Fool's Gold: How the USD lost its shine

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1 Extended Abstract

This paper investigates the determinants of international investors' portfolio choices between gold and sovereign bonds in an environment shaped by economic and geopolitical shocks. Specifically, we ask under what conditions investors reallocate wealth from interest-bearing but potentially sanctionable or defaultable government debt toward a non-yielding but politically neutral and universally acceptable asset like gold. We document that periods of elevated geopolitical risk—such as the post-2014 sanctions regime, the 2022 Russian invasion of Ukraine, or escalating U.S.–China strategic rivalry—coincide with an increase in the real price of gold, a rise in gold market liquidity, and a shift in central bank reserve holdings toward gold among non-Western economies. At the same time, U.S. Treasury convenience yields and bond market liquidity decline, signaling that safe-asset demand is increasingly fragmented along geopolitical lines.

The global financial system relies on a limited set of assets that are both safe and liquid enough to serve as stores of value and as collateral in international transactions. Historically, U.S. Treasury bonds have played this role as the world's dominant "safe asset," underpinned by deep markets, legal protections, and the political stability of the

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United States. Yet recent years have witnessed an apparent reemergence of gold as an alternative reserve asset for both private and official investors, particularly in the face of rising geopolitical tensions and concerns about the political use of the dollar-based financial system. The renewed accumulation of gold by central banks in China, India, and other non-Western economies suggests a shift in the global hierarchy of safe assets—one that cannot be explained purely by fundamentals of return or storage costs, but instead by changing perceptions of liquidity, safety, and political risk.

The starting point of our analysis is empirical. The historical data from 1947 to 2025 reveal that gold's role as a safe asset is episodic but recurring: gold tends to gain value in moments when confidence in dollar-denominated debt is shaken. This pattern holds across a range of crises—from the collapse of Bretton Woods, to the oil shocks of the 1970s, but is strongest in more recent events, such as the Lehman Brothers bankruptcy, Covid and the recent invasion of Ukraine by Russia. This suggests that the "safe haven" properties of gold are contingent, not static or unconditional. The liquidity of the gold market itself should also be state-dependent: during episodes of financial stress, trading activity and liquidity in the gold market is expected to rise, generating coordination effects and size externalities similar to those that underpin the dominance of the U.S. dollar in tranquil periods[1].

To rationalize these empirical facts, we develop a theoretical framework in which international investors face a portfolio choice between two types of safe assets: liquid but risky sovereign bonds and illiquid but riskless gold. The model embeds sovereign default risk (including risk of sanctions), endogenous liquidity, and coordination in asset markets. Investors and central banks choose between holding U.S. bonds, which can be defaulted on or frozen under geopolitical conflict, and holding gold, whose supply is exogenous but which cannot be repudiated or easily sanctionable. Liquidity in each market arises endogenously through a search and matching mechanism à la Duffie et al. (2005): the more investors coordinate on one asset, the easier it becomes to trade it. Consequently, market liquidity and convenience yields depend not only on asset fundamentals but also on global portfolio composition and political trust.

We introduce two key shocks. The first is a fundamental economic shock, capturing fluctuations in output and fiscal capacity, which affect the perceived solvency of the bond issuer. The second is a geopolitical shock, which raises the probability that the issuer defaults selectively on certain foreign creditors or sanctions them, freezing their assets.

[1]See Arvai and Coimbra (2025).

The interaction of these shocks generates distinct regimes: in low-risk periods, investors coordinate on bonds, enjoying higher liquidity and convenience yields; in high-risk regimes, they coordinate on gold, despite its lower yield and higher storage or transaction costs. The equilibrium allocation thus depends not only on economic fundamentals but also on the perceived credibility of international commitments and the political neutrality of financial assets.

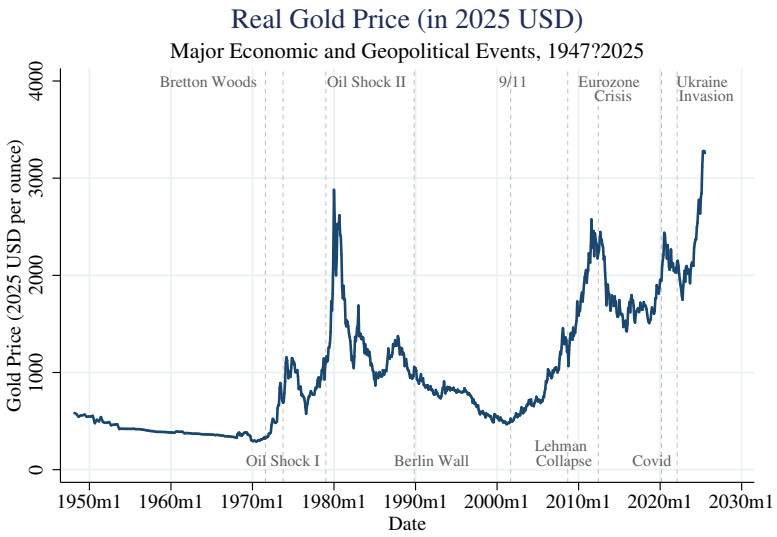
Our framework highlights that global safe-asset demand is shaped by both economic safety and political safety. While U.S. bonds remain the dominant safe asset due to scale and liquidity, their political safety has declined as geopolitical fragmentation increases. Gold, in turn, functions as the "asset of last resort"—a store of value whose liquidity is self-reinforcing when global trust erodes but in general a more imperfect safe asset during normal times. The model generates testable implications for the co-movement of bond convenience yields, gold liquidity, and reserve accumulation patterns, providing a unified interpretation of recent trends in global capital allocation.

This perspective situates our work within a growing literature on dominant currencies and safe assets (e.g., Bianchi et al. (2023) ; Chahrour and Valchev (2022) ; Corsetti and Maeng (2024) ;. However, unlike standard approaches that treat the safety of the dollar as exogenous, we emphasize its endogenous and political nature. By linking default risk, liquidity, and geopolitical considerations, our analysis sheds light on how the global monetary system can shift from a dollar-dominated equilibrium to one where gold plays an important role as a hedge to geopolitical risk. Ultimately, the paper contributes to understanding when and why international investors abandon yield for sovereignty—substituting bonds with bullion as the ultimate safeguard against both market and political risk.

2 Figures

Figure 1: Measures of return

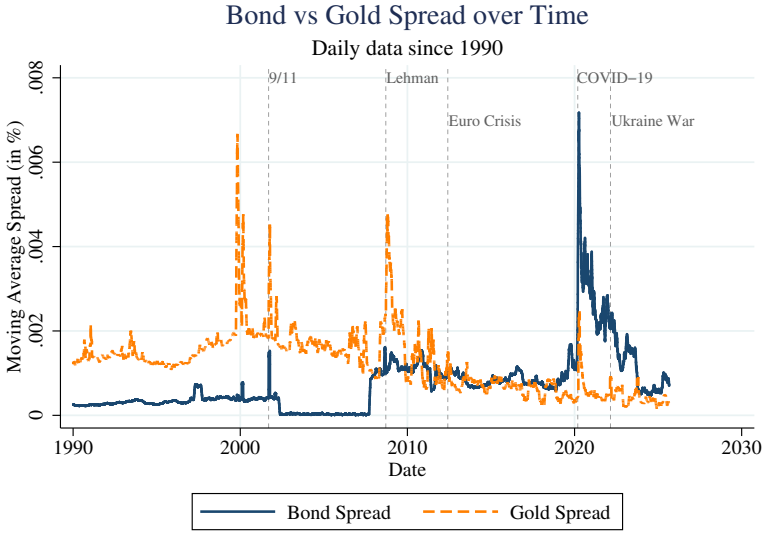
(a)



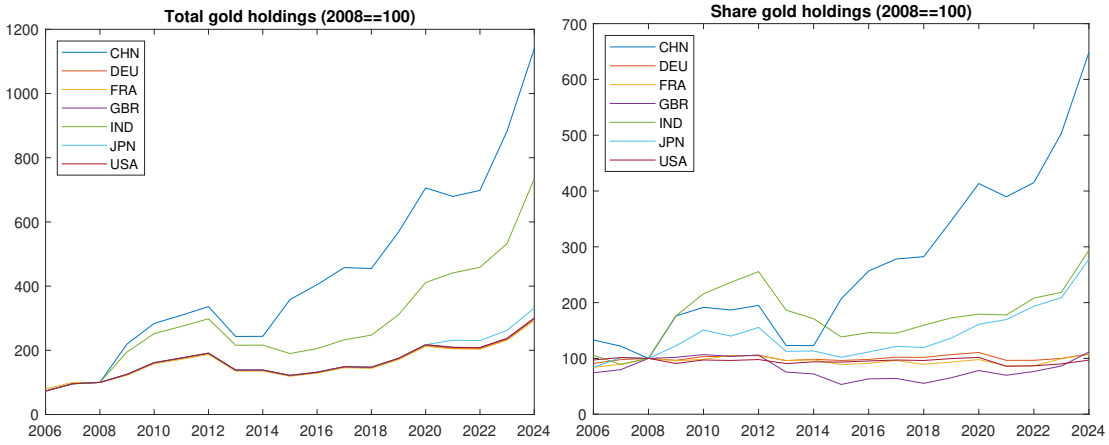
Note: Source: Bloomberg,

Figure 2: measures of liquidity:

(a) monhtly MA event



Note: Source: Bloomberg



Source: World Bank

3 Model

3.1 Setup

US government

The US government is the main issuer of debt in the model, it is infinitely lived and maximizes expected lifetime utility

$$\mathbb{E}_0 \left[\sum_{t=0}^{\infty} \delta^t v(C_t) \right]$$

There is endowment Y_t, and it can issue short-term bonds. Bonds are the only way the government can borrow, the new issuance of these bonds is denoted by B_t. Let Q_t be the market price of newly issued bonds in t that pay out one unit in the next period.

The budget constraint is then given by

$$Y_t + Q_t B_t = C_t + B_{t-1}$$

We can solve this and write the problem down recursively (even the baseline has no stochastic element and utility might be linear), B_t only choice variable.

$$V_t(B_{t-1}) = v(C_t) + \delta \mathbb{E} V_{t+1}(B_t)$$

Foreign Country

The Foreign country maximizes expected lifetime utility, is risk-avers, faces stochastic

output and is subject to a borrowing constraint. Its variables are denoted by a *

$$\mathbb{E}_0 \left[\sum_{t=0}^{\infty} \beta^t u(C_t^*) \right]$$

The budget constraint is

$$Y_t^* + B_{t-1}^* = C_t^* + Q_t B_t^*$$
$$B_t^* \geq 0,\ Y_t^* \sim [\underline{Y}, \bar{Y}]$$

We can start with two productivity states. The recursive problem is

$$U_t(B_{t-1}^*) = u(C_t^*) + \beta \mathbb{E}\left[U_{t+1}(B_t^*)\right]$$

Equilibrium

Given starting values Y_0 and B_0 , an equilibrium coincides with a path for prices such that bond markets are cleared

$$B_t = B_t^*$$

3.2 US Default

US We assume that with a certain probability ϵ_t, there is a geopolitical shock that gives the US the option to default with a haircut κ. In case of default, the US autarky budget constraint is

$$Y_t = C_t^d - (1-\kappa) B_{t-1}$$

After such an event, the stock of outstanding bonds is set to zero, the US can not emit any other bonds for a while/

When the US has the opportunity to default it incurs political (dis-) utility ϕ. The per period utility is then

$$v(C_t^d) + \phi$$

The value function of default and non-default is

$$V_t^d(0) = v(C_t^d) + \phi + \delta\left(p\mathbb{E}[V_{t+1}^d(0)] + (1-p)\mathbb{E}[V_{t+1}^n(0)]\right)$$
$$V_t^n(B_{t-1}) = v(C_t^n) + \delta\left(\mathbb{E}[V_{t+1}^n(B_t)]\right)$$

where p is the exogenous probability that the US leaves autarky and starts issuing bonds again. The US does default if $V_t^d > V_t^n$. A default event only occurs if the political gains are larger than the economic costs. The probability of default is

$$\pi_t = \epsilon_t \cdot prob\left(V_t^d > V_t^n\right)$$

Foreign

If the US defaults the Foreign budget constraint is

$$Y_t^* = C_t^{*d} + (1-\kappa)B_t^* \quad \text{with} \quad B_t^* \geq 0,\ Y_t^* \sim [\underline{Y}, \bar{Y}]$$

The Bellman equation for the Foreign country is:

$$U_t^d(B_t^*) = u(C_t^{*d}) + \beta\left(p\mathbb{E}[U_{t+1}^d(0)] + (1-p)\mathbb{E}[U_{t+1}^n(0)\right)$$
$$U_t^n(B_t^*) = u(C_t^{*n}) + \beta\left(\mathbb{E}[U_{t+1}^n(B_t^*)]\right)$$

We assume that the US takes bond demand as given, which is determined by China's Euler equation:

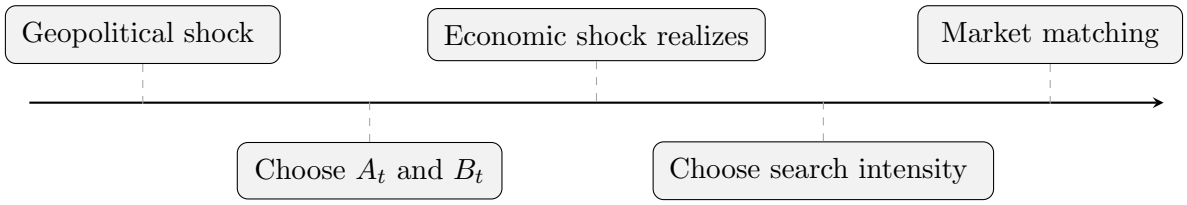
$$Q_t u'(C_t^{*n}) = \beta\mathbb{E}[\mathbb{I}(1-\kappa)u'(C_{t+1}^*)]$$

For log utility in China this is

$$Q_t = \frac{\Omega(Y_t^* + B_{t-1}^*)}{1 + \Omega B_t^*}, \quad \Omega = \beta\mathbb{E}[\mathbb{I}(1-\kappa)u'(C_{t+1}^*)]$$

Equilibrium Same as before

3.3 Gold and Default and Liquidity



We add gold as a riskless asset with fixed exogenous supply $\bar{A}$. The budget constraint for China is then:

$$Y_t^* + B_{t-1}^* + B_{t-1}R_t^{*B} - Q_t^A(A_t^* - A_{t-1}^*) + A_{t-1}^* R_t^{*A} = C_t^{*n} + Q_t B_t^*, \quad A_t^* \geq 0, \quad \text{no default}$$
$$Y_t^* + (1-\kappa)B_{t-1}^* - Q_t^A(A_t^* - A_{t-1}^*) + A_{t-1}^* R_t^{*A} = C_t^{*d}, \quad A_t^* \geq 0, \quad \text{default}$$
$$A_t^* + A_t = \bar{A}$$

and the US

$$Y_t + Q_t B_t - Q_t^A(A_t - A_{t-1}) + A_{t-1}R_t^A = C_t^n + B_{t-1}, \quad A_t \geq 0 \quad \text{no default}$$
$$Y_t - Q_t^A(A_t - A_{t-1}) + A_{t-1}R_t^A = C_t^d - (1-\kappa)B_{t-1}, \quad A_t \geq 0 \quad \text{default}$$

where R_t^j are additional yields from investment opportunities of asset j.

intratemporal problem We assume that in each subperiod a fraction χ of the population has access to an investment opportunity in the country. This investment can be financed with bonds or gold. In that case, those with investment opportunities receive additional returns of R^+ on their assets.

The other mass of investors $(1-\chi)$ do not have direct access to these investment opportunities. However, they can lend their net worth to those that do. The additional returns on total lending is given by R^+ times an increasing an concave function $h(\tilde{A}+\tilde{B})$, implying that the additional returns from lending and investing into these opportunities are decreasing. The tilde indicate the amount that has been affectively matched to investors. Assets are invested, and then right after returned to the lenders together with a certain profit share. Total additional returns due to investment opportunities are then given by

$$h(\tilde{A}+\tilde{B}) - \kappa\tilde{A}^2$$

where $-\kappa\tilde{A}^2$ indicates that there are convex inventory costs for gold when it is moved and

used to finance investment.

Only assets, that are not in default can be used for the investment opportunity. The lending procedure is subject to search and matching frictions. Financial intermediaries collect all bonds and gold and then match it to the mass of investors with investment opportunities. The search and matching between intermediaries and agents with opportunities is asset specific, that means for example that only gold by lenders can be used as gold for borrowers.

A matching function determines the probability of a match, therefore determining the fraction of gold and bonds being matched to an investor with opportunities. This function depends on the overall value of the specific asset on both supply and demand side, and a search intensity similar to Duffie et al. (2005). In particular, we assume that agents choose a search intensity λ that then translates into a more efficient matching process $f(\lambda)$ in the bond market and $f(1-\lambda)$ in the gold market. The total value of assets that lenders can match to investors is given by a standard Cobb Douglas function m that uses input asset demand (subscript d) and asset supply which is $(1-\chi)$ times the asset:

$$\mathcal{M}^A = f(1-\lambda)\overbrace{(A^d)^\alpha((1-\chi)A)^{1-\alpha}}^{m^A}, \quad \mathcal{M}^B = f(\lambda)\overbrace{(B^d)^\alpha((1-\chi)B)^{1-\alpha}}^{m^B}$$

The fraction of assets being matched is given by

$$\mu^A = \frac{\mathcal{M}^A}{(1-\chi)A}, \quad \mu^B = \frac{\mathcal{M}^B}{(1-\chi)B},$$

Here we assume now that the returns function $h(\cdot)$ is log. Total additional returns (total surplus) due to inter-mediation are then given by :

$$\max_{A^d,B^d} \log\left(f(1-\lambda)(A^d)^\alpha(\overbrace{(1-\chi)A}^{C})^{1-\alpha} + f(\lambda)B^d\right) - \kappa\left(f(1-\lambda)(A^d)^\alpha((1-\chi)A)^{1-\alpha}\right)^2, \quad B \leq \bar{U}$$

The optimal amount of gold A^d demanded is then given by: The first order condition for A is

$$\frac{f(1-\lambda)\alpha A^{\alpha-1}C^{1-\alpha}}{f(1-\lambda)A^\alpha C^{1-\alpha} + f(\lambda)B} = 2\kappa f(1-\lambda)^2\alpha A^{2\alpha-1}C^{2(1-\alpha)}$$

$$0 = Zf_1C^{1-\alpha}A^{2\alpha} + Zf_2BA^\alpha - f_1C^{1-\alpha} \quad \text{solve qu eq for } \alpha = 1/2$$

$$f_1 = f(\lambda),\ f_2 = f(1-\lambda)\ Z = 2\kappa f_1^2\alpha C^{2(1-\alpha)}$$

We assume that the surplus is distributed via Nash bargaining, with the lenders receiving a share η, while the rest $1-\eta$ goes to the borrowers. [2]

What usually should happen: In normal times borrowers max out B, get as much as they can. They then start thinking about getting gold. Investors who choose the search intensity λ after default shock has realized face the following problem if $f(\lambda) = \lambda^{0.5}$:

$$\begin{aligned}
\text{default: } \max_{\lambda} \quad & \left[R^{+} \log((1-\lambda^{d})^{0.5} m^{A}) - \mathbb{E}[\kappa A^{2}]\right] \Rightarrow \lambda^{d} = 0 \\
\text{no default: } \max_{\lambda} \quad & \left[R^{+} \log((1-\lambda^{n})^{0.5} m^{A} + (\lambda^{n})^{0.5} [m^{B}])\right] \\
& \Rightarrow \lambda = \frac{(m^{B})^{2}}{(m^{B})^{2} + (m^{A})^{2}}
\end{aligned}$$

Search intensity λ for bonds increases, whenever there are more matches in the bond market.

intertemporal problem For the foreign country, a no arbitrage condition arises between gold and US long-term bonds that determines its relative prices, $Q = Q(Q^{A})$. The Euler equation for a no-default event is

$$\begin{aligned}
(Q_t^A + R_t^{A'}) u'(C_t^{*n}) + \mu_t &= \beta \left[p(Q_{t+1}^A + R_{t+1}^{A'}) u'(C_{t+1}^{*d}) + (1-p)(Q_{t+1}^A + R_{t+1}^{A'}) u'(C_{t+1}^{*n}) \right] \\
(Q_t + R_t^{B'}) u'(C_t^{*n}) + \nu_t &= \beta \left[p u'(C_{t+1}^{*d}) + (1-p)(Q_{t+1} R_{t+1} + R_{t+1}^{B'}) u'(C_{t+1}^{*n}) \right]
\end{aligned}$$

with ν_t and μ_t being the multipliers on the non-negativity constraint. The complementary slackness condition arises.

The Bellman equation for the Foreign country is:

$$\begin{aligned}
U_t^d(B_t^*, A_t^*) &= u(C_t^{*d}) + \beta \left(p_{t+1} U_{t+1}^d(B_t^*, A_t^*) + (1-p_{t+1}) U_{t+1}^n(B_t^*, A_t^*) \right) \\
U_t^n(B_t, A_t^*) &= u(C_t^{*n}) + \beta \left(p_{t+1} U_{t+1}^d(B_t^*, A_t^*) + (1-p_{t+1}) U_{t+1}^n(B_t^*, A_t^*) \right)
\end{aligned}$$

An equilibrium, given initial conditions and a path of shocks Y_t^* and ϵ_t, consists out of a path of prices Q_t, Q_t^A in which bond markets and the gold market is cleared: $B_t = B_t^*$ and $A_t + A_t^* = \bar{A}$.

[2] To not introduce heterogeneity in the investor base, we set η such that in each period $R^{+}A + R^{+}B + \eta \left[R^{+} \sqrt{\mu^{A} A + \mu^{B} B} - \kappa A^{2} \right] = (1-\eta) \left[R^{+} \sqrt{\mu^{A} A + \mu^{B} B} - \kappa A^{2} \right]$. [I think η is then a parameter that is state dependent... annoying but what else should we do?] Alternative, you just consume it on the spot/ have it in utility?

4 Results

5 Conclusion

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