International Gold Prices, Gold Reserves of Central Banks and Debt Stocks Relationship: Analysis Among G8 Countries

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Abstract

Gold is a commodity that has been used to protect the wealth of not only people but also organizations and states from past to present. For this reason, countries prefer to keep some of their reserves as gold through their central banks.

At the financial macroeconomic level, the primary goal of countries is to sustain a healthy economic growth. However, when the economies of developed countries are examined, especially when the economic growth rate of the G8 countries, which are called thestrongest countries class, is examined, it is seen that the public debt ratio is very high, which increases the risk levels of the countries. Therefore, it is expected that the gold reserve demands of these countries will be in a causal relationship with international gold prices. In this study, the causality relationship between the public debt stock of countries, international gold prices and gold reserve of countries is investigated based on this question.

The country sample is based on the quarter between 2008 and 2020 of the G8 country

group. The analysis method has been utilized by econometric methods and the relationship between variables has been examined with panel granger causality analysis.

As a result, a unidirectional causality relationship has been found between the debt stock of countries and international gold prices, and between gold reservoirs and debt stock.

Key Words: Gold reserves of central banks; international gold prices; panel granger causality relationship; public debt stock

INTRODUCTION

From past to present, human kinds have always been interested in gold. Different civilizations such as Romans, Greeks or Egyptians wanted to collect as much gold as possible. The reason behind this had been different usage of gold. Paying for resources or safety -haven in times of war or political chaotic environment could be thought of as some important reasons. Today, it is known that gold is used as an important saving and investment tool, although it has lost its place in the monetary system. It is also known that gold is one of the most important wealth protection tools.

The different factors behind the fluctuation in gold prices and the reasons for the volatility in gold prices are of great importance. In this respect, many studies have been conducted on this subject and different results have been obtained. For example, Dooley, Isard and Taylor (1992) and Sjaastad and Scacciavillani (1996) examined the short and long-term relationship between gold prices and exchange rates, which are thought to affect gold prices. Vural (2003) examined the relationship between gold prices and silver prices, which are thought to affect gold prices, the US dollar, oil prices, Euro rate, copper prices, interest rate and the Dow Jones Industrial Index. Poyraz and Didine (2008), intended to affect the price of gold to the Central Bank's foreign exchange reserves of gold prices in Turkey have investigated the relationship between oil prices and the exchange rate. Menas (2009), the movements in made clear that thegold market study and gold prices in Turkey, which is thought to affect the CPI index, the ISE100 Index, the real exchange rate index has examined the relationship between real interest rates on deposits and the London gold market in the designated ounce of gold value.

Central banks have been holding large amounts of gold for more than 100 years and are expected to maintain large gold stocks in the future. Central Banks still own approximately 20% of aboveground gold stocks. It is true that the readjustment process of reserve portfolios in order to adapt to changing conditions towards the end of the 20th century experienced a decrease in the amount of gold they hold in some central banks. This process has changedover the last decade. Central banks confirm with the agreement they signed in 1998 that gold will remain an important reserve asset for the near future.

Gold prices are affected not only by central banks but also by countries' indebtedness. Due to borrowing, which is used as a financial instrument by countries today, countries tend to hold gold in their treasury to neutralize their risks, which is thought to increase global gold prices, especially in times of financial crisis. In this context, considering the debt to GDP ratioof G8 countries is more than 70% and these countries constitute more than half of the world economy, it is expected that there will be a relationship between the increase in public indebtedness rates of these countries and global gold prices.

With the light of given information above, the aim of this thesis is to investigate the relationship among gold reserves of central banks, countries debt stocks and international gold prices. In previous studies, gold reserves of central banks, gold prices and countries' debt stocks are analyzed as individual topics; on the other hand, there is not a study that analyzed the relationship among these subjects. Therefore, it is considered that this study will be a pioneer study for the future studies.

In the first chapter, It is planned to give a conceptual framework about this work. First of all, gold will be taken into account. It is aimed to give historical knowledge of gold in the financial system, how the gold market works and how gold prices occur in the financial markets. After, debt concepts will be analyzed. There are two major debt classification; external debt and internal debt. It is aimed to give conceptual framework both of them and ,at the same time, debt stock classification will be analyzed. Lastly, it is planned to make a conceptual framework for the gold reserve of central banks.

Information about previous studies will be analyzed in the second chapter. The main strategy is to give related literature about a group of concepts.

In the third chapter, it will be mentioned the hypothesis of this study and theoretical and econometric framework. For analyzing the relationship among the concepts, it is planned to

benefit panel data analysis methods, especially panel causality analysis techniques. For this reason, Granger causality analysis will be applied.

The fourth chapter will include the descriptive statistics, information about dataset and econometric analysis results of the hypothesis. In this chapter, the causality relationship among concepts and direction of the relationships will be analyzed, deeply.

Lastly, reached results after findings will be evaluated and analyzed in terms of related literature review in the conclusion and discussion chapters. Moreover, the possible recommendation will be given the future researchers and related parties in the recommendation chapter.

RESULTS

In this part, it is aimed to give the research methodology of this study. Due to the nature of dataset and research questions, it is determined to benefit from econometric methods, especially panel causality methods. In this part, firstly the aim of this study will beto introduce. After, hypothesis and dataset will be presented and lastly econometric methodology and research model will be given.

DISCUSSION

The sample of countries was determined as Group of 8 (G8) countries. In addition to this, to investigate the relationship between variables that is mentioned in the research questions, government debt to GDP ratio is used for measuring debt stock of countries, international gold prices for gold prices and central banks' gold reserves to total reserves ratio for measuring gold reserves of countries are used for quarterly period between 2008-Q1 and 2020-Q2.

One reason why a causal relationship could not be established between gold reserves and international gold prices may be due to the fact that the gold reserves of the G8 countries did not change significantly. While it was observed that the gold reserves increased dynamically only on the Russian side in the panel, it was observed that there were minor changes in other countries, and Canada did not hold the Ltin reserve. When we consider the

cross-sectional dependence in the data, it can be shown as a reason why the causality relationship cannot be established. However, it is recommended that researchers observe different country groupings while establishing a causal relationship between gold reserves and public debt in future studies and investigate the differences between G8 countries in order to reveal the causality relationship between these two financial macroeconomic variables more clearly.

Another result of the study is that gold reserves affect the government debt stock of countries. According to the results, it is observed that the gold reserves of the G8 countries affect the government debt stock of the next 1 and 2 quarters. When the debt stock of countries is considered as a risk factor, it is expected that such a causality relationship will be established between the gold reserves of central banks and the risk appetite of countries. This is because gold is used by macro and micro elements in the economy as a safe haven and / or hedging instrument. At the same time, this result coincides with the results obtained in the studies of Gosh (2016) and Gopalakrishnan and Mohapatra (2017).

Finally, a statistically significant result was reached in all significant lag lengthsbetween a causal relationship between the government debt stock of countries and international gold prices. As mentioned in the second hypothesis of the study, countries increasing their gold reserves through central banks in order to hedge their risks cause an increase in international gold demand and this affects international gold prices. However, the fact that there is no granger causality from gold prices to government debt stock gives us the sign that countries are buying according to their own risk profile, not by looking at the international prices of gold, especially for G8 countries. The causality analysis found from government debt stock to international gold prices also parallels with studies in the literature. Godsell and Tran (2011) explained in their study for the United States that the decline in the government debt stock also reduced the gold prices, as the low government debt stockstrengthened the local currency and consequently reduced the demand for gold.

CONCLUSION

As stated in many sources, there is no doubt to the significance of gold for not only its investment instrument but also its safe haven property for all agents in the economic system. At the financial economics level, gold's role is critical for protecting the economic system from instability and keeping balance of local currencies. Therefore, governments stock some of reserves as gold by central banks. In instabil environment of economics gold reserves that are held in the central banks tend to increase. European sovereign debt crisis is a good example for that reflex. While gold is used for hedging by the countries, it is important to research whether this behaviour is valid in the world's most developed economy. Besides, it isvaluable to research the impact of developed countries' gold demand on international gold prices that is occured due to the hedging of their economies. By taking into consideration that most developed 8 economies make more than 40% of global debt in total, it is considered thattheir gold reserves in central banks, their government debt reserves and international gold prices have causality relationships. In this study, it is aimed to identify empirical evidence of this relationship of this financial macroeconomic concepts.

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Tables and Figures

Tables and Figures 1: COUNTRY SPECIFIC DESCRIPTIVE STATISTICS

1.1. Descriptive Statistics of Government Debt Stocks By Countries

	Min	Max	Mean	Standart Deviation	Skewness	Kurtosis
Canada	37,1	57,5	46,3	3,66	-0,27	1,09
France	58,6	104	82,8	10,2	-0,71	0,09
Germany	37,7	52	44,8	4,37	0,04	-1,4

Italy	99	145	123	11,2	-0,59	-0,77
Japan	139	212	183	19,4	-0,96	-0,3
Russia	5,64	14,5	10,7	2,87	-0,26	-1,48
United Kingdom	41,3	99,2	79,9	13,6	-1,56	1,33
United States	56,6	119	90,2	12,6	-1,15	1,03

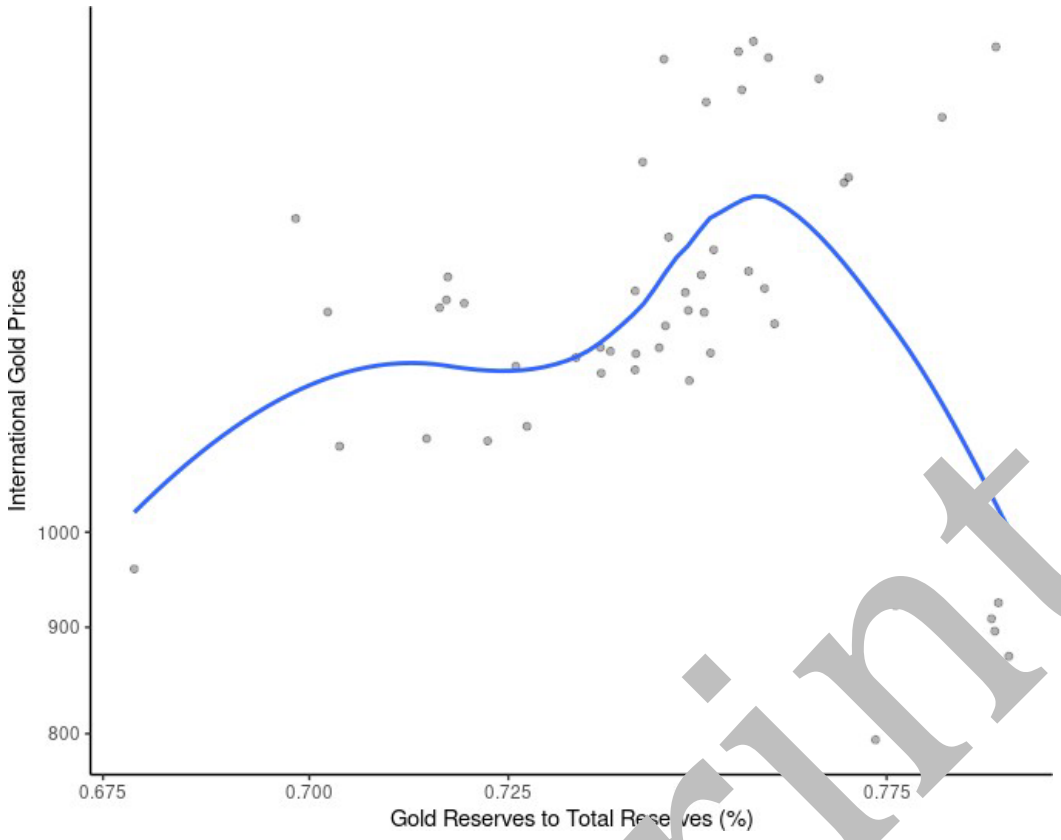
1.2. Descriptive Statistics of Gold Reserve Ratio of Central Banks By Countries

	Min	Max	Mean	Standart Deviation	Skewness	Kurtosis
Canada	0	0,002	0,001	0,001	-0,22	-1,69
France	0,59	0,74	0,65	0,03	0,7	-0,192
Germany	0,64	0,75	0,69	0,02	0,23	-0,355
Italy	0,62	0,73	0,67	0,02	0,32	-0,586
Japan	0,02	0,03	0,02	0,003	0,65	-0,809
Russia	0,02	0,23	0,11	0,05	0,15	-1,22
United Kingdom	0,07	0,15	0,1	0,02	0,2	-1,6

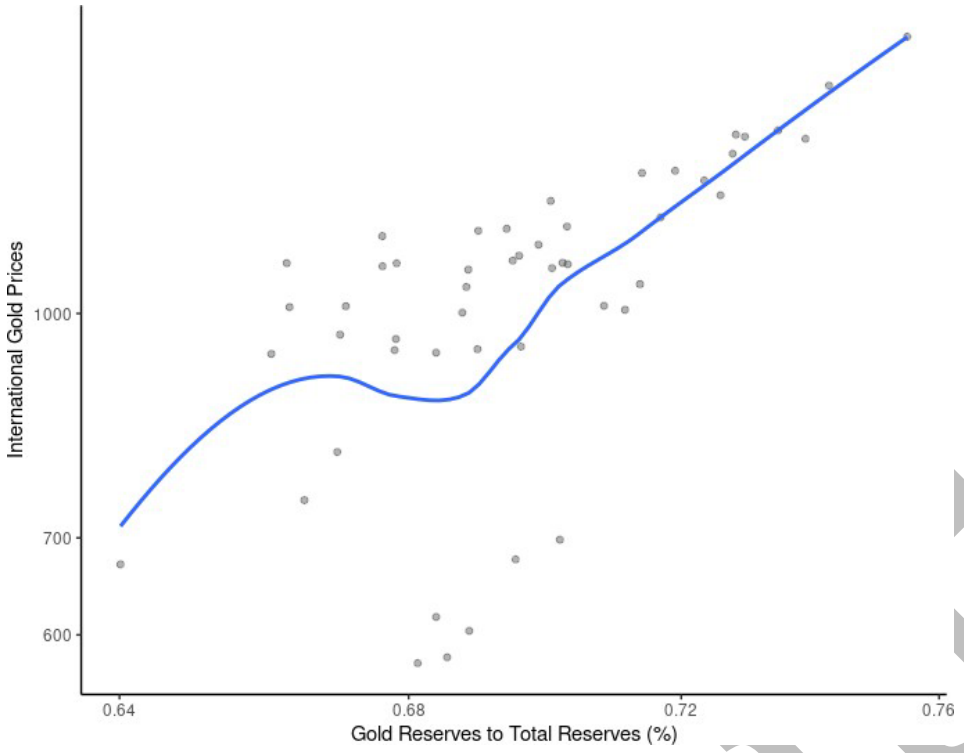
United States	0,67	0,79	0,74	0,02	-0,23	-0,136

Tables and Figures 2: COUNTRY SPECIFIC GRAPHS

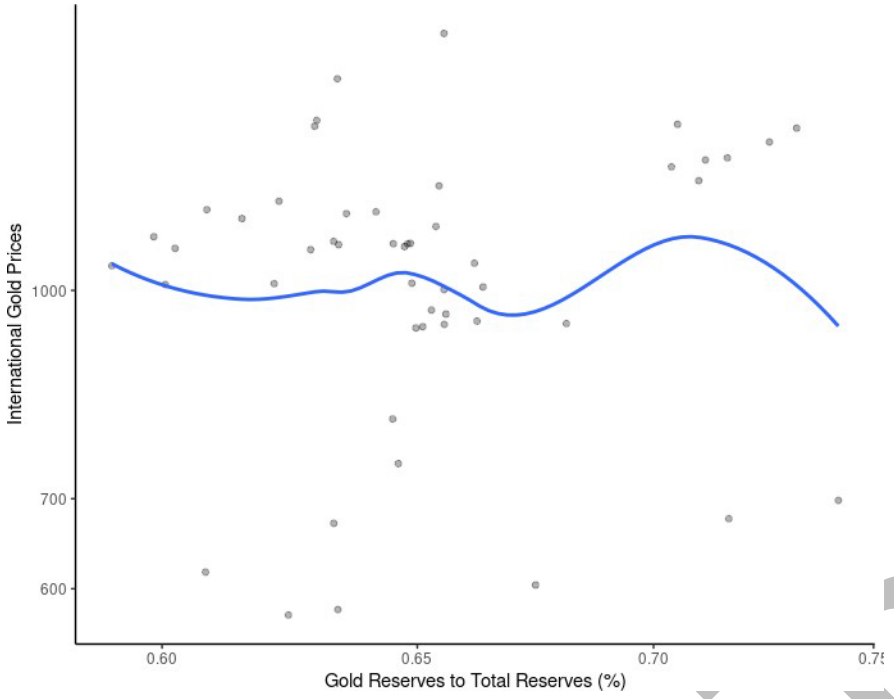
2.1. United States



2.2. Germany



2.3. France



2.4. Italy