

THE GEOPOLITICAL “PUZZLE” OF THE CENTRAL BANK’S SWITCH TO GOLD

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ABSTRACT

Gold holdings increased during recent time. Geopolitical factors could be responsible for such shift taking into account rising number of conflicts in the world since 2014. However, optimal share for gold in external assets is still disputable. The paper provides empirical tests to identify political economy factors of central bank's gold holdings. The paper imply two empirical approaches: analysis of how gold reserves in tones and as a share of reserves distributed among the countries with different political regimes; logit regression to identify role of political economy factors that may push countries' switch to gold. Results of empirical analysis shows that political regime itself is not obvious driving force of gold share. Excluding developed countries, it is possible to see that autocracies do not outperform democracies in terms of mean and median share of gold systematically. Countries demonstrated shifts toward gold early then reference point of 2014 year despite political regime. Logit regression also helps to see that countries heavily have being exposing to gold are more likely hoarding large exchange reserves and politically stable. Proxies of geopolitical aggressiveness are valid with some covenants. While Global Peace Index is well proxy to identify geopolitical preconditions of countries' switch to gold, military expenditures are not. This means that geopolitical motives of gold hoarding probably work directly and indirectly through exchange reserves accumulation and supportive political stability. Geopolitical aggressiveness that coincides with only large military expenditures but not with reserves accumulation is likely to stand on weak economic ground.

Keywords: gold, currency reserves, central banks, geopolitical risks, reserve diversification, military expenditures

1. INTRODUCTION

After moscow started an aggressive war against Ukraine and Western allies imposed sanctions against its foreign assets, the signals of increasing pressure on the gold market became stronger. A number of central banks increased their investments in the precious metal. There is an easy temptation to explain this situation from viewpoint that gold is a unique asset used to hedge geopolitical risks. There are sufficient reasons for such an argument. The world has become a more dangerous place, contrary to estimates by the Rand Corporation (Szaynaetal, 2017). Monetary authorities of individual countries fear that their international reserves are no longer protected as they once were.

Increasing geopolitical tension between the United States and a number of countries prompts a rethinking of the dollar's role in the international political economy. Actually, such arguments fully correspond with the unique properties of gold as a reserve asset. Such properties are that gold embodies intrinsic value. It follows that it is not someone's obligation. In other words, the precious metal is not subject to sovereign solvency risk. Moreover, owning gold makes it impossible to depend on the behavior of the issuer of reserve assets, which may be subject to certain restrictions. In light of the fear of such restrictions and geopolitical risks, the growing interest of central banks in gold should be justified. In addition, in a broader sense, geopolitical risks should have a systematic impact on the decision to hold a larger share of gold in foreign assets.

On the other hand, there is evidence that the geopolitical role of gold is clearly overestimated. In particular, (Koziuk, 2022a) shows that the aggregate share of gold in global currency reserves has returned to the level of 2000. Its dynamics are more sensitive to the uncertainty of economic policy and reserve management decisions than to geopolitical risks. In addition, the recent increase in interest of central banks in gold may be due to economic rather than geopolitical considerations. Until recently, low interest rates lowered the opportunity cost of holding precious metal. The acceleration of inflation in the world affected the fact that fixed income instruments generate negative yields in real terms. Expectations of rate hikes provoke the appearance of strong valuation effects due to the fall in market prices for instruments issued at lower rates in previous years.

Moreover, the question of gold demand driven by discussions about the diversification of hoarded reserves. And if autocracies have accumulated larger reserves (Koziuk, 2021a), (Jager, 2016) and are more prone to provoking geopolitical tension, is the growing demand for the precious metal driven by non-economic motives has an indirect form? Besides, differences in the motives of reserve management arise from the peculiarities of political regimes.

Obviously, from a fundamental point of view, the advantage of holding precious metal should demonstrate a more systematic manifestation, not so much in the last few years. The year 2014 can be called a kind of watershed. The violent annexation of part of one country by another and the introduction of sanctions in response fell on this year. In addition, if geopolitical factors matter when choosing in favor of gold, then they should indicate that central banks increase their holdings of the metal and its share in reserves after 2014. This paper shows that political regimes are not an unequivocal criterion for choosing a greater role of gold in external assets. At the same time, if geopolitical factors of reorientation towards gold exist, then they act through the channel of significant currency reserves and political stability, which enables their accumulation. However, this does not rule out that in some cases geopolitical motives for diversification in favor of gold are dominant.

2. LITERATURE OVERVIEW

The ambiguity of the role of gold in central banking practices is quite expected. The greater the growth in holdings of foreign exchange reserves prompts the introduction of the portfolio approach to their management, the more the economic arguments rest on a reliable foundation. However, this does not mean that there are no opinions that emphasize the special political and economic aspects of central bank decisions. At the same time, the geopolitical dimension of the special role of gold can be conditionally reduced to the question of whether hoarding gold helps to hedge geopolitical risks and to the question of the central bank motives for such hoarding.

The study of gold’s ability to hedge geopolitical risks is based on the tradition of analyzing its role as a “safe haven”. Moreover, some of studies are relatively unanimous that gold can be a fairly reliable instrument for hedging the risks of inflation (Reboredo, 2013a), (Reboredo, 2013b), stock price fluctuations (Baur and McDermott 2010, Gürgün and Ünalms, 2014), decline bond yields (Baur and Lucey, 2010). In most cases, the emphasis is on the opposite movement of the yield of gold and the corresponding asset class at certain times, or on the inverse correlation between them. However, in some papers the ability of gold to be a “safe haven” challenged. In recent paper Iaccurci (2021) shows that gold is not a good solution as inflation hedge. The similar results performed by Fabris and Jesic (2023) in case of some European financial indicators. Joachim (2015) stress on volatility and unpredictability of gold prices. The non-linearity in relations with inflation and interest rates should make gold less attractable from “safe haven” viewpoint. COVID crisis and economic development are also challenging factor to financial indicators behavior (Fabris, 2022), (Mastilo et. al. 2021).

Regarding geopolitical risks, Qinet et al. (2020) show that the dynamics of gold prices are sensitive to significant negative changes in the behavior of indicators characterizing geopolitical tension. They conclude that holding gold improves risk hedging in “times of chaos”. Baur and Smile (2020) also confirm that gold prices rise when geopolitical risks increase. At the same time, Baur and Smile (2020) also state that the increasing profitability of assets in gold reacts more to geopolitical threats than to manifested geopolitical events. This may indicate that the gold market is more sensitive to geopolitical signals. Moreover, geopolitical risks are not a reason for the automatic reaction of central banks in the direction of changing the management of external assets. In Koziuk (2021), the dominance of geopolitical factors in the behavior of gold prices is questioned. Uncertainty of economic policy has a more pronounced effect on the behavior of prices for precious metal.

Regarding the geopolitical factors of gold holding, research is less clear-cut. For example, Koziuk (2022) a showed that the aggregate share of gold in global reserves over the past 20 years hardly reflected geopolitical problems. It is more sensitive to uncertainty about economic policy and the opportunity costs of holding reserves. Besides, Koziuk (2022b) argues that gold hoarding for geopolitical reasons against economic expediency is some kind of manifestation of imperial narcissism. Similar conclusions correspond to the results obtained by Aizenman and Inoue (2012), who claim that the imperial past significantly affects the size of the gold share in a country’s external assets. Moghadam Bahrami and Bahernia (2021) emphasize that it is the factors of the international political economy determine the role of gold in currency reserves. Elements of the historical consequences of the power of the countries represented in the categories of export scale are also considered to be significant drivers of the gold share in foreign assets (Aizenman and Inoue, 2012), (Sousa Barros, 2020), (Oktay et al. 2016). At the same time, for a third of central banks, geopolitical factors are important criteria for the adoption of external asset management decisions (GoldCouncil,2020). Arslanalp et al. (2023) in the same time more clear about geopolitical role of gold. Results reached by Arslanalp et al. (2023) are interesting and generally are in line with this paper. They show that motivation to diversify toward gold is twofold. One reason is a traditional “safe haven” effect. Another reason is the geopolitical tensions. Multilateral sanctions found to be strong driver of propensity to diversify toward gold because of unique features of gold as reserve assets.

Despite the debatable validity of approaches linking the scale of exports to the volume of gold reserves, especially in the case of developed countries (Oktay et al. 2016), non-economic motives for central banks’ decisions regarding gold fit into the tradition of the political-economy approach. For example, Eichengreen et al. (2017) shows that geopolitical orientation signifi-

cantly influenced the choice of the currency structure of the country's external assets from a historical perspective. In addition, political and economic approaches to the analysis of foreign exchange reserves indicate that the political regime is a powerful factor that potentially determines a country's tendency to accumulate reserves (Koziuk, 2021a), Aizenman and Marion (2004), Jager (2016), Dreher and Vaubel (2009), Son B. (2020), (Leblang and Pepinsky, 2008). Moreover, taking into account that the volume of reserves can affect the propensity to diversify them more (Beck and Weber, 2010), decisions about the gold will reflect the complexity of portfolio approaches, to which non-economic factors can be added. Arslanalp et al. (2023) identify 14 "active diversifiers" toward gold and all of them are emerging market countries. At the same time, commodity economies show a shift towards the possession of larger gold reserves (Koziuk, 2021c). And the analysis of the distribution of gold reserves among resource-rich countries (Koziuk, 2021c) demonstrated the presence of strong asymmetries, which are determined by how much a country is able to conduct a balanced macroeconomic policy under each political regime.

As for studies on the optimal gold share in exchange reserves, they mostly use a portfolio approach, which to one degree allows taking into account the peculiarities of the behavior of gold prices in the spirit of a "safe haven". That is, if gold stabilizes the portfolio as in the case of institutional investors (Emmrich and McGroarty, 2013), then it can do the same in the case of central banks. In other words, a certain gold share performs a positive role in the management of external assets, since its prices are not correlated with the prices of other classes of assets (O'Connor, 2015, Baur and McDermott, 2010, Baur and Lucey, 2010). However, there is no consensus on what this proportion should be (Zulaica, 2020). According to a survey of central bank external asset managers, most of them agree that the optimal share of precious metal should not exceed 25% (Gold Council, 2020).

Zulaica (2020) points out that optimal gold share conditioned by composition of reserves and the risks they are exposed. If short-term instruments denominated in reserve currencies dominate the structure of foreign exchange reserves, then the optimal gold share will not exceed 5%. If instruments with duration of more than 2 years play a significant role, then gold at the level of 10% share of exchange reserves will reduce the sensitivity of the portfolio of external assets to the risk of yield fluctuations. If the portfolio is sensitive to fluctuations in exchange rates and yield levels, then a 20% share will help stabilize it. And even a significant holding of gold (about 50%) can be optimal if the portfolio of external assets has a significant component denominated in non-traditional reserve currencies, which, in addition, has a duration of more than 5 years (Zulaica, 2020). It follows from this that the optimal gold share rather results from the specific case of the goals and criteria of external asset management. In addition, it is quite natural that geopolitical considerations can correspond to the portfolio approach, or even be covered by it. Moreover, in cases of expectations of aggressive behavior or the desire to demonstrate "sovereignty" the advantage is in favor of gold may be a demonstrative choice. This also raises the question of some relativity of reserve management criteria, where domestic motivations for increasing the gold share may mask more complex geopolitical idiosyncrasies (Ghosh, A. 2016, Koziuk 2022b).

On the other hand, gold holdings do not exclude the increased risk of fluctuations in its value, significant costs for its physical possession, and a decrease in the profitability of external assets. Moreover, greater external vulnerability should theoretically lead to a lower share of gold for reasons of liquidity of foreign exchange reserves (Gopalakrishnan and Mohapatra, 2017). In Abduloev et al (2020) and Mastilo (2021) specific vulnerabilities of emerging markets are shown. Taking into account the dependence of the optimal share of gold on the composition

of external assets (Zulaica, 2020), and the dependence of the composition of assets on the volume of reserves, it can be seen that there are strong fundamental economic drivers of holding the precious metal. By itself, the gold share in external assets rather plays an autonomous role mostly in the case of gold-mining countries (for example, Uzbekistan, Tajikistan, Kazakhstan, etc.).

In addition, the nature of vulnerability to external shocks, the ability to accumulate reserves, and the alternative adjustment channels (through reserves or through exchange rate fluctuations) can be considered economic criteria for decisions on the management of external assets. Political tolerance for fiscal losses from the possession of suboptimal reserves or geopolitics is the non-economic motive, which is still possible. Moreover, the tension in the world contributes to this. Therefore, the paper puts forward two hypotheses. Firstly, political regimes cannot purely be a criterion of greater or lesser propensity to gold holding due to the limitations arising from the ability to accumulate and maintain exchange reserves. Secondly, as shown in Arslanalp et al. (2023) and Koziuk (2022a) and Koziuk (2022b), geopolitical motives perform as individual cases and unlikely common tendency. Due to this proxy of a country’s propensity to aggressive behavior could be a predictor of a shift in favor of gold. For example, Arslanalp et al. (2023) identify “active diversifiers” and geopolitical motivation among them combining empirical criteria and case study approach. At the same time, the paper emphasizes that shift toward gold should take place after 2014, since this is the year of the annexation of Crimea by Russia, the introduction of the first wave of sanctions against it, and the year after which the number of conflicts in the world increased. Arslanalp et al. (2023) are not clear about this defining moment. Based on a comparison of data on the distribution of the average and median gold share in exchange reserves across countries with democratic and autocratic regimes, the first hypothesis can be considered confirmed. The application of logit regression showed that the second hypothesis can be considered confirmed with certain warning. The switch to gold for geopolitical reasons rather acts not directly, but through the ability to accumulate currency reserves and maintain political stability.

3. METHODS

Methodologically, the study consists of two parts according to the question of whether the political regime affects the nature of the distribution of the gold share in exchange reserves, and whether certain indicators of geopolitical aggressiveness can be predictors of decisions regarding the diversification of reserves in favor of the precious metal. List of countries are available in the Annex.

In the first case, a comparison of the average and median value of the gold share in exchange reserves is used. Such a comparison based on data over the past 20 years. Countries defined in terms of political regimes (see the Annex). A political regime is identified based on the Democracy Index, according to which an index value of less than 4 qualifies as an autocracy and more than 4 as a democracy. A persistent excess of the average and median value for one group of countries of similar indicators for another group of countries will indicate that the factor of the political regime is important.

In the second case, logit regression is used. The choice of this empirical approach is due to a number of reasons. According to the purpose of the study, the question of whether the events after 2014 led to changes in the behavior of central banks regarding the accumulation of gold reserves is of interest. The selection of central banks among others seems to be more fruitful using a binary variable, rather than, for example, the OLS method. We assume the presence of a

relatively autonomous tendency to maintain a certain implicit gold share in exchange reserves. In the case of a trend towards the accumulation of reserves by most central banks, a similar trend will be observed with respect to gold in general. This will make it difficult to understand which central banks stand out from the rest. To identify such central banks, the average growth rates of gold reserves in tonnes and the average growth rates of the gold share in exchange reserves for the period from 2015 to 2021 are calculated. Next, the average value of such growth rates is determined for the group of countries for which information is available based on Gold Council data.

Two models for defining a binary variable are used. According to model 1, value 1 is assigned to the country if, during the specified period average growth rates of gold in tonnes and the gold share in exchange reserves are exceed the average in the world. Otherwise, the value of the binary variable is 0. Since this option may appear too severe in cases of significant initial holding of reserves (diversification in favor of gold of substantial reserves can significantly shake the precious metal market), model 2 is additionally applied. According to it, the value 1 is assigned to a country if for the indicated period at least one condition is hold: gold reserves growth in tonnes for country i is $>$ then for the world or gold share for country i is $>$ then for the world. Otherwise, the value of the binary variable is 0. In this respect we are differ from [Arslanalp et al. \(2023\)](#), who identify active diversification based on empirical criteria (raised gold share “in total reserves by at least 5 percentage points over the last two decades”). Our empirical criteria for logit model looked more severe and more focused to neutralize the problem of collective trend toward larger gold reserves holdings.

Three groups of variables are used as predictors in the logit model.

First, these are variables characterizing the number of accumulated currency reserves. Here, the indicator of the volume of foreign exchange reserves to GDP in % and the coverage of import reserves in months is chosen. Both variables are presented as averages for 2015-2021 (source: World Bank Development Indicators). In the empirical model, both variables are used separately to confirm the robustness of the significance of the relationship between reserve holdings and the propensity to diversify into gold. Theoretically, there should be a direct relationship, but this is not imperative, since the choice in favor of gold is not necessarily determined solely by the fact that the priority of diversification of larger reserves.

Secondly, these are variables that indicate the geopolitical aggressiveness of the country, namely the ratio of military expenditures to GDP in percentage (data from World Bank Development Indicators) and the Global Peace Index (The Institute for Economics and Peace). For example, [Acemoglu and Yared \(2010\)](#) indicate that the volume of military expenditures is an indicator that reduces the country's propensity for trade openness. This indicator directly attests to the country's ability to confront for reasons of potential. Nevertheless, [Acemoglu and Yared's \(2010\)](#) understanding, also illustrates less loss from breaking global ties in the event of escalation. The Global Peace Index is a more comprehensive indicator designed to measure the level of violence and propensity to it within the framework of the political agenda in a particular country. If military expenditures can also reflect a defensive aspect, then this index will more clearly indicate aggressiveness as a predictor of the tendency to geopolitical escalation.

Thirdly, it is an indicator characterizing the political stability of the country, namely Political Stability and No Violence/Terrorism (source: World Bank Governance Indicators). The political stability of a country is an important prerequisite for the ability to accumulate foreign exchange reserves, regardless of the political regime. It is also a prerequisite for a lower tendency to aggression when resolving internal conflicts or participation in external ones, which should

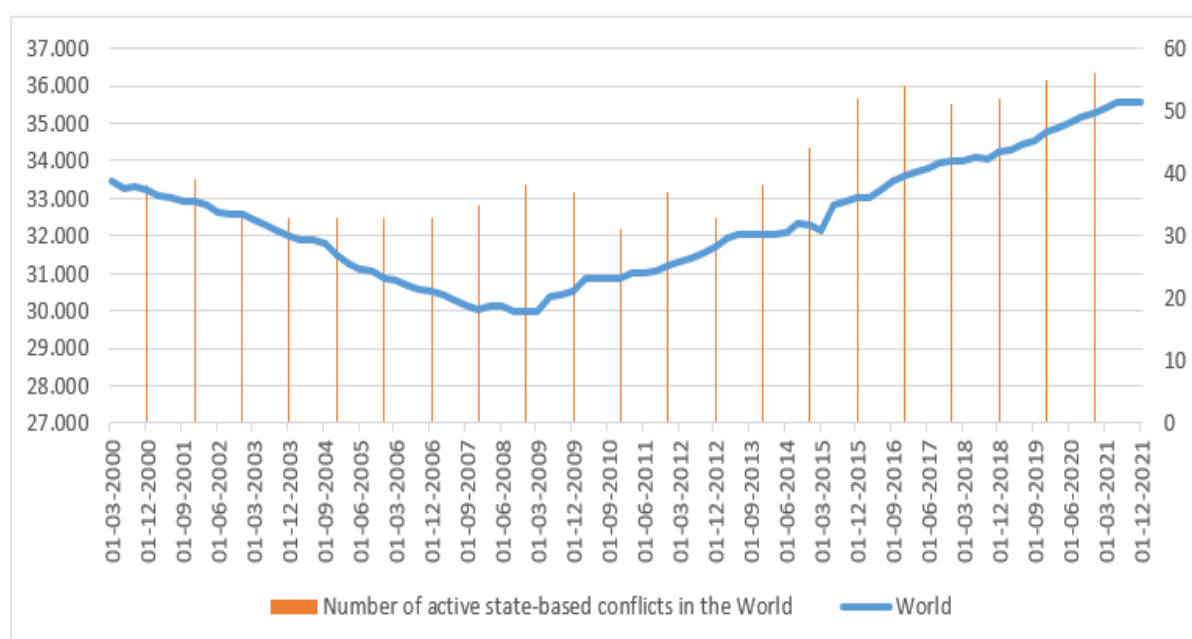
indicate a lower sensitivity to macroeconomic shocks. Moreover, this, in turn, will allow a lower need to maintain exchange reserves in the most liquid form and, accordingly, will allow maintaining a larger gold share without risk to macrofinancial stability.

The applied methodology made it possible to obtain results that generally confirm the stated hypotheses.

4. RESULTS

The change in the trend in gold hoarded by central banks is obvious (Fig. 1). After a long period of declining interest in holding the precious metal, a clear opposite trend is observed. However, have geopolitical factors affected this? The answer to this question depends on a closer look.

Figure 1. Gold holdings by central banks in the World (tonnes) (l.s.) and number of active war conflicts in the World



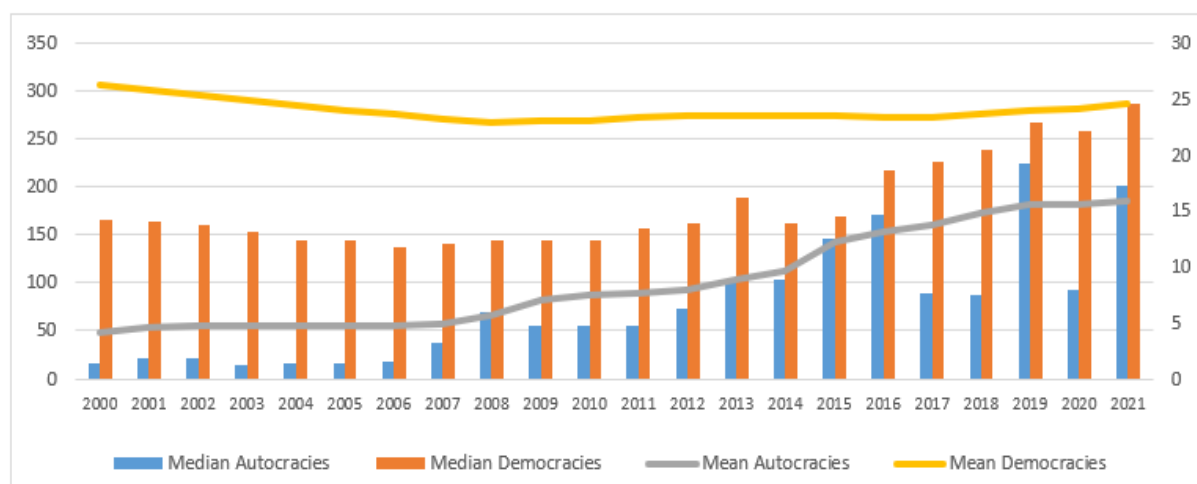
Source: Gold Council (gold holdings) and The Uppsala Conflict Data Program (number of conflicts)

The increase in the number of conflicts in the world occurred after 2014. 2014 is the year of the kremlin’s aggression against Ukraine and the annexation of Crimea. It is obvious that the level of aggression in the world and geopolitical tension has increased under the influence of these events, which should affect changes in the behavior of central banks. However, the data in Fig. 1 indicate that the change in the gold accumulation trend occurred earlier. A geopolitical factor alone is unlikely to have contributed to this, given other motivations for hoarding gold reserves, such as falling global interest rates.

The division of countries according to the criterion of political regimes allows us to see a more complex situation. Theoretically, it can be assumed that autocracies are more likely to generate geopolitical tension. Likewise, they may be more inclined to pursue external asset management policies to minimize the likely impact of restrictions on reserve asset transactions by developed democracies. The data in Fig. 2 indicate that the increase in gold holdings in tonnes occurred mostly at the expense of autocracies and also began after the global financial crisis, as in the

case of the data in Fig. 1. But for the period of 2014-2015, there was a strengthening of the tendency to “escape” toward metal.

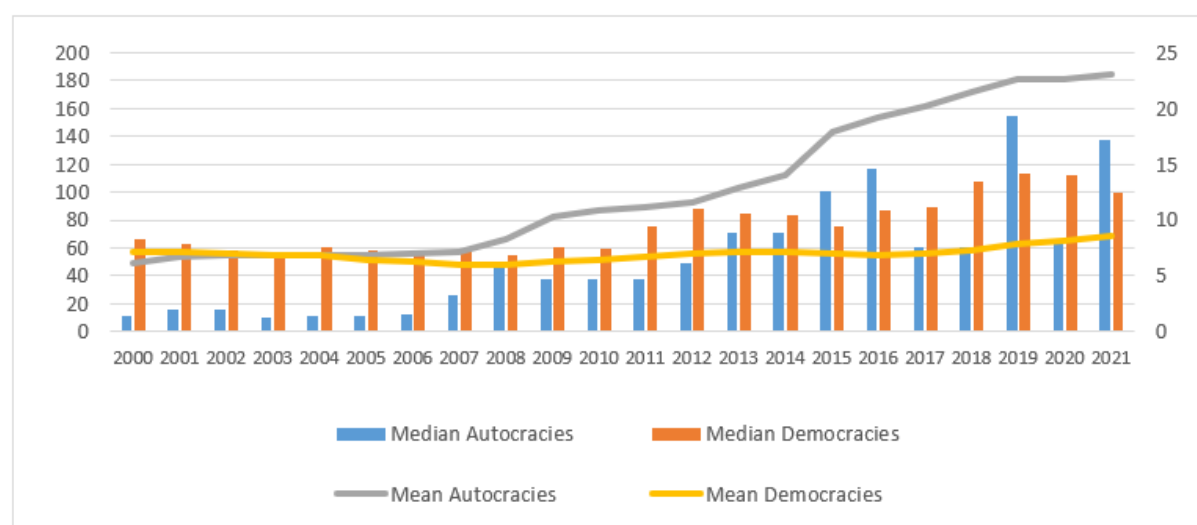
Figure 2. Distribution of gold reserves (tonnes) across political regimes



Source: Gold Council. Author's calculations

Characteristically, developed countries almost do not change the amount of gold holdings. In categories of [Aizenman and Inoue \(2012\)](#), their management strategy is passive. Amount of such holdings is determined by historical factors that is in line with some previous research ([Aizenman and Inoue \(2012\)](#), [Sousa Barros \(2020\)](#), [Oktay et al. \(2016\)](#)). This partly explains why both the mean and median values of gold holdings in tonnes for democracies are significantly higher than for autocracies. The increase in median values with practically unchanged averages suggests that a number of countries with a democratic regime also reoriented themselves to holding larger amounts of gold. Excluding developed countries significantly changes the situation (Fig. 3).

Figure 3. Distribution of gold (tonnes) across political regimes (excluding developed countries)

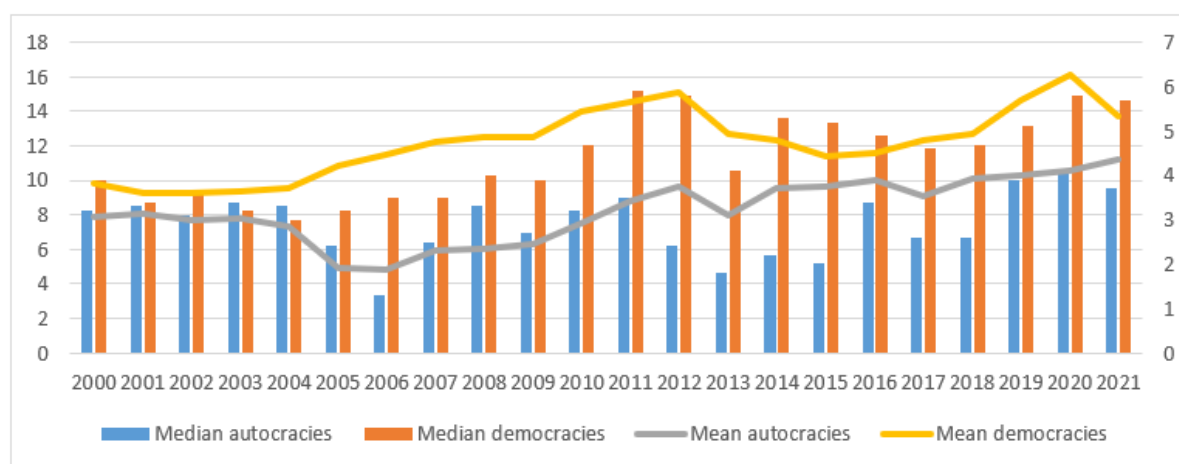


Source: Gold Council. Author's calculations

Excluding developed countries, average gold holdings for democracies also appear stable over time. However median values began to increase again after the global financial crisis. At the same time, the average values for autocracies began to exceed the corresponding values for democracies even before the global financial crisis, but their significant increase occurred after 2014. Median values for autocracies tend to exceed their corresponding values for democracies after 2014 as well, although they are not stable from year to year. Moreover, it can be assumed that the interest in holding larger reserves of gold is mainly driven by autocracies and individual democracies. The shift toward gold is hardly geopolitical in its purest form, but a geopolitical factor can be seen in the increased interest, if you consider which autocracies and democracies are behind it.

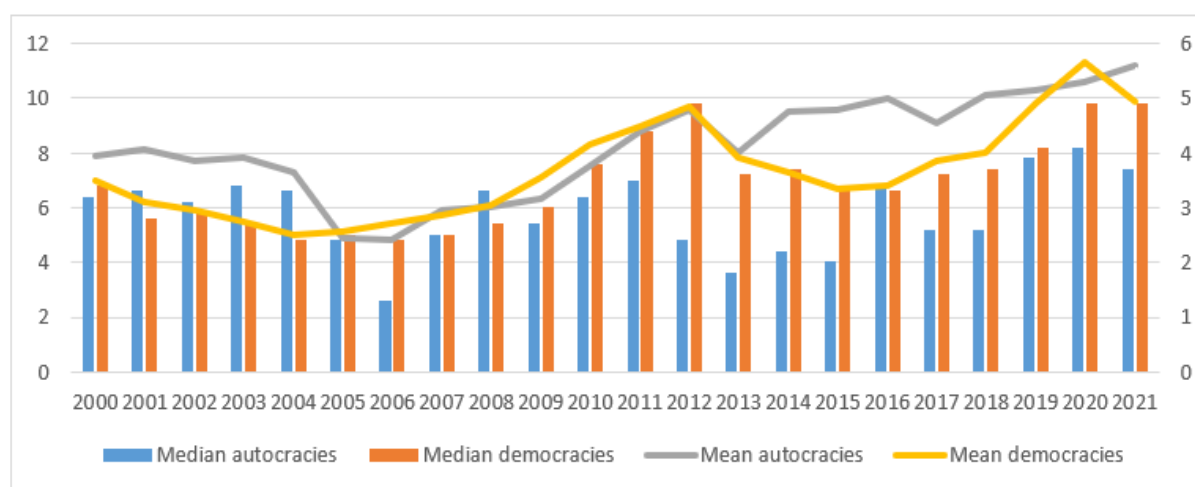
Nevertheless, the data on the distribution of gold share in exchange reserves (Fig. 4 and 5), which is of more interest to us in terms of research hypotheses, are more convincing from the point of view of reevaluating the geopolitical factors of gold holding (Koziuk (2022a), Koziuk (2022b)).

Figure 4. Distribution of gold share in exchange reserves across political regimes



Source: Gold Council. Author’s calculations

Figure 5. Distribution of gold share in exchange reserves across political regimes (excluding developed countries)



Source: Gold Council. Author’s calculations

From the data in Fig. 4 and 5 it can be seen that the tendency towards a certain increase in the gold share in exchange reserves, measured by both the average value and the median, was formed even before the global financial crisis. This tendency is almost equally characteristic of democracies and autocracies. However, fig. 1 shows that world gold reserves in tonnes started to increase after global financial crisis. The period after 2014 is not indicative due to increased diversification in favor of gold. If it accounts for the trend to increase the gold share, then it is more likely a return to the previous trend. The exclusion of developed countries does not change the situation as it did in the case of the possession of gold in tonnes (Fig. 2 and 3). Autocracies are not consistent leaders in holding a larger gold share, either on average or median. As with physical gold holdings, autocracies show a much less even distribution of gold share in exchange reserves. This indicator is more volatile in time, compared to democracies.

This situation can be explained based on the assumption that among autocracies there is a larger share of gold-mining countries. Politically unstable autocracies face pressure on foreign exchange reserves, responding to it by selling gold. When the situation stabilizes, they restore its stocks. Moreover, unlike the case of gold in tones, the gold share in exchange reserves is not an indicator that shows radically different patterns of behavior across political regimes. For example, the difference in the accumulation of currency reserves across political regimes is much more obvious (Koziuk (2021a), Jager (2016)). The advantage of autocracies in this process is influenced by a greater concentration of commodity rent, less independent central banks, and a greater propensity for limited exchange rate fluctuations, etc. (Koziuk (2021a), Aizenman and Marion (2004), Jager (2016)). But in the case of the gold share in exchange reserves, this is not obvious, which is confirmed by the data in Fig. 4 and 5. If in terms of political regimes there is no obvious advantage in favor of diversification with respect to gold, as well as differences in the time of switching to a larger gold share, then we can conclude that this refers to the weak role of geopolitical factors influencing the management of external assets. In other words, in most cases, the choice regarding this or that share of gold is dictated by economic considerations, not geopolitical ones.

At the same time, such conclusions do not exclude that individual countries may demonstrate a higher level of sensitivity to geopolitical factors. Taking into account the increase in the number of conflicts after 2014 and the subsequent geopolitical events, it can be assumed that such individual countries should show signs of aggressive behavior that correspond to their choice in favor of a larger gold share. This concerns the second part of the research methodology. It identifies countries that are more oriented towards gold, compared to the world average. And with the help of logit regression, the ability of proxy geopolitical orientation to act as appropriate predictors is tested.

The empirical test (Tables 1 and 2) demonstrates that the hypothesis about the geopolitical role of motives for a reorientation towards the possession of larger reserves in gold has the right to exist, but it is not an unequivocal statistically robust fact. Based on the obtained data, a number of generalizations can be made.

Table 1. Results of empirical test using logit model 1

	(1)	(2)	(3)	(4)	(5)
Reserves, % GDP	0,0156		0,087		
Reserves in month of import		0,085		0,037	
Military Expenditures, % GDP	-0,205	-0,254			-0,0927
Global Peace Index	3,480	2,793	2,9521	2,4910	2,9703
Political Stability	2,107	1,765	1,908	1,6079	1,872
Chi ²	9,3886	7,4098	7,6720	5,3910	7,1851
p-value	0,05211	0,11578	0,05332	0,14533	0,06625

Source: Calculated with STATISTICA package

Table 2. Results of empirical test using logit model 2

	(1)	(2)	(3)	(4)	(5)
Reserves, % GDP	-0,062		-0,0611		
Reserves in month of import		-0,235		-0,2279	
Military Expenditures, % GDP	0,0397	0,088			-0,0282
Global Peace Index	-0,705	0,078	-0,5984	0,2074	-0,557
Political Stability	0,069	0,177	0,103	0,232	-0,063
Chi ²	16,007	16,087	15,928	15,771	1,541
p-value	0,00301	0,00291	0,00118	0,00127	0,67282

Source: Calculated with STATISTICA package

First, it is important that the criteria under which the binary variable acquires the value 1 is play role. In addition, in the stricter case of identifying a country as one that reorients itself to gold (Table 1), the relationships between the variables are not identical, compared to a softer approach (Table 2). Above all, this applies to such independent variables as the volume of accumulated reserves and military expenditures. From this, it can be concluded that the nature of country identification matters. With a more rigorous approach, all variables have the theoretically predictable sign, except for military spending. Moreover, countries that accumulate more gold than the world average, and increase the gold share in exchange reserves more than the world average definitely have a larger amount of reserves and are characterized by a greater tendency to aggression and violence, but at the same time, they are politically stable. This is more consistent with the political-economy line of arguments, according to which the ability to accumulate reserves, determined by a favorable political environment, also enables greater exposures in gold in terms of volume and share. At the same time, political stability predicts greater interest to gold and in a softer approach (Table 2). In all specifications except (5), the sign is theoretically correct.

Secondly, in the case of a more rigid approach (Table 1), both variables characterizing the volumes of accumulated reserves have a theoretically predictable positive sign. In addition, in the case of a softer approach (Table 2), they have not. Moreover, with a more rigid approach to the identification of a country switch to gold, exchange reserves and political stability play a more significant role, and with a less rigid one, military expenditures and political stability. Regardless of the country’s geopolitical orientation, only those countries that rely on larger reserves

can afford more aggression for less military spending. If defense spending is significant, it may interfere with the ability to accumulate reserves, even if they are diversified in favor of gold.

Thirdly, taking into account that the variable of political stability in both cases (Tables 1 and 2) is the most stable, the countries reorienting to gold must also be stable in terms of the political situation. This creates a positive feedback loop: political stability enables reserve accumulation, accumulated reserves allow for greater geopolitical aggressiveness, and opportunities for greater geopolitical aggressiveness rely on domestic political stability.

Fourth, the variables characterizing geopolitical aggressiveness do not demonstrate the stability of sign depending on the models with the identification of countries and the specification of the equations. In the case of a tougher approach (Table 1), military expenditures and the Global Peace Index behave in different directions. This can be explained by the fact that geopolitical aggressiveness does not always mean direct readiness for aggression. Perhaps this is evidence of a domestic political agenda of the type of right-wing populism or right-wing sovereignism. In the case of a softer approach (Table 2), military expenditures behave predictably with the exception of specification (5) of Table 2, which is not statistically significant. Moreover, the Global Peace Index has the correct sign only in specifications (2) and (4), where the variable reserves in months of imports used. Nevertheless, here the proxy of reserves is not in the theoretically correct direction of relation. This nature of the relationship can be explained by the fact that if the volume of reserves does not play a major role in the switch to gold, then this means that geopolitical aggressiveness can rest on a weak economic background.

Fifth, outside the channel of military expenditures (specifications (3) and (4) in Tables 1 and 2), the theoretical correctness and stability of the directions of relation takes place only in the first model (Table 1). In the second model, the sign in the case of the Global Peace Index is not stable. This is a confirmation of the thesis that the switch to gold should take place in terms of substantial reserve accumulation, regardless of the reasons for this. Moreover, there is a positive feedback loop between political stability, reserve accumulation, geopolitical orientation, and focus on gold.

Sixth, outside the exchange reserves channel (specification (5) in Tables 1 and 2), geopolitical interest in gold does not look convincing. In the case of a stricter approach to the identification of countries, military expenditures behave unpredictably, although in the same way as in other specifications (1-4) of Table 1. But in the case of a softer country identification, the failure to take into account currency reserves (specification (5) in Table 2) leads to the fact that the model sharply loses statistical significance with the appearance of an incorrect direction of relation the case of all other variables. Taking into account the data from specifications (3) and (4) for both variants of country identification, it is obvious that the channel of foreign exchange reserves is even more important than the channel of military expenditures.

It follows from the conducted analysis that the geopolitical drivers of reorientation towards gold in the management of external assets do not work independently. Such a reorientation can occur even with lower military expenditures. The main thing is that the country has more reserves and is politically stable. Geopolitical aggressiveness expressed by the Global Peace Index may reflect manifestations of right-wing populism/sovereignism.

5. DISCUSSIONS AND CONCLUSIONS

The results of the empirical analysis, however, are not completely unambiguous. But they help deepen the discussion in some directions.

Beck and Weber (2010) were among the first to show that larger reserves tend to lead to greater diversification. Gold has long been considered as one direction for such diversification, especially given the ambiguous prospects of traditional reserve currencies (Arslanalp et al. (2022)). Zulaica (2020) provides arguments based on the model that an increase in gold share is more optimal the fewer external assets are exposed in traditional reserve currencies. It is in this direction that the geopolitical role of gold should be manifested. Countries-potential-violators of the world order will most likely be less inclined to maintain external assets in traditional reserve currencies, and therefore gold will be a natural direction of diversification for them. From this, it follows that geopolitical risks in themselves do not push countries to hold more gold, whatever the advantages of this in terms of the behavior of its prices. Moreover, the direct channel of the “safe haven” is unlikely to work in its pure form, which is confirmed by data on the aggregated behavior of the gold share in global currency reserves (Koziuk (2022a), Koziuk (2022b)). Switching to gold for geopolitical reasons requires an economic basis, which is the already accumulated volume of reserves, and political stability, which enables their accumulation. That is why the role of political regimes is less pronounced when it comes to switching to larger gold holdings. Autocracies may allow greater fiscal losses from holding the precious metal, but they are not significantly different from democracies in terms of the gold share in exchange reserves. And this means that geopolitical factors are not distorted by political regimes. And this, in fact, is a bad signal. The defining line between aggressive democracies and autocracies could be too narrow in case of external assets management.

As it has already been shown, the nature of the country’s identification as one that switches to gold is important (Tables 1 and 2). However, not always the expected empirical connections indicate that there may be questions about military spending and whether the Global Peace Index correctly reflects a country’s geopolitical aggressiveness. It is a difficult question. The country that suffers from external aggression, but is peaceful, has the specified variables at a level comparable to aggressive countries. And a country that is an aggressor, but significant in terms of scale and influence, may have these indicators at a relatively lower level. Likewise, an exclusively “military” approach to identifying the country’s geopolitical orientation cannot always explain cases of switching to gold due to a shift to right-wing populism/sovereignism. It is unlikely that the increasing interest in gold in Poland and Hungary can be explained solely by issues of geopolitical tension. Similarly, Brazil and India are unlikely to show overt signs of geopolitical aggression, but their so-called policy of neutrality is little different from a policy of tolerance towards those who oppose the conventional Western world. At the same time, Saudi Arabia, being in a geopolitical conflict with Iran and being involved in the conflict in Yemen, does not show any interest in holding significant gold reserves.

Moreover, this paper allows us to look at the question of the predictability of the actions of this or that country in the geopolitical arena from a different angle. Political regime and military spending are most likely not predictors of pure aggressiveness. Most likely, a complex of socio-ideological, military and economic factors together will indicate in which direction particular country is moving in the geopolitical coordinate system. In addition, the reserve accumulations, with the decline in the value of traditional reserve currencies and increasing interest in gold, may in the early stages better indicate the intentions of countries.

In terms of gold holdings the results shows that reserve accumulation is more likely to push gold share up. Only a few countries may afford to increase role of gold in the external assets. Then

such countries are strong reserves hoarders, this may affect some aggregate shifts toward more gold in reserve assets.

Recently, the central bank's holdings of gold have grown significantly. The number of conflicts in the world has also increased significantly after 2014. Geopolitical motives of foreign asset management continue to be in the focus of interest regarding the drivers of the sovereign demand growth for the precious metal. And the research literature does not demonstrate consensus regarding the role of gold in currency reserves. Empirical tests on the role of gold as a "geopolitical safe haven" correspond very tentatively with research on the optimal gold share in external assets. Did the switch to gold after 2014 take place in light of the increased geopolitical tensions in the world, taking into account that a number of economic factors also contributed to this? Despite the assertion of overestimation of the geopolitical motives of gold holding (Koziuk (2022a), Koziuk (2022b)), the factors of international political economy cannot be completely ignored. The conducted empirical tests of the distribution of gold share in exchange reserves and the identification of geopolitical predictors of switching to gold allowed us to state the following. First, the political regime is not a robust criterion influencing decisions on the management of external assets. The average and median values of the distribution of gold holdings in tonnes differ much more between democracies and autocracies than similar indicators of the gold share in exchange reserves. Secondly, the conditionally direct channel of geopolitical aggressiveness is not a sufficient criterion for a reorientation towards gold. Most likely, such a reorientation requires sufficient economic prerequisites in the form of the possession of a larger volume of foreign exchange reserves and political stability, enabling geopolitical aggressiveness. However relevant proxies may not be sufficiently reliable predictors of switching to gold if the motive for this is right-wing populism/sovereignism. Fourth, the approach to identifying a country as switching to gold is important. The more rigid it is, the more important the role of exchange reserves, rather than military spending, and vice versa. In addition, political stability is equally important in both cases.

Interest in gold for reasons of freedom from possible sanctions imposed by issuers of reserve currencies is unlikely to be an effective long-term strategy, taking into account the possibility of imposing sanctions on transactions with gold. A corresponding shift in the portfolio in favor of non-traditional reserve currencies can push up the optimal gold share (Zulaica, 2020). But this brings us back to the question that geopolitical factors may not directly encourage countries to hold a larger gold share, but indirectly through the economic motives of managing foreign exchange reserves in the new environment. Under any circumstances, the very fact of hoarding substantial reserves appears to be a weightier criterion for decisions regarding their structure. However, this does not rule out that some countries are really preoccupied with geopolitical considerations.

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Country list

Autocracies (Democracy Index < 4)	Democracies (Democracy Index > 4)
Afghanistan	Albania
United Arab Emirates	Argentina
Burundi	Armenia
Bahrain	Australia
Belarus	Austria
Central African Republic	Belgium
China	Bangladesh
Cameroon	Bulgaria
Congo, Dem. Rep.	Bosnia and Herzegovina
Comoros	Bolivia
Algeria	Brazil
Egypt, Arab Rep.	Canada
Eritrea	Switzerland
Gabon	Chile
Jordan	Colombia
Kazakhstan	Costa Rica
Kuwait	Cyprus
Lao PDR	Czech Republic
Libya	Germany
Myanmar	Denmark
Mauritania	Dominican Republic
Nigeria	Ecuador
Oman	Spain
Qatar	Estonia
Russian Federation	Finland
Saudi Arabia	Fiji
Syrian Arab Republic	France
Chad	United Kingdom
Tajikistan	Ghana
Uzbekistan	Greece
Yemen, Rep.	Guatemala
	Honduras
	Croatia
	Haiti
	Hungary
	Indonesia
	India
	Ireland
	Iraq
	Iceland
	Italy
	Japan
	Kenya
	Kyrgyz Republic
	Cambodia

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Autocracies (Democracy Index < 4)	Democracies (Democracy Index > 4)
	Korea, Rep.
	Lebanon
	Sri Lanka
	Lithuania
	Luxembourg
	Latvia
	Morocco
	Mexico
	Malta
	Mongolia
	Mozambique
	Mauritius
	Malawi
	Malaysia
	Nicaragua
	Netherlands
	Norway
	Nepal
	Pakistan
	Peru
	Philippines
	Papua New Guinea
	Poland
	Portugal
	Paraguay
	Romania
	Singapore
	El Salvador
	Serbia
	Suriname
	Slovak Republic
	Slovenia
	Sweden
	Thailand
	Trinidad and Tobago
	Tunisia
	Turkey
	Trinidad and Tobago
	Ukraine
	Uruguay
	United States
	Venezuela, RB
	South Africa