter in times of crisis, they are part of larger political strategies. Consequently, rare metals, in response to global geopolitical and economic crises, are expected to always increase their price. Trouble on the world stage and the endeavour of reconfiguration towards a new international order implies a currency war. A war in which precious metals and not only gold will shine. However, it is true that gold shall be the key element, and that is because *gold is really the most important geopolitical metal*.

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