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NOTES

Gold in Central Bank Reserves

Strategic Considerations, Market Risks, and Practical Guidance

Istvan Mak and Etienne Vaccaro-Grange

Gold in Central Bank Reserves: Strategic Considerations, Market Risks, and Practical Guidance

NOTE/2026/007

Istvan Mak and Etienne Vaccaro-Grange*

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ABSTRACT: This Note examines the renewed prominence of gold in central bank reserves and provides practical guidance for reserve managers and policymakers. It shows that the recent rise in gold's reserve share has been driven largely by valuation gains rather than physical accumulation, and that gold's benefits are highly conditional. While gold carries no credit risk and may support long-term portfolio resilience, it is volatile, offers limited and regime-dependent hedging and safe haven properties, and provides less effective liquidity than its headline market value suggests. The Note argues that gold should be treated as a high-risk reserve asset, confined mainly to investment tranches, and assessed through liquidity-adjusted and risk-based frameworks. It also cautions that domestic gold purchase programs—especially involving nonmonetary gold—can create governance, financial integrity, balance sheet, operational, and monetary policy risks and should generally be avoided or assigned outside the central bank.

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Tel.: (202) 623-7430 Fax: (202) 623-7201
Email: publications@imf.org
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*Contact: imak@imf.org and evaccaro-grange@imf.org. This note was prepared by Istvan Mak and Etienne Vaccaro-Grange (both IMF Monetary and Capital Markets Department), under the guidance of Romain Veyrune and Dmytro Solohub (both IMF Monetary and Capital Markets Department) and with contributions from Carine Chartouni, Chady El Khouri, and Tomoyuki Kubota (all IMF Legal Department). The authors would like to thank Will Abel, Ivailo Arsov, Hicham Bennouna, Sandra Benitez Celis, Olga Beshpalova, Pornpinun Chantapacdepong, Alexandre Chailloux, Radu-Gabriel Cristea, Chris Erceg, Martin Gororo, Courage Gumbanjera, Shakill Hassan, Heikki Hatanpaa, Marthe Hinojales, Leni Hunter, Ivanova Reyes, Tetsuya Konuki, Mindaugas Leika, Flora Lutz, Antonio Manzanera, Haonan Qu, John Ralyea, and Anita Tuladhar for their helpful suggestions, as well as Shirley Du for her excellent research assistance and Julie Vaselopulos for her outstanding editing. The views expressed in this note are those of the authors and do not necessarily represent the views of the International Monetary Fund, its Management, or its Executive Directors.

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Gold in Central Bank Reserves: Strategic Considerations, Market Risks, and Practical Guidance

Istvan Mak and Etienne Vaccaro-Grange

July 2026

Gold has reemerged as a prominent component of central bank reserves, and its share has risen sharply in recent years. This increase has been driven overwhelmingly by valuation effects stemming from the surge in global gold prices, rather than by large-scale accumulation of physical gold. As a result, improvements in headline reserve adequacy metrics may reflect valuation gains rather than the accumulation of reserves.

This Note is intended as practical guidance for reserve managers and policymakers, but not as an assessment of gold as a private investment asset. Its objective is to provide a framework for measuring gold-related market risk and to support prudent reserve management decisions in an environment of heightened uncertainty, geopolitical risk, and financial fragmentation.

From a reserve management perspective, gold differs fundamentally from traditional reserve assets. Although gold carries no credit risk and can act as a protection against sanctions, it is highly volatile and has hedging, safe haven, and diversification properties that are both regime and shock dependent. Gold acts most consistently as a hedge against interest rate risk and as a partial hedge against US dollar depreciation, and it can also provide diversification benefits in long-duration reserve portfolios. By contrast, its protection against equity downturns, inflation surprises, and geopolitical shocks has weakened considerably after the pandemic period, alongside a broader breakdown of the stock–bond hedge. Moreover, empirical evidence shows that gold does not exhibit reliable safe haven properties in tail events. These conditional and regime-dependent properties imply that gold can enhance long-term balance sheet resilience, but it may undermine the self-insurance function of reserves if over-allocated or treated as a substitute for liquid foreign assets.

Liquidity risk is central to assessing gold's appropriate role in reserves. Central banks can address this risk either through separating liquidity and investment tranches or, in the absence of tranching, by incorporating liquidity-risk metrics directly into asset allocation decisions. Under a tranching framework, gold is ill-suited for the liquidity tranche and should be confined to the investment tranche. Where tranching is not used, the liquidity-adjusted market value of reserve assets should be compared with expected liquidity needs. Such indicators reveal that gold provides materially less effective liquidity than its headline market value suggests.

These challenges are amplified when central banks engage in domestic gold purchase programs. Domestic purchases introduce significant risks related to mandate clarity, governance, balance-sheet exposure, financial integrity, operational arrangements, and monetary policy implementation—particularly when central banks acquire non-monetary gold that must be refined and monetized before it can qualify as a reserve asset. Such activities resemble quasi-fiscal operations and sit uneasily with central bank mandates. Central banks should treat gold as a high-risk reserve asset, and avoid interpreting valuation gains as a permanent increase in reserves. Domestic gold purchases—especially of non-monetary gold—should generally be avoided or assigned to other public entities better equipped to manage commercial and fiscal risks.

What Are Central Banks' Reserves? Why Do Central Banks Hold Them?

International reserves play a critical role in maintaining macroeconomic and financial stability. They provide countries with self-insurance (a buffer) against exposure to external risks, such as sudden capital outflows, terms-of-trade shocks, or exchange rate fluctuations.¹ Adequate reserves enable authorities to absorb some or all those risks in lieu of the private sector by usually selling foreign exchange (FX) reserves to private sector counterparties exposed to the risk through their intermediaries such as banks. They support the continued functioning of financial systems during periods of stress. This insurance function is particularly important for economies with open capital accounts or significant external liabilities that do not have access to external sources of insurance such as swap lines. For them, insufficient reserves can amplify vulnerabilities and trigger destabilizing feedback loops.

To fulfill this role, assets in the reserves' liquidity tranche should be both highly liquid and of high quality. The liquidity tranche serves as the immediate "ammunition" to address identified risks prudently. Liquidity refers to the ease of finding a counterparty to buy or sell an asset without significant delay or cost. Liquid assets generally carry low credit or counterparty risk; however, they may still be exposed to market risk.

In addition to the liquidity tranche, central bank reserves usually include an investment tranche. This investment tranche follows different investment guidelines, placing less emphasis on liquidity and credit quality and more on achieving returns. These considerations become particularly relevant when evaluating gold as part of FX reserves.

Why Are We Talking about Gold in Central Bank Reserves Now?

Gold² has been prominent in the balance sheets of many central banks largely because of the institutional and historical legacy of the gold-standard era and subsequent postwar monetary arrangements. Under the classical gold standard, central banks were required to back their monetary liabilities with gold, leading to large accumulations that persisted even after the convertibility was suspended. The Bretton Woods system further entrenched these holdings by linking the US dollar to gold and encouraging countries to maintain gold as a key reserve asset alongside dollars. When the system collapsed in the early 1970s, most advanced economies shifted to fiat currencies but retained their existing gold stocks, as divestment was not operationally urgent, its status as a sovereign asset free of counterparty risk, and the desire to maintain continuity and confidence in central bank balance sheets. This persistence and renewed policy interest are consistent with recent evidence that gold has regained relevance as a reserve asset in the post-Bretton Woods era (Arslanalp, Eichengreen, and Simpson-Bell 2023).

Central banks' gold holdings in international reserves have increased significantly in recent years. The sharp increase in the share of monetary gold on central bank balance sheets—from 10 percent of reserves in January 2019 to over 22 percent by August 2025—has been driven primarily by the extraordinary surge in gold prices. Figure 1 shows the status of daily gold price from 1975 to 2025, across five different periods: before the global financial crisis, during the global financial crisis, from the end of the global financial crisis to the start of the COVID-19 pandemic, during the COVID-19 pandemic, and after the COVID-19 pandemic. Nevertheless, both advanced and emerging market central banks have steadily added to their physical gold reserves, with the most pronounced growth observed among emerging markets. These purchases have stemmed from two main sources. First, some central banks have recently taken strategic decisions to convert a portion of their FX assets

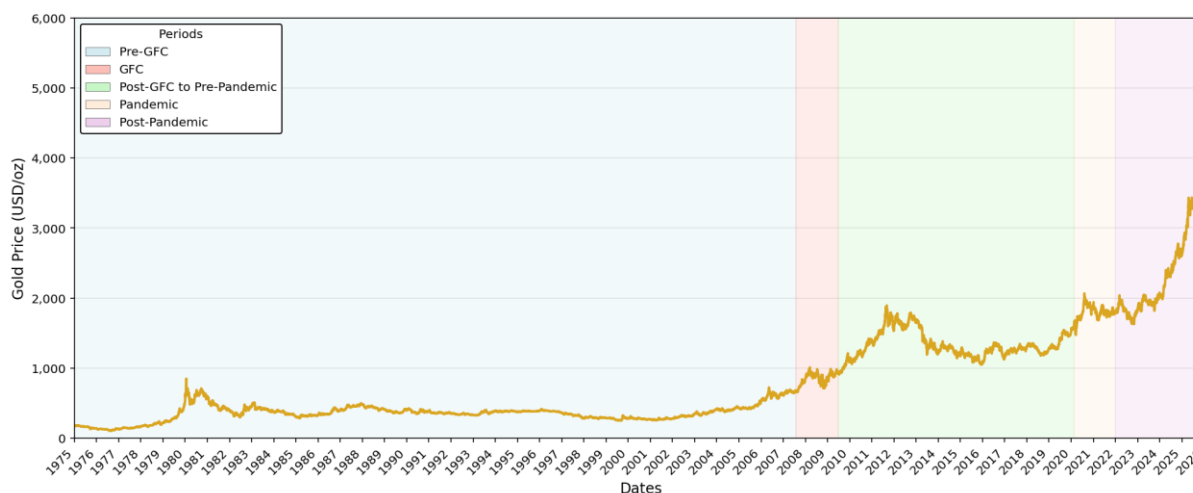
¹ The definition of international reserves in the IMF's Balance of Payments Manual is as follows: "External assets that are readily available to and controlled by monetary authorities for directly financing payments imbalances, for indirectly regulating the magnitude of such imbalances through intervention in exchange markets, and for other related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing)."

² Monetary gold is gold owned by monetary authorities (or by others subject to the effective control of monetary authorities) and held as a reserve asset. It includes gold bullion—coins, ingots, or bars—with a purity of at least 995 parts per 1,000, including such gold held in allocated gold accounts and unallocated gold accounts with nonresidents that give title to claim the delivery of gold. All gold other than monetary gold is treated as a commodity rather than a financial asset.

into gold, reflecting a shift in reserve management priorities. Second, many institutions have engaged in domestic gold purchases (DGPs), often in response to elevated international gold prices and the desire to de-shadow and support local mining sectors.

Figure 1. Gold Price

Daily gold price (USD/oz)



Source: London Bullion Market Association.

Note: Daily afternoon (PM) quotes.

During this period, the expansion of central bank gold holdings has been driven overwhelmingly by valuation effects rather than by large-scale accumulation of physical gold (Figure 2, panels 1–3). Between 2018 and 2025, the market value of central bank gold holdings rose by about \$3.2 trillion, from roughly \$1.2 trillion to \$4.5 trillion—an increase of 268 percent—although the aggregate volume of gold held increased by only about 8.5 percent. Remarkably, nearly two-thirds of this increase in value occurred at central banks that kept the physical quantity of gold broadly unchanged, implying that the entire rise in their gold holdings reflected revaluation gains stemming from the sharp increase in gold prices, particularly in the past two years. By contrast, about one-third of the increase in aggregate gold holdings (about \$1.1 trillion) is attributable to central banks that actively purchased gold, expanding their holdings by about 36 percent in volume terms.³

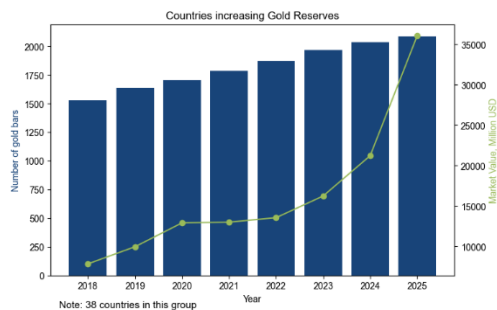
The evidence from the most recent Reserve Advisory and Management Partnership (RAMP) survey⁴ suggests that the expansion of gold holdings has not generally been guided by formal quantitative allocation frameworks. Most central banks report that the size of their gold position is determined primarily by legacy holdings or qualitative diversification considerations, rather than by strategic asset allocation (SAA) models. Nearly half of respondents retain gold largely as a legacy asset, whereas a further quarter rely on qualitative assessments of its diversification or strategic value. Only about one-quarter explicitly incorporate gold into their SAA frameworks—either as a financial asset or, less frequently, as a currency—and very few institutions engage in short-term or tactical adjustments to gold holdings. These choices shape both the scale of gold exposure and the institutional approach to risk measurement and accounting, reinforcing the tendency to treat gold as a long-term strategic asset rather than an actively managed reserve instrument.

³ A small share of global holdings—around 1.5 percent—remains with central banks that reduced their physical gold positions (by roughly 16 percent), yet even for these institutions, higher gold prices more than offset volume declines, resulting in a cumulative increase of about 187 percent in the value of their gold holdings.

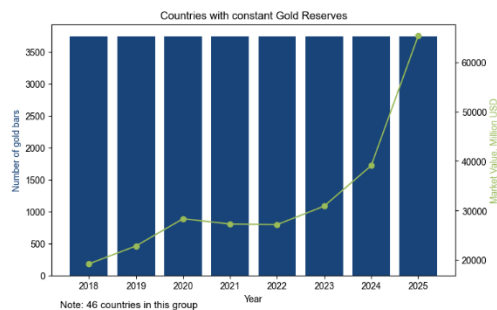
⁴ RAMP is a World Bank Treasury program that provides advisory services to central banks and conducts periodic surveys documenting reserve management practices across a broad cross section of official reserve managers; see, most recently, World Bank (2025).

Figure 2. Changes in Central Banks' Gold Reserves

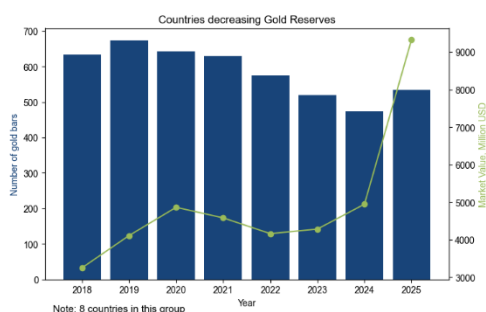
Panel 1: countries that increased gold reserves



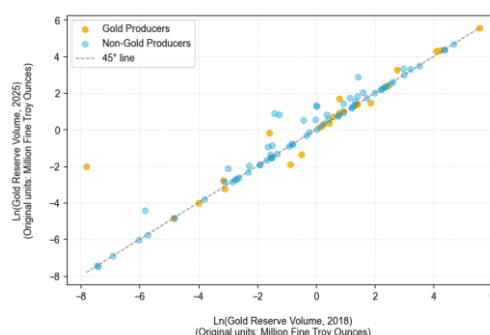
Panel 2: countries that kept gold reserves unchanged



Panel 3: countries that decreased gold reserves



Panel 4: Gold producers vs. non-gold producers



Source: IMF staff calculations.

The distribution of gold purchases across countries further highlights that recent accumulation has been driven predominantly by central banks in non-gold-producing economies (Figure 2, panel 4). This chart shows that the bulk of net purchases in volume terms since 2018 originated in countries without domestic gold production, underscoring that higher gold holdings largely reflect active reserve diversification decisions rather than the automatic retention of domestically mined output. Although few gold-producing countries recorded substantial increases in the physical volume of their gold reserves, most producers kept their gold holdings broadly unchanged or reduced them over time. This pattern suggests that, even among gold-producing economies, domestic production has not systematically translated into higher reserve accumulation and that recent global gold purchases have been primarily driven by discretionary policy choices among nonproducing central banks.

The recent surge in gold prices has had a dual impact on central bank reserve portfolios. On the one hand, all else being equal, higher gold valuations have contributed to improved reserve adequacy ratios (for example, import coverage, short-term external debt coverage, ARA-metric). On the other hand, increased price volatility and a stronger positive correlation with traditional reserve assets have heightened the overall market risk exposure within central bank reserve portfolios.

The remainder of this note is structured as follows. The next section examines gold's characteristics as a reserve asset—organized around three themes, namely, its deep and liquid market; its significant market risk; and its hedging, safe haven, and portfolio diversification properties—and the operational challenge of relying on its liquidity for foreign reserve management. The note then discusses the unique challenges and policy considerations arising from the addition of domestically produced gold to official reserves, including financial, operational, and monetary policy implications.

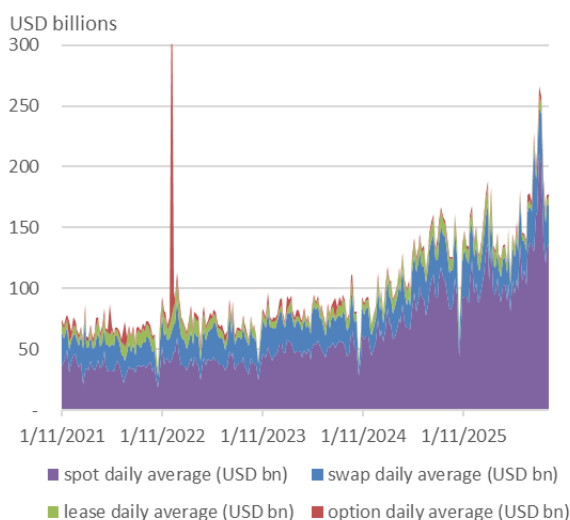
Is Gold a Good Reserve Asset from the Central Bank Point of View?

The Enduring Appeal: A Deep and Liquid Global Market, No Credit Risk

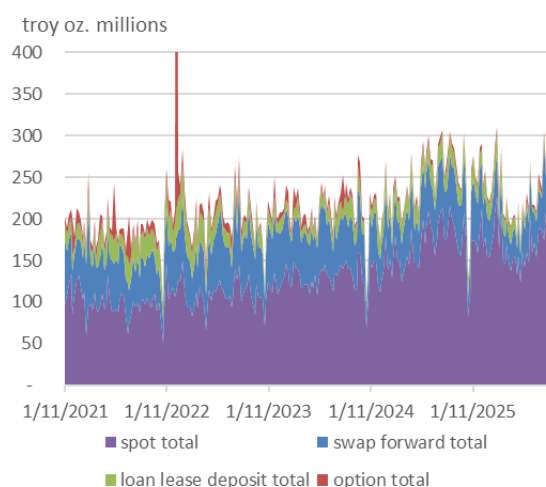
Gold's liquidity is evidenced by substantial trading volumes in major bullion markets. Its daily average trading volume in London is about \$134 billion (Figure 3, panel 1, 2), providing confidence that positions can be unwound even under stressed conditions, such as other traditional reserve assets. For comparison, the US Treasury market's trading volume is \$1.071 trillion (September 2025), the Chinese Government Bond market's trading volume is \$70 billion, and the combined EU+UK Government Bond market's turnover was \$110 billion in 2024.

Figure 3. Daily Average Gold Market Trading Volume in London

Panel 1: Daily volume in USD billions



Panel 2: Daily volume in troy oz. millions



Source: LBMA and IMF staff calculations.

Is gold a *hedge*, a *diversifier*, or a *safe haven*? Following Baur and Lucey (2010), we define a *hedge* as an asset that is uncorrelated or negatively correlated with another asset, on average. However, a *hedge* does not have the specific property of reducing losses in times of market stress, since the asset could exhibit a positive correlation in such periods and a negative correlation in normal times, with a negative correlation on average. A *diversifier* is defined as an asset that is positively (though not perfectly) correlated with another asset, on average. Similar to the hedge, the diversifier does not have the specific property of reducing losses in extreme adverse market conditions since the correlation property is only required to hold on average. Lastly, a *safe haven* is defined as an asset that is uncorrelated or negatively correlated with another asset in times of market stress. The specific property of a safe haven asset is the nonpositive correlation in extreme market conditions. Nevertheless, this property does not force the correlation to be positive or negative on average but only to be zero or negative in specific periods.

Gold falls into one of these three categories with respect to a particular risk, depending on the channels through which its price responds to shocks. Those channels are driven by three main forces. First, as gold pays no dividend, its price is sensitive to real interest rates, which represent the opportunity cost of holding gold versus a safe interest-bearing asset (for a dividend-paying asset, this channel also depends on how cash flows respond to real rates, which can be positive or negative depending on whether the driver is to demand or supply). Second, gold's price reflects a convenience yield—a nonmonetary benefit from simply holding the asset, stemming from its status as a store of value with no issuer and no counterparty (so no default risk and

potentially a protection against sanctions), and from its scarcity and intrinsic value, which make it less vulnerable to inflationary erosion—that varies with perceived risks to the monetary and financial system. Third, as gold is priced in US dollars, its quoted price moves mechanically with the external value of the dollar. Gold’s behavior against a given risk depends on which of these three channels the relevant shock activates.

To assess gold’s hedging properties in a portfolio of foreign reserves, we consider its behavior against the risks affecting traditional reserve assets. Such portfolios are typically composed of cash and short- and long-term bonds issued by core sovereigns in the major reserve currencies. The portfolios are exposed to three main risks: interest rate risk on the bond component, which generates capital losses when yields rise and is particularly pronounced for long-term bonds because of their higher duration; exchange rate risk across currency holdings, since reserves are typically valued in a domestic numeraire that differs from the currency of investment; and inflation risk, which erodes the real value of fixed-income claims. Credit risk is generally contained by the focus on core issuers. Beyond these portfolio-level risks, reserves are also held to provide a buffer against broader macrofinancial stress, even when such shocks do not directly affect reserve assets.

Such broader shocks include equity sell-offs, commodity-price disruptions, sudden stops in capital flows, banking or sovereign-debt stress, and geopolitical or sanctions-related events. Gold’s response to these shocks is inherently ambiguous, as transmission through the three channels is shock dependent and the channels often offset. Equity declines, for instance, may reflect growth concerns, monetary tightening, or liquidity stress, each moving real rates and the convenience yield in different directions; commodity, geopolitical, and financial-stress shocks act through varying combinations of safe-asset demand, dollar dynamics, and real-rate responses. The resulting correlations are unstable and strongly regime dependent (that is, dependent on the prevailing macroeconomic and financial conditions).

Overall, theory suggests that gold behaves more consistently as a hedge when shocks operate through the financial channels—real rates and safe-asset demand—than through broader macroeconomic forces, where the three channels (that is, opportunity cost, convenience yield, and dollar pricing) can work in opposing directions. This helps reconcile why gold can provide reliable diversification against interest rate risk while offering only conditional and regime-dependent protection against other forms of risk. The remainder of this section assesses these predictions empirically, examining the correlation of gold returns with proxies for the main risks identified earlier—interest rates, equity and commodity prices, financial stress, and inflation surprises—across regimes.

Gold is a good hedge against interest rate risk. Gold’s negative correlation with the 10-year US yield is the most stable and consistent finding across all periods (Figure 4), confirming its flight-to-safety role alongside Treasuries during both calm and stressed episodes. This pattern reflects the joint operation of the opportunity-cost and convenience-yield channels: lower long-term yields reduce the cost of holding a non-yielding asset, but the same risk-off episodes that compress yields simultaneously raise demand for assets with no counterparty risk. The negative correlation with the 10-year US term premium reinforces this interpretation, as gold benefits from risk-off sentiment when investors require less compensation for duration risk. Against the short end of the curve, gold benefits from easing monetary policy conditions after global financial crisis, as falling short rates reduce the opportunity cost of holding a zero-yield asset.

Gold is not a consistent hedge against downturns in equity markets. Its correlation with the S&P 500 index is nearly zero from 1998 to 2020 and negative before the COVID-19 pandemic (Figure 4). This supports Baur and Lucey’s (2010) finding that gold was a hedge against US equity. However, this correlation has turned positive since the COVID-19 pandemic, implying that gold’s hedging properties have vanished. This shift mirrors the broader breakdown of the stock–bond hedge (consistent with IMF 2026), with inflation and liquidity having become dominant common drivers that push asset classes in tandem rather than in opposition. More fundamentally, it reflects a shift in the type of shocks driving equity sell-offs. Before the COVID-19 pandemic, equity declines were mostly driven by growth concerns, which lowered real rates and raised safe-asset demand—supporting gold through both the opportunity-cost and convenience-yield channels. Since 2020, equity declines have been driven primarily by monetary tightening and largely by supply-driven inflation

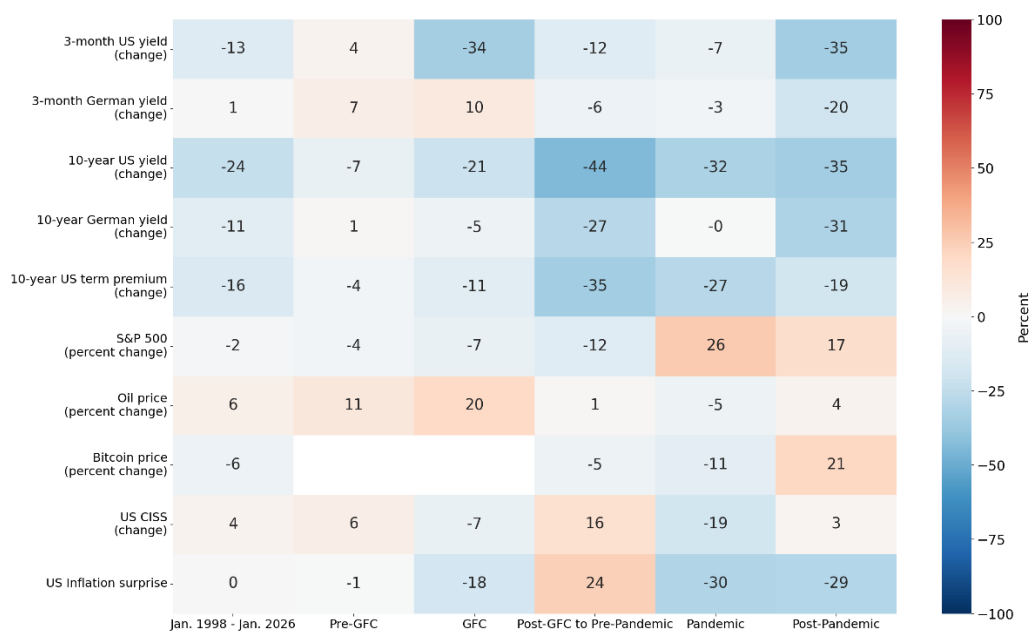
surprises, which raise real rates and weigh on gold through the opportunity-cost channel, breaking the historical hedge relationship.

Similarly, gold's correlation with US inflation surprises is predominantly negative, with the exception of the period between the end of the global financial crisis and the start of the COVID-19 pandemic. This suggests that gold does not provide a consistent hedge against inflation shocks, and that its performance depends on the nature of the shock: it tends to rally on inflation surprises when real rates remain low, but to sell off when surprises are accompanied—or expected to be followed—by rising real rates. These findings are consistent with Erb and Harvey (2013), who show that gold is a poor inflation hedge at short and medium horizons. Subsequent studies suggest that movements in real interest rates, rather than inflation itself, provide a stronger explanation for gold price dynamics.

More generally, gold's correlations with oil, bitcoin, and systemic stress (US Composite Indicator of Systemic Stress indicator) exhibit varying correlations across regimes, indicating that its hedging properties are both time-varying (regime dependent) and contingent on the dominant underlying shocks (shock dependent). This is consistent with the broader literature: Reboredo (2013) finds that gold acts as a hedge against average oil price movements but provides limited safe haven properties during extreme oil market stress. Shahzad and others (2019) document that gold's safe haven role against Bitcoin-related risk is time-varying and not consistently robust across market states. Similarly, Baur and McDermott (2010) show that gold's safe haven properties against financial stress vary substantially across countries and crisis episodes.

Figure 4. What is Gold Correlated With?

Correlation Matrix between Gold and different Assets/Indices

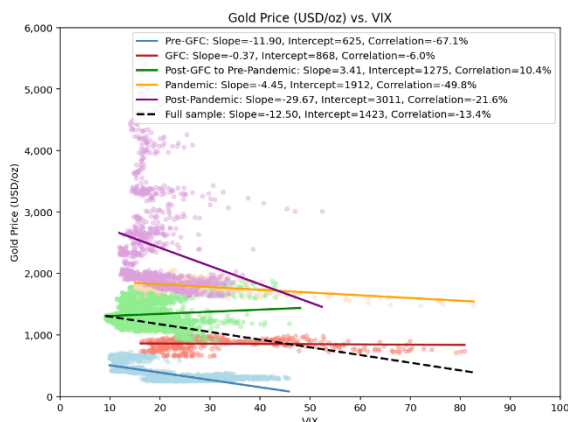


Source: IMF staff calculations.

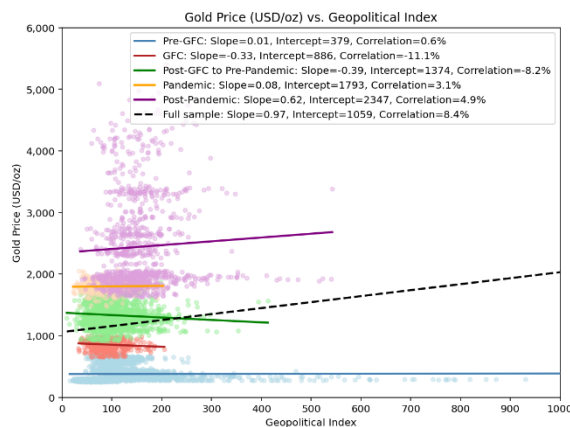
Note: Correlation between gold price (percent change) and assets/indices. 3-month and 10-year yields are derived from zero-coupon curves. 10-year US term premium is the Federal Reserve Bank of New York Adrian, Crump, and Moench (2013) Treasury premium. S&P 500 is the S&P 500 index. Oil price is the West Texas Intermediate crude oil price. US CISS is the Composite Indicator of Systemic Stress (CISS) for the US. US Inflation Surprise is the monthly Citigroup US Inflation Surprise Index. Period definitions: pre-GFC (January 1998–July 2007), GFC (August 2007–June 2009), post-GFC to pre-pandemic (July 2009–February 2020), pandemic (February 2020–December 2021), and post-pandemic (January 2022–January 2026). Data are based on the monthly average of daily observations. GFC = global financial crisis; post-GFC = after the global financial crisis; pre-GFC = before the global financial crisis.

Figure 5. Gold, Market Volatility, and Geopolitical Risk

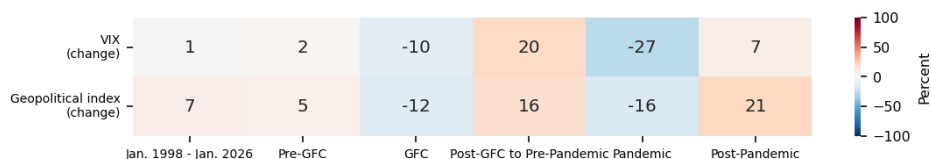
Panel 1: Gold Price (USD/oz) vs. VIX



Panel 2: Gold Price (USD/oz) vs. Geopolitical Index



Panel 3: Correlation between Gold Price, VIX, and Geopolitical Index



Source: IMF staff calculations.

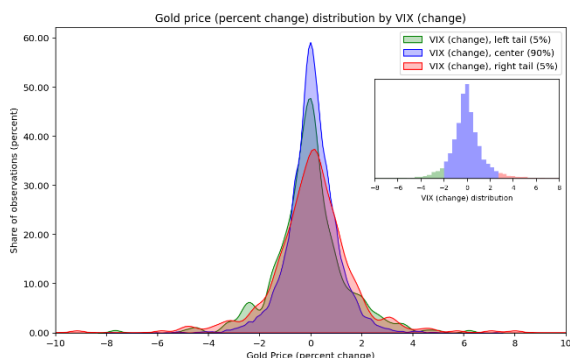
Note: Figure 5, panel 3: correlation between gold price (percent change), VIX (change), and Geopolitical Threat Index (change). VIX is the Chicago Board Options Exchange Volatility Index. Geopolitical index is from Caldara and Iacoviello (2021). Period definitions: pre-GFC (January 1998–July 2007), GFC (August 2007–June 2009), post-GFC to pre-pandemic (July 2009–February 2020), pandemic (February 2020–December 2021), and post-pandemic (January 2022–January 2026). Data are based on the monthly average of daily observations.

GFC = global financial crisis; post-GFC = after the global financial crisis; pre-GFC = before the global financial crisis.

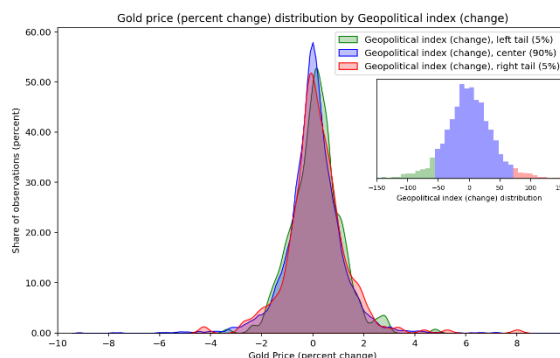
Is gold a hedge against equity-market volatility? The empirical evidence is mixed. The scatter plot in Figure 5 (panel 1) shows that high gold prices were only associated with high market volatility (VIX) in the period between the end of the global financial crisis and the start of the COVID-19 pandemic. The correlations in the first differences (Figure 5, panel 3) confirm the instability of gold's hedging properties: gold price significantly comoved significantly with volatility only in the period between the end of the global financial crisis and the start of the COVID-19 pandemic, and with the opposite sign, during the global financial crisis and the COVID-19 pandemic. Thus, gold is neither a reliable hedge against equity-market volatility, nor is its high price level consistently coinciding with a high volatility. This is consistent with Hood and Malik's (2013) finding that gold provides limited hedging benefits against US stock market movements under normal conditions. Besides, gold is not a reliable hedge against geopolitical risk. Figure 5, panel 3, shows that it acts as a hedge only when markets are not stressed, that is, when the VIX is low. The correlation between gold prices and the geopolitical index in the first difference is positive in most periods, but it turns negative during the global financial crisis and COVID-19 pandemic, when the dominant shocks were financial and pandemic-related rather than geopolitical. The scatter plot in Figure 5 (panel 2) further shows that high gold prices are not always associated with high geopolitical risk. This regime dependence confirms Baur and Smales' (2020) finding that gold's hedging properties against geopolitical risk vary considerably across event types and time periods. Therefore, gold's safe haven properties are neither universal nor unconditional—they are contingent on both the prevailing macroeconomic regime and the nature of the stress episode.

Figure 6. Gold and Tail Risk

Panel 1: Gold price distribution by VIX



Panel 2: Gold price distribution by Geopolitical index



Source: IMF staff calculations.

Note: VIX = Chicago Board Options Exchange Volatility Index.

Is gold a safe haven against tail risks? Kernel density estimations conditional on the part of the distribution of the change in VIX and geopolitical index show that gold does not exhibit safe haven properties in extreme episodes (Figure 6). Whether shocks on market volatility and geopolitical turmoil are large positive, large negative, or small in absolute terms, the contemporaneous distribution of gold returns is broadly symmetric and centered about zero. This is consistent with Baur and Lucey's (2010) assertion that gold's safe haven property against equity drawdowns holds only for short windows after extreme shocks, after which the property dissipates. However, this does not rule out that gold can still perform better than other traditional fixed-income reserve assets during tail events. Zulaica (2020) shows that gold provides diversification benefits in a portfolio of special drawing right government bonds during tail events, and that the appropriate level of gold that minimizes the portfolio volatility depends on the duration of the bonds (see Box 1).

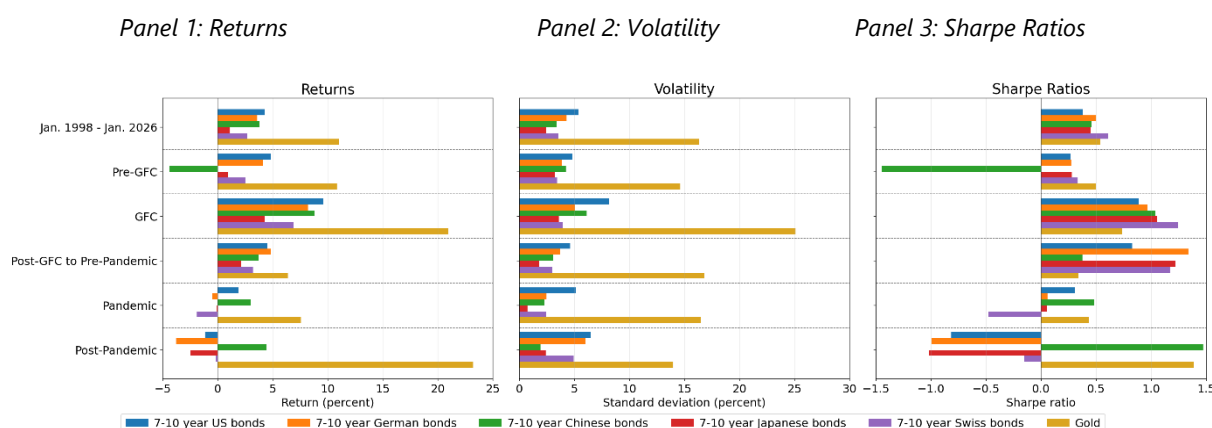
Gold can also serve as a hedge against sanction risks, but only at the cost of sharply reduced liquidity. This has become particularly relevant in an environment where geopolitical fragmentation and the use of financial sanctions have reshaped reserve management incentives (Chinn, Frankel, and Ito 2025). Unlike FX reserves held in accounts or securities subject to the jurisdiction of issuing countries, gold held outside the international financial system is not a liability of any foreign sovereign and is therefore, in principle, insulated from asset freezes or payment restrictions. This property has gained relevance as financial sanctions have increasingly targeted reserve assets held abroad. However, the effectiveness of gold as a sanctions hedge depends critically on custody arrangements. The closer the gold holdings are kept to domestic vaults, the stronger the protection against external legal or operational interference, but the weaker their immediate usability. Gold stored domestically becomes extremely difficult to mobilize rapidly for FX liquidity, international payments, or market interventions, rendering it almost perfectly illiquid in practice. As a result, gold's role as a hedge against sanctions risk inherently trades off against its fundamental reserve-management function as a source of readily deployable liquidity, reinforcing the need for careful differentiation between strategic resilience objectives and short-term liquidity needs in reserve composition decisions.

The Uncomfortable Reality: High Returns with High Volatility

Gold is an asset providing high returns while bearing significant market risk. Returns on gold, calculated as the change in gold price, are substantially higher than those of traditional reserve assets with long duration (Figure 7, panel 1), despite being an asset that does not deliver any income. After the COVID-19 pandemic, monthly average annualized returns reached 23.2 percent, although the best performing asset (Chinese government bonds) only averaged 4.5 percent. However, this high return is associated with a high risk: gold's annualized volatility has always been significantly larger than those of prime long-term government bonds (Figure 7, panel 2). Gold's volatility is twice as high as the most volatile asset after the COVID-19 pandemic

(US bonds) and reaches 14 percent in annualized terms. Indeed, Zulaica (2020) finds that risk parity in a portfolio of gold and two-year maturity special drawing right bonds is reached when gold accounts for 10 percent of the portfolio. That is, 50 percent of portfolio volatility arises from only 10 percent of gold. As a consequence, gold's risk-adjusted return is not consistently attractive. The Sharpe ratio⁴ comparison, Figure 7, panel 3) shows that gold was only the best performing asset once adjusted for market risk the period before the global financial crisis. Thus, gold's current high attractivity for foreign reserves management should be put in the perspective of its relatively lower historical appeal.

Figure 7. Asset Performance



Source: IMF staff calculations.

Note: Annualized returns are calculated as bond return (percent) and gold price (percent change). Volatility is the annualized standard deviation of bond and gold returns. The annualized Sharpe ratio is calculated as the excess return divided by its volatility. Annualized excess returns are calculated as bond and gold return minus the risk-free return. Risk-free return is based on the 3M US zero-coupon yield for gold and 3M zero-coupon yield of the related country for the 7–10-year bonds. 7–10-year bond returns are obtained from ICE BofA 7–10-year total return index. Data are based on monthly average of daily observations. Period definitions: pre-GFC (January 1998–July 2007), GFC (August 2007–June 2009), post-GFC to pre-pandemic (July 2009–February 2020), pandemic (February 2020–December 2021), and post-pandemic (January 2022–January 2026). Data are based on the monthly average of daily observations. GFC = global financial crisis; post-GFC = after the global financial crisis; pre-GFC = before the global financial crisis.

This pronounced volatility in gold prices also poses important challenges from the reserve accumulation perspective. Although central banks have benefited from the recent surge in gold prices—which has mechanically boosted the market value of their gold holdings and, in many cases, lifted total reserves—such improvements are not the result of underlying policy adjustments and may prove temporary.

Hedging instruments to manage gold market risk exist, but their availability is limited and they would add to gold cost on top of storage and insurance. Central banks and reserve managers can use financial derivatives such as forwards, futures, and especially options to hedge against adverse movements in the gold price. For example, purchasing out-of-the-money protective put options provides downside insurance while retaining upside potential, whereas collar strategies—combining long puts and short calls—can offer cost-effective protection by capping both downside risk and upside gains. More sophisticated approaches, such as dynamic hedging or partial hedges targeting tail risks, can be tailored to institutional objectives and risk tolerances. However, it is important to note that the practical implementation of these strategies is often constrained by the limited size and liquidity of the gold derivatives market relative to the scale of central banks' physical gold holdings. As a result, although hedging can mitigate gold price risk for a portion of reserves at a predictable, albeit, at times, high cost, the available market depth may not be sufficient to fully hedge large official sector positions without incurring significant transaction costs or market impact.

⁴ The Sharpe ratio is calculated as the excess return (that is, the return minus the risk-free return) divided by the standard deviation of the excess return. The higher the Sharpe ratio, the better the risk-adjusted performance.

Another dimension of gold's market risk arises when sharp and sustained price increases generate large, unrealized valuation gains on central bank balance sheets. Although these gains boost the reported value of reserves, they can also create significant volatility in the central bank's profit and loss account once gold sales begin to be realized. Selling even a small portion of gold holdings after a price spike can convert sizable mark-to-market gains into realized profits, potentially leading to large and uneven profit transfers to the government. This dynamic may also expose central banks to political pressure to sell gold specifically to increase transfers to the budget, thereby complicating reserve management objectives and introducing procyclical incentives. For these reasons, valuation swings linked to large gold price movements represent an additional—and often underappreciated—source of market risk for central banks.

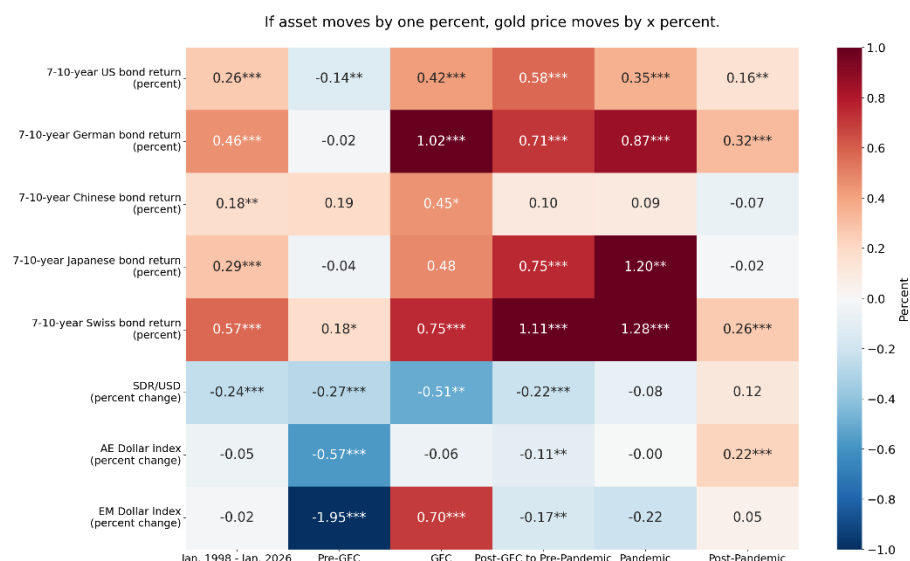
In practice, however, the extent to which such valuation swings translate into income volatility or fiscal transfers depends critically on how gold is accounted for. Evidence from the latest RAMP survey (World Bank 2025) indicates that most central banks do not route gold revaluation gains and losses through the income statement. Only about one-quarter of respondents report these gains and losses in profit and loss, although a similar share records them in equity or other comprehensive income, often segregated from investment operations. Others reflect valuation changes directly in balance sheet positions, treat gold at historical cost, or apply hybrid approaches shaped by national accounting standards and statutory mandates. These practices can substantially dampen the immediate income effects of gold price movements and help insulate reserve management from short-term market fluctuations. At the same time, where realized gains ultimately become distributable, accounting choices do not eliminate the underlying tension between large gold valuation gains, profit distribution frameworks, and pressures to monetize reserves after sharp price increases.

The Fading Promise: Gold as a Portfolio Risk Diversifier

Gold can be a useful addition to reserves from the portfolio management perspective, although its diversification benefits vary with the duration of the portfolio and the prevailing regime. Regression coefficients of bond returns on gold returns (Figure 8) show that gold returns are positively correlated with returns on 7–10-year sovereign bonds across major reserve currencies, consistent with the earlier finding that both assets respond positively to declines in real yields. This means that gold and bonds tend to rally together in flight-to-safety and calm market episodes, but they also sell off together when real rates rise as in the period before the COVID-19 pandemic. By contrast, gold's correlation with the broad dollar indexes is negative across most regimes, indicating that gold provides a partial hedge against US dollar depreciation—a property of particular value when reserves are denominated in a domestic numeraire other than the dollar. The empirical analysis by Zulaica (2020) demonstrates that, despite gold's substantial market risk, small allocations of gold (typically below 5 percent) can help mitigate portfolio volatility and tail risk in low-duration portfolios, with higher allocations justified for portfolios with greater duration or exposure to non-reserve currencies. Box 1 shows that there is an optimal allocation of gold that minimizes the volatility of a long-duration portfolio. However, applying a similar exercise to data through 2025 suggests that gold no longer helps mitigate the volatility of a short-duration portfolio, which is consistent with the post-pandemic shift toward inflation as a common driver that has eroded the stock–bond hedge. Overall, gold can enhance the resilience of mid- to long-duration reserve portfolios, particularly those exposed to dollar depreciation or extreme market events, but its diversification benefits against short-duration and bond-return risk have weakened in the recent regime.

Figure 8. Gold for Portfolio Diversification

Contemporaneous regression coefficients of gold price (percent change) on different assets

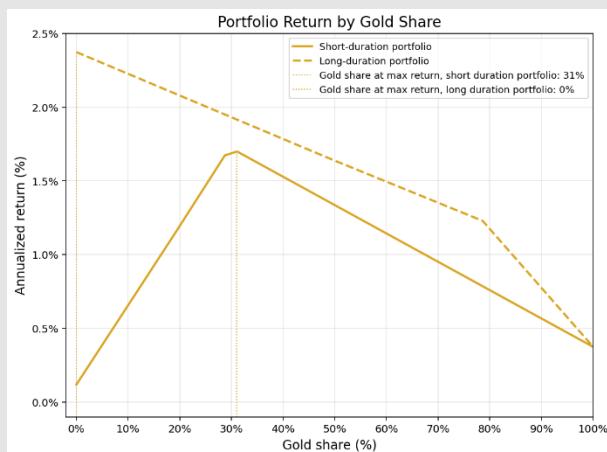


Source: IMF staff calculations.

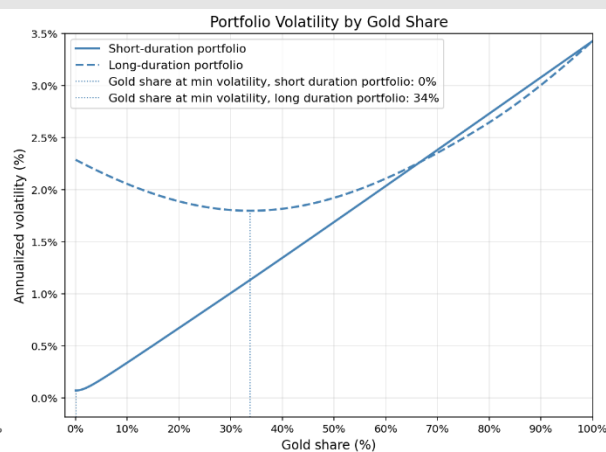
Note: Coefficients from the contemporaneous regression of gold price (percent change) on bond returns (percent) and FX rates (percent change). *** means significant at 1 percent, ** means significant at 5 percent, and * means significant at 10 percent. 7–10-year bond returns are obtained from ICE BofA 7–10-year total return index. Advance Economies (AE) Dollar index is a weighted average of EUR, CAD, JPY, GBP, CHF, AUD, and SEK vs. the USD. Emerging Markets (EM) Dollar index is a weighted average of CNY, MXN, KRW, INR, BRL, TWD, SGD, HKD, VND, MYR, THB, ILS, IDR, PHP, CLP, COP, SAR, ARS, and RUB vs. the USD. Gold price is expressed in GBP to remove the mechanical correlation arising from the USD denomination of FX rates. Period definitions: pre-GFC (January 1998–July 2007), GFC (August 2007–June 2009), post-GFC to pre-pandemic (July 2009–February 2020), pandemic (February 2020–December 2021), and post-pandemic (January 2022–January 2026). Data are based on the monthly average of daily observations. Data labels in this note use International Organization for Standardization (ISO) country codes. FX = foreign exchange; GFC = global financial crisis; post-GFC = after the global financial crisis; pre-GFC = before the global financial crisis.

Box 1. What Is the Optimal Share of Gold in a Portfolio of Foreign Reserves?

Panel 1: Portfolio Return by Gold Share



Panel 2: Portfolio Volatility by Gold Share



What is the optimal share of gold in a portfolio of foreign reserves? The answer is: it depends on the duration of the portfolio.

To assess the optimal share of gold in a portfolio of foreign reserves, portfolios with government bonds of traditional reserve currencies have been constructed: US, German, Swiss, Japanese, and Chinese bonds. In particular, two portfolios have been constructed: one of short duration, with gold and three-month bonds, and the other of long duration, with gold and 7–10-year bonds. In both portfolios, the share of gold vary from 0 to 100 percent and the return and volatility are assessed in a textbook Markowitz portfolio optimization exercise.¹

In a short-duration portfolio, such as the liquidity tranche, minimal volatility is obtained with zero percent of gold, as the metal is much more volatile than three-month bonds (panel 2). However, a zero percent share of gold leads to the smallest return of all portfolio combinations, since gold features competitive returns in comparison (panel 1). The maximum return is reached with a level of 31 percent of gold, but this comes with a substantially higher portfolio volatility. In fact, gold is more volatile than three-month bond returns that the volatility of the short-duration portfolio is nearly entirely driven by the share of gold.

In a long-duration portfolio, such as the investment tranche, there is a certain level of gold share that minimizes the volatility of the portfolio. In our example with 7–10-year bonds, minimum volatility is reached with 34 percent of gold. However, this lower level of volatility comes at the expense of a lower return. Indeed, the maximum return in the long-duration portfolio is reached with a level of zero percent of gold, as gold did not beat the performance of long-term bonds over the whole period studied (2006–25).

In a nutshell, one can find an optimal share of gold (31 percent, here) to achieve the maximum return in a portfolio of short duration, at the cost of higher volatility. In a portfolio of long duration, there is an optimal share of gold (34 percent, here) to achieve the minimum volatility, at the expense of lower return. In practice, foreign reserve portfolios are made of combinations of short, medium, and long durations, with different levels of risk aversion. Therefore, the optimal level of gold likely lies between zero and one-third, depending on the actual duration of the portfolio. In addition, Zulaica (2020) shows that the optimal share of gold also depends on the portfolio's unit of account (or numeraire). Gold's diversification benefits are indeed enhanced in the presence of foreign exchange risk.

Source: IMF staff calculations.

¹ 7–10-year bond returns are obtained from ICE BofA 7–10-year total return index. Three-month returns are derived from the zero-coupon yield curves. Data are end-of-the-month observations from May 2006 to October 2025.

The balance of the case: Gold should be considered in combination with other reserve assets and country's specific risk exposure to design a strategy to improve portfolio resilience.

The Operational Drawback: Gold Struggles to Serve the Liquidity Front Line

In foreign reserve management, liquidity risk can be addressed through different institutional and analytical approaches. Two common frameworks are: (i) the use of *tranching*, which separates reserves by liquidity purpose; and (ii) the incorporation of *liquidity-risk metrics* directly into the asset allocation process when tranching is not used. Although both approaches aim to ensure that reserves can reliably cover FX liquidity needs under stress, they have different implications for the treatment of gold.

Under a tranching framework, reserves are typically divided into a liquidity tranche and an investment tranche. The liquidity tranche—sometimes further split to cover day-to-day FX needs—serves as the first line of defense against external shocks and should be composed of highly liquid, short-duration, and low-risk assets, such as cash, deposits, or short-term government securities. The investment tranche, by contrast, is intended to replenish the liquidity tranche if needed and can be invested in longer-term or more volatile assets to generate returns. Given its high price volatility and potential for valuation losses during market stress, gold is not well suited for inclusion in the liquidity tranche and should, under a tranching approach, be confined to the investment tranche.

When a central bank does not operate a formal tranche system, liquidity risk must instead be addressed through explicit liquidity-risk metrics. In this case, the availability of reserves to cover FX liquidity needs should be assessed by comparing those needs with the *liquidity-adjusted market value* of reserve assets. This requires applying risk-based haircuts to asset market values to reflect uncertainty surrounding the amount of liquidity that can be raised through asset sales over short horizons. For gold, Box 2 provides a simple value-at-risk–based methodology to estimate such haircuts and derive a liquidity-adjusted market value, ensuring insurance equivalence with traditional liquid fixed-income assets and preventing overstatement of effective reserve liquidity.

Box 2. Haircut on Gold¹

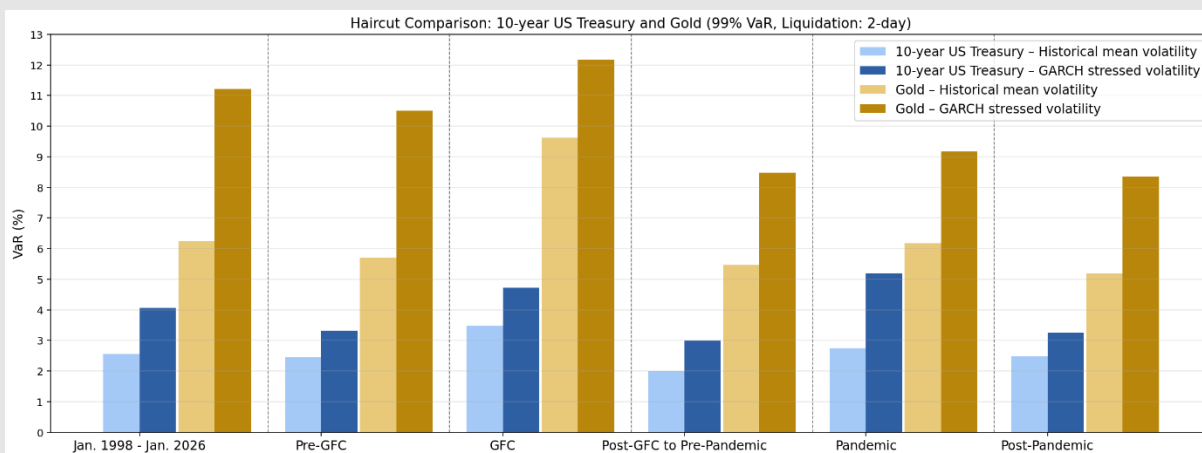
In this box, a simple method is provided to estimate the haircut that should be applied to gold in central bank reserves to reach risk equivalence between gold and liquid and risk-free fixed-income assets.

To compute this haircut as a percentage of the market value, use of the value at risk (VaR) methodology is proposed.² The VaR methodology quantifies the maximum expected loss over a specified time horizon at a given confidence level, providing a statistical measure of market risk. For gold, it can be defined as follows:

$$\text{VaR}(\Delta \text{ Gold returns}, \alpha, \Delta T) = -(\mu \Delta T + \phi^{-1}(1 - \alpha) \sigma \sqrt{\Delta T}),$$

where μ is the average return on gold prices,³ ΔT is the time required to fully liquidate the asset, σ is the volatility of gold returns, α is a confidence level, and ϕ is the cumulative density distribution of the standard normal distribution. The volatility of gold returns σ can be defined as historical volatility or estimated with GARCH models. GARCH-modeled volatility enables to capture volatility clustering and asymmetric responses to market shocks. Furthermore, by taking the volatility at a confidence interval (for example, the same as of the VaR), one can capture volatility in stressed market conditions.

Haircut Comparison: 10-year Treasury and Gold



In this context, the haircut can be defined as the VaR at a chosen level of confidence and estimated time to liquidate the asset on the market:

$$\text{Haircut} = \text{VaR}(\Delta \text{ Gold returns}, \alpha, \Delta T)$$

¹ Haircuts are estimated as a VaR at 99 percent confidence over a two-day liquidation horizon. GARCH haircuts combine a stressed volatility estimate—the 99th percentile of the GARCH conditional volatility series—with a 99th percentile Student- t quantile. Period definitions: pre-GFC (January 1998–July 2007), GFC (August 2007–June 2009), post-GFC to pre-pandemic (July 2009–February 2020), pandemic (February 2020–December 2021), and post-pandemic (January 2022–January 2026). Data are based on daily observations.

² This is also the methodology applied under the US implementation of the Basel III framework. This framework calibrates haircuts based on VaR at 99 percent with a 10-business-day holding period and historical volatility. For US Treasury securities with residual maturity greater than five years, the prescribed haircut is 4.0 percent. For gold, which is grouped with main index equities, the prescribed haircut is 15.0 percent. The Federal Reserve Bank of New York Discount window does not accept gold as a collateral, so they do not calibrate this haircut.

³ In theory, one should adjust the return for the cost of storage of gold bars. Central banks storing gold at the Bank of England are charged GBP 0.035 per bar per night, or GBP 12.775 per bar per year. That is, \$17.245 per bar per year in September 2025, or about \$0.043 per Troy ounce (a gold bar is roughly 400 ounces). With an average price of gold \$3,658.09 per Troy ounce in September 2025 (morning (AM) quoting), the yearly storage cost was about 0.000012 percent of the value, which is negligible. However, the cost of converting mined gold to monetary gold can be substantial, as it includes mining, refining, assaying, and transportation cost to the vault, which can represent a meaningful fraction of the metal's value. It is not accounted for here.

Box 2. Haircut on Gold (continued)

The following are defined: $\alpha = 99\%$ and $\Delta T = 2$ days. That is, the interest is in the potential loss the central bank could bear at a 99 percent confidence level over a liquidation horizon of two days. Being able to liquidate the desired amount of gold in two days on the market is reasonable to the extent that the gold is of monetary standard and held at the Bank of England or at the London Bullion Market Association. If gold is held in the central bank's vault, a longer liquidation period is used in the calculation of the haircut.

An estimation of the haircut to be applied to gold included in the liquidity tranche using historical volatility and a stressed volatility (at the 99th percentile) from a GARCH model shows that the haircut level to apply is regime dependent. In stressed markets (for example, during the global financial crisis), a haircut of about 12 percent should be applied in the conservative scenario of stressed volatility, and about 9.5 percent based on historical average volatility. In periods of relatively calm markets (for example, after COVID-19 pandemic), a haircut of 8 percent would be sufficient in the conservative scenario, and 5 percent otherwise. Most importantly, this is about twice higher than the haircut one would want to apply to a long-duration 10-year Treasury note using the same methodology. As the haircut is an insurance against stressed market conditions, we recommend applying a haircut of 6–12 percent to the market value of gold included in the liquidity tranche, based on a VaR at 99 percent with stressed volatility run over the period 1998–2025.

Source: IMF staff calculations.

Note: GFC = global financial crisis; post-GFC = after the global financial crisis; pre-GFC = before the global financial crisis.

The Alchemy Fallacy: Why Domestic Gold Is No Panacea?

As central banks increasingly explore the option of augmenting their official reserves with domestically sourced gold, it is essential to recognize that such operations present a unique set of challenges and policy considerations distinct from traditional reserve management. Although DGP programs can offer opportunities for reserve diversification and support for local mining sectors, they also introduce complex governance, balance sheet, financial integrity, operational, and monetary policy risks that must be carefully assessed.

DGPs by central banks are not a uniform activity and should not be assessed as such. A critical distinction must be made between the domestic purchase of monetary gold—that is, gold that already meets international reserve standards and is readily marketable—and the domestic purchase of nonmonetary gold, which requires upgrading through refining, assaying, and certification before it can qualify as a reserve asset (Box 3). These two modalities differ fundamentally in their implications for central bank mandates, balance sheet, operational capacity, financial integrity, and monetary policy implementation. Therefore, the degree of exposure to institutional and financial risks depends crucially on the form of gold acquired and the operational pathways through which it is incorporated into reserves. Nevertheless, although the intensity and interaction of risks differ depending on whether the gold purchased is monetary or nonmonetary, they warrant systematic consideration at the outset of any DGP decision.

Box 3. Typical Central Bank Strategies in Domestic Gold Purchases

Central banks that purchase gold domestically typically follow strategies defined by three key attributes: the source of the gold, the process of upgrading it to monetary gold, and the ultimate use of the acquired gold.

The first attribute concerns the counterparties from whom gold is purchased. Central banks may buy unrefined gold directly from artisanal or industrial producers, acquire any form of gold from the general public—including jewelry or scrap—or purchase refined gold from domestic refiners. Each approach reflects different policy objectives, such as supporting local mining or simplifying reserve management.

The second attribute relates to how the acquired gold is transformed into monetary gold. Unrefined gold itself does not qualify as a reserve asset but can be swapped with a refinery for monetary gold, refined domestically if capacity exists, or sent abroad for processing. These choices depend on logistical considerations, cost efficiency, and the availability of domestic refining infrastructure.

The third attribute focuses on how monetary gold is managed once acquired. Central banks may store gold in major international trading centers such as London or New York, hold it domestically to enhance reserve visibility, or sell portions regularly to maintain a stable share of gold in overall reserves despite continuous purchases. These decisions align with broader reserve management strategies and risk considerations.

Source: IMF staff.

DGPs raise fundamental questions about the appropriate scope of central bank mandates and governance arrangements. Central banks are typically tasked with monetary stability, financial stability, and prudent reserve management. Engaging directly in domestic gold markets—particularly when procurement involves raw or semi-processed gold—introduces activities that resemble commercial trading or industrial policy rather than core central banking functions. Without explicit legal authorization, such involvement risks stretching statutory mandates and weakening institutional accountability. Even where legal authority exists, DGP programs may create governance challenges related to pricing discretion, counterparty selection, and political influence, especially when programs are motivated by objectives such as supporting domestic mining sectors or channeling income to specific constituencies. Consequently, these mandate and governance considerations argue for strictly limiting central banks' involvement in DGPs from the legal perspective (Box 4).

Box 4. Legal Considerations to Address Domestic Gold Purchases by Central Banks

No Engagement or Phaseout

Legal frameworks should prohibit central banks from engaging in domestic gold purchase (DGP) programs involving nonmonetary, unrefined gold, as they constitute quasi-fiscal activities (QFAs) and risk undermining the pursuit of the central bank's core mandate. Accordingly, a central bank currently operating a DGP program should adopt a time-bound exit strategy and transfer the activity to an appropriate public body such as a state gold purchasing agency under the competent ministry. To reinforce institutional boundaries, the central bank legislation should be amended to expressly prohibit QFAs, including the purchase of domestically produced nonmonetary, unrefined gold for policy purposes that are fiscal in nature. Where the purchase of unrefined gold is identified as a public policy priority (for example, for international reserve accumulation/diversification using domestic output or support to artisanal and small-scale miners), the function should be assigned to a public entity other than the central bank.

Safeguards Where a DGP Program Is Initiated or Maintained under Political Constraints

Where, contrary to best practices, a central bank is politically compelled to engage in a DGP program, the activity should be grounded in an explicit legal basis with robust safeguards. When political constraints make withdrawal from a DGP program impracticable, the central bank law (and, where relevant, mining/gold legislation) should expressly authorize the activity, rather than relying on a general economic support/development mandate. Such authorization should narrowly define the program's purpose (for example, ultimate conversion into international reserves as monetary gold), as well as its scope and limits, affirming that the function should not prejudice the central bank's core objectives of monetary and financial stability. A DGP activity should not be recognized as a standard instrument of monetary policy or international reserve management. Instead, it should be framed as exceptional and temporary, subject to legal and regulatory requirements, including periodic statutory review of the program's continued justification or its potential transfer outside the central bank. Formal coordination mechanisms with relevant public authorities such as ministries responsible for mining, environment, and labor are also essential.

Financial safeguards associated with a DGP program should be codified in law and regulation to protect the central bank's balance sheet. This should include purchases below prevailing market prices pursuant to explicit pricing rules (with appropriate discounts for assay, logistics, refining, and other relevant costs), quantitative exposure caps, and timely monetization either through prompt refining into monetary gold of at least 995/1,000 purity aligned with international reserve standards (often through accredited offshore refineries), or through sale for freely convertible foreign currencies. Any subsidy and other financial support to miners should be provided outside the central bank (for example, by a relevant public agency). The legal framework should also specify loss-allocation arrangements through the central bank's profit distribution rules and recapitalization mechanisms, to compensate the central bank for losses incurred under the DGP program.

Transparency and accountability requirements for a DGP program should be explicitly embedded in primary legislation. The framework should mandate regular reporting to politically accountable bodies (for example, Parliament and the Ministry of Finance) on key aspects of the program, including volumes purchased, realized/unrealized financial outcomes, risk exposures, and risk mitigation measures. Public disclosure of the DGP program should be required through the central bank's annual report, dedicated publications, and its website, to ensure the transparency. Independent external audits of the DGP program should be mandatory, complemented by periodic internal audits focusing on governance, risk management, and internal control arrangements applicable to the QFA.

Source: This box was prepared by Tomoyuki Kubota (IMF Legal Department).

Mandate and governance risks are highest when central banks purchase nonmonetary gold. Procuring unrefined or semi-processed gold entails activities—including commodity trading, quality verification, logistics, pricing, and refining decisions—that are operationally and legally distinct from reserve management and closely resemble commercial or quasi-fiscal functions. Although initiatives such as the *London Principles* (Box 5) seek to improve environmental, social, and governance practices and formalization in artisanal mining, they do not address the core governance issues for central banks, including mandate consistency, balance sheet protection, accountability for losses, and insulation from political or distributive pressures. By contrast, the domestic purchase of monetary gold—where the asset already meets reserve standards and does not require processing—poses fewer mandate ambiguities, although governance concerns can still arise if purchases are driven by industrial or redistributive objectives rather than reserve management needs.

Box 5. Initiatives to Develop Good Practices of Central Banks' Domestic Gold Purchases

In response to the growing importance of artisanal and small-scale gold mining for livelihoods and central bank reserve management in many gold-producing countries, the London Principles provide a comprehensive framework for central banks to responsibly purchase domestically mined gold through domestic gold purchase programs. These principles aim to formalize the artisanal and small-scale gold-mining sector; enhance environmental, social, and governance standards; and promote sustainable development by emphasizing legal frameworks, transparency, community well-being, mercury reduction, due diligence, progressive improvement, formalization, economic incentives, rule of law, accessibility, access to clean finance, proper refining, and international cooperation. Supported by central banks from Colombia, Ecuador, Mongolia, and the Philippines, the initiative seeks to benefit responsible miners, strengthen gold market integrity, and foster collaboration among regulatory and law enforcement agencies.

These principles address areas that typically fall outside conventional central bank mandates and remain mostly silent on the ones that matter for central banks. Most of the principles cover issues that are relevant to the gold-mining sector, but critical issues for the central banks are marginal. There are only two useful elements. First, one of the principles advocates for the gold purchased to be refined at LBMA Good Delivery List refineries, which is helpful in ensuring that the resulting monetary gold is tradable on the most liquid market. Second, another principle relates to producers' economic incentives and suggests that the prices offered should attract the sale of material, considering the producers' additional costs arising from operating a formalized supply chain. The principles remain silent on central banks' risks associated with domestic gold purchase programs: financial risks, potential interference with liquidity management for monetary policy implementation, and quasi-fiscal activities.

Source: World Gold Council and IMF staff.

DGPs can generate significant balance sheet risks if pricing, valuation, and risk-control frameworks are not carefully designed, with the magnitude of these risks depending critically on the form of gold purchased. Gold price volatility exposes central banks to valuation swings, whereas domestic purchases—particularly of nonmonetary gold—entail additional costs related to assay, refining, transportation, storage, and insurance, as well as valuation uncertainty and potentially prolonged holding periods before upgrading to monetary gold. If purchase prices do not adequately discount these costs and risks, DGP programs can generate persistent losses, effectively creating quasi-fiscal transfers that weaken central bank financial autonomy.⁵ Illiquidity during the period between acquisition and upgrading to monetary gold further amplifies exposure, as balance-sheet risks remain unhedged and difficult to unwind, especially when programs are conducted at scale or over extended periods. By contrast, purchasing monetary gold domestically reduces—but does not eliminate—these risks, as the asset is immediately tradable and can be valued using international price benchmarks, limiting valuation distortions and reducing the likelihood of implicit subsidies.

Financial integrity risks are an important and often underappreciated dimension of DGP programs. Gold—particularly when sourced from artisanal or small-scale mining or through complex intermediary chains—can be

⁵ See International Monetary Fund (2025) for a discussion of financial outcomes and risk implications of the Bank of Ghana's domestic gold purchase program.

used to launder illicit proceeds or circumvent sanctions and tax obligations. When central banks purchase gold directly from domestic suppliers, they assume responsibility for ensuring robust anti-money laundering/combating the financing of terrorism (AML/CFT) controls, including customer due diligence, beneficial ownership verification, transaction monitoring, and recordkeeping that preserves a verifiable audit trail from source to reserve asset. Failure to establish and enforce such controls risks incorporating illicit value into official reserves, with potentially severe reputational, legal, and financial consequences for the central bank.

Financial integrity risks are overwhelmingly concentrated in programs involving nonmonetary gold. Unrefined gold sourced through artisanal mining or complex intermediary chains presents heightened AML/CFT risks, including illicit trade, smuggling, and the laundering of criminal proceeds through subsequent monetization. When such gold is incorporated into official reserves, these risks directly affect the central bank's reputation and credibility. Although AML/CFT considerations do not disappear when purchasing monetary gold domestically, the risk profile is substantially lower when transactions occur with regulated counterparties trading internationally certified bars.

Operational arrangements for DGPs introduce risks that differ materially from those associated with conventional reserve assets, with risks most acute when nonmonetary gold is acquired. Central banks must manage logistics related to sourcing, assaying, refining, transportation, custody, and insurance—often without in-house expertise or established infrastructure. Ensuring that nonmonetary gold can be refined to internationally accepted standards, transported securely, insured adequately, and custodied in line with reserve management practices requires specialized capabilities that many central banks do not possess. Gold that fails to meet London Good Delivery standards may face liquidity constraints, price discounts, or outright exclusion from key markets, undermining its tradability and effective liquidity as a reserve asset. Weak custody arrangements, limited insurance coverage, and inadequate verification mechanisms further heighten exposure to theft, fraud, or misreporting. By contrast, domestically purchasing monetary gold—particularly when custody and settlement occur in established international trading centers—preserves market access and liquidity, aligning more closely with standard reserve operations and mitigating, though not eliminating, operational risks.

DGPs also have direct implications for monetary policy implementation and liquidity management. Purchasing gold from domestic counterparties injects local currency into the economy, thereby expanding the monetary base. As with any central bank asset purchase—including FX—this effect is not specific to gold and typically requires sterilization to maintain monetary control. Without appropriate sterilization measures—such as open market operations or other liquidity-absorbing instruments, such as FX sales, this expansion can complicate the transmission of monetary policy and contribute to upward pressure on inflation. In a typical scenario where central banks acquire and upgrade gold for reserve addition, the standard sterilization instrument is a liquidity-absorbing open market operation at the policy rate. However, in the context of DGP programs, central banks could face policy or political pressures to purchase gold at a scale or pace not aligned with liquidity management objectives. Where sterilization capacity is limited, this approach is considered costly by some central banks and sterilization may be conducted through FX sales. This action generally leads to an increased proportion of gold in otherwise-stable reserves, and also affects FX market conditions. Another option is to sell domestically acquired gold for FX and use the proceeds for sterilization, which maintains both the total reserve amount and the proportion of gold unchanged, effectively making the central bank's activity similar to that of a gold trader, outside the scope of traditional central bank functions. Therefore, the interaction between gold purchase operations and liquidity management requires careful integration into the overall monetary and exchange rate policy framework—particularly where operational or market constraints limit sterilization capacity—to avoid unintended interference with policy objectives.

These differences become particularly relevant when considering the central bank's starting point. For central banks not currently engaged in DGPs, initiating a program centered on nonmonetary gold represents a discrete escalation of mandate, governance, balance sheet, financial integrity, operational, and monetary policy risks relative to purchasing monetary gold. For institutions already purchasing nonmonetary gold, a transition toward exclusively acquiring monetary gold—through direct market purchases or accelerated upgrade of nonmonetary

gold to monetary gold—can materially reduce risk exposure. Conversely, maintaining or expanding nonmonetary DGPs entrenches quasi-fiscal activities and increases balance sheet vulnerability. Central banks already purchasing monetary gold domestically face comparatively narrower challenges, which can be managed through standard reserve governance and risk-management frameworks.

Therefore, the key policy implication is unambiguous. Although DGPs should generally be approached with caution, purchasing monetary gold is always preferable to purchasing nonmonetary gold from the reserve management perspective. The former preserves market liquidity, limits balance sheet and governance risks, and remains broadly consistent with central banking functions. The latter fundamentally alters the nature of central bank activity, exposes the institution to significant quasi-fiscal and operational risks, and should, in most circumstances, be avoided or assigned to other public entities.

Conclusion

Gold has reemerged as a prominent component of central bank reserves, but its role remains fundamentally distinct from that of liquid FX assets. Although it offers certain long-term resilience benefits—notably its lack of credit risk and its potential to perform during periods of stress—its high volatility, limited and contingent diversification properties, and weak liquidity characteristics constrain its effectiveness as a core reserve asset. These features underline the need to assess gold not in isolation, but as part of a broader portfolio strategy aligned with the central bank’s policy objectives and risk-bearing capacity.

The analysis in this note highlights that DGP programs add a further layer of complexity. Beyond standard reserve management considerations, such operations can blur institutional mandates, create quasi-fiscal exposures, strain operational capacity, and complicate monetary policy implementation—particularly where sterilization capacity is limited or policy pressures influence purchase decisions. These risks are most acute when central banks engage in the acquisition of nonmonetary gold.

In this context, the strategic question of how much gold a central bank should hold remains central. For gold-producing economies, excessive accumulation can weaken the self-insurance role of reserves, as adverse gold price shocks can simultaneously affect export revenues and reserve valuations. Therefore, determining the appropriate share of gold requires a holistic, risk-based assessment of external vulnerabilities, economic structure, and policy frameworks. Decisions on gold accumulation—including through DGPs—should be firmly anchored in SAA and sound policy analysis, rather than operational convenience or short-term considerations.

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