# EGA

**Elevado Labs**
elevado.xyz

## Abstract

We propose EGA (Elevado Gold Asset), a commodity asset protocol on Ethereum. The EGA protocol issues EGA (EGA), a gold-backed and ounce-denominated asset designed to maintain or increase the backing (in oz gold) per reserve share. The system implements an immutable, oracle-free, and governance-independent smart contract architecture in which the gold-denominated Net Reserve Value (NRV) per EGA unit is guaranteed to be non-decreasing over time. The EGA protocol achieves this by permanently retaining all buy (mint) and sell (redemption) fees of the EGA asset within its collateral reserve of XAUT (Tether Gold), thereby compounding the backing ratio for the remaining supply. The result is a self-contained monetary instrument that functions as a synthetic gold reserve – analogous to a central bank balance sheet – whose reserve-per-unit increases monotonically in gold terms. By formalizing an ounce-based unit of account and insulating the system from fiat volatility, the EGA protocol reintroduces the structural properties of classical commodity money within a cryptographic and autonomous framework.

## 1 Introduction

Gold has served as humanity's principal monetary foundation for millennia. Its scarcity, permanence, and universal acceptance made it both a medium of exchange and the measure of value itself. The classical gold standard of the nineteenth century institutionalized this role, linking national currencies to fixed quantities of bullion and constraining monetary expansion to tangible reserves. That discipline ended in 1971, when the U.S. suspended dollar convertibility, marking the transition to unbacked fiat systems. The result was monetary flexibility at the cost of intrinsic value stability.

Today, the global order again moves toward commodity-based credibility. The 2024 introduction of Zimbabwe Gold (ZiG) and the accelerated accumulation of bullion by countries such as China, Poland, and others illustrate a renewed demand for neutral, politically agnostic reserves. In an environment of fiat debasement and geopolitical realignment, gold's function as a non-sovereign store of value is being reasserted.

EGA (Elevado Gold Asset) emerges at this intersection of historical continuity and digital innovation. EGA establishes a gold-denominated monetary framework built on Ethereum. Its issued asset, EGA (EGA), represents a direct, ounce-based position on a protocol gold reserve. The protocol's invariant principle is that the gold backing per unit can never decrease.

Conceptually, EGA functions as an autonomous central reserve, maintaining a continuously compounding store of gold collateral. The total reserve, measurable in ounces (or eventually in metric tons), mirrors the balance sheet of a 'sovereign monetary authority', yet operates without governance or policy discretion.

EGA thereby reintroduces commodity money as a cryptographic institution – anchoring digital value once again in physical weight.

## 2 Protocol Architecture

The EGA protocol operates as a single immutable smart contract deployed on Ethereum. It holds all XAUT collateral and issues EGA asset against it according to a defined issuance and redemption mechanism.

The protocol maintains no oracles, external price feeds, or governance keys. All state variables evolve deterministically according to on-chain actions.

Let $R_t$ denote the total XAUT reserve held by the contract at time $t$, and $S_t$ the total supply of EGA tokens outstanding. The initial state is defined by $R_0 = S_0$, establishing the 1:1 issuance ratio of EGA to XAUT.

The Net Reserve Value in ounces per token is given by $\mathrm{NRV}_t = \dfrac{R_t}{S_t}$.

The initial issuance ratio is established at 1:1 ratio (i.e., 1 EGA equals 1 XAUT), with a 1 % entry fee and a 2 % redemption fee.

When a user deposits $D_t$ ounces of XAUT to mint EGA, a 1 % entry fee is retained by the reserve. The contract mint $\Delta S_t = (1 - \alpha) D_t$, where $\alpha = 0.01$ is the entry-fee coefficient. The reserve increases by $R_{t+1} = R_t + D_t$. When a user redeems $\Delta S_t'$ EGA for XAUT, the contract burns the tokens and transfers to the user $W_t = (1 - \beta)\Delta S_t' \times \mathrm{NRV}_t$, where $\beta = 0.02$ is the exit-fee coefficient. The remaining $\beta$ fraction of the redeemed amount remains within the reserve. Consequently, $R_{t+1} = R_t + \alpha D_t + \beta W_t$, which implies $R_{t+1} > R_t$ for all non-zero activity. Because $S_t$ increases by less than $D_t$ during deposits and decreases fully upon redemption, the ratio $\mathrm{NRV}_t = R_t / S_t$ is strictly non-decreasing over time.

This design guarantees that the gold-denominated reserve per EGA share cannot decline. All transactional friction accumulates internally as collective reinforcement, resulting in a compounding reserve density. No oracle determines price; no governance adjusts fees or supply. EGA is a closed gold system, responsive only to minting and redemption events executed under transparent and immutable rules.

# 3 Gold Denomination, Value-Weight Principle, and Reserve Scale

## 3.1 Ounce-Denominated Accounting

All accounting within EGA is expressed in troy ounces, the standard measure of bullion trade. The Net Reserve Value (NRV), issuance, and redemption functions are denominated in ounces, producing a monetary unit whose referential measure is physical weight rather than fiat valuation.

## 3.2 Value-Weight Principle

A fundamental property of EGA is that its value equals its weight in gold.

Let $V_t$ represent the effective value of an EGA holding at time $t$ in grams of gold, and let $w_t$ be the NRV in grams per token. Then:

$$V_t = S_t \cdot w_t$$

Where $S_t$ is the number of EGA tokens held and $w_t$ is the Net Reserve Value per token in grams of gold.

This equation formalizes the principle that more value corresponds directly to more gold weight. As the protocol reserve compounds through retained fees, $w_t$ increases monotonically, making each token incrementally 'heavier' in gold terms. EGA thus restores weight as the primary measure of monetary value, where purchasing power is proportional to underlying mass.

## 3.3 Reserve Scaling

As adoption expands, EGA's total reserve may reach magnitudes more suitably expressed in metric tons. The conversion from ounces to tons is:

$$T_t = \frac{R_t}{32{,}150.7466}$$

Where $R_t$ is the total reserve in troy ounces, $T_t$ is the total reserve in metric tons. One metric ton equals 32,150.7466 troy ounces.

Combining the weight-to-value relationship at the macro scale, the aggregate value of the reserve in grams of gold is:

$$V_t^{\text{reserve}} = R_t \cdot 31.1035$$

Where 31.1035 grams = 1 troy ounce. This allows the EGA protocol to quantify its reserve as a tangible physical mass and link it directly to monetary value.

# 4 Mathematical Framework

Let $t$ denote discrete transaction time and $\mathrm{NRV}_t = R_t/S_t$. The reserve evolution under deposit and withdrawal is expressed as:

$$R_{t+1} = R_t + D_t + \beta W_t,$$

$$S_{t+1} = S_t + (1-\alpha)D_t - \Delta S_t'.$$

Substituting the redemption output $W_t = (1-\beta)\Delta S_t' \mathrm{NRV}_t$, the incremental change in NRV is derived as $\mathrm{NRV}_{t+1} - \mathrm{NRV}_t = \dfrac{\alpha D_t + \beta(1-\beta)\Delta S_t' \mathrm{NRV}t}{St+1} \geq 0.$

Since both $\alpha$ and $\beta$ are positive and $D_t, \Delta S_t' \geq 0$, the inequality holds strictly for any transaction. Hence, $\mathrm{NRV}_t$ is a monotonically non-decreasing function in gold units. Over an infinite sequence of transactions with positive net activity, the reserve ratio converges toward an upper asymptote proportional to cumulative fees retained.

This dynamic defines EGA's 'anti-dilution law': transactional volume increases the collateral density per remaining token, producing endogenous compounding in the gold base.

## 5 Macroeconomic Interpretation

Fundamentally, the EGA protocol can be interpreted as the monetary balance sheet of a digital central bank denominated in gold. The EGA reserve corresponds to the asset side – physical bullion claims in the form of XAUT – while the EGA supply constitutes the liability side, representing circulating money backed by that reserve. The Net Reserve Value (NRV) expresses the coverage ratio, or the 'gold backing ratio' of the currency.

In traditional central banking, reserve accumulation depends on fiscal surpluses, trade balances, or monetary policy discretion. In EGA, accumulation is structural and automatic: every issuance and redemption adds marginal ounces to the reserve base. This mechanism inverts the inflationary bias of fiat systems. Where conventional currencies erode purchasing power through expansionary issuance, EGA densifies its monetary base over time, producing deflationary reinforcement in the gold unit of account.

Denominating EGA in ounces of gold rather than fiat (e.g., USD) stabilizes its referential measure. Fiat currencies measure value against political variables – interest rates, debt, and confidence – whereas gold ounces constitute a physical constant. The ounce-denominated protocol thereby forms a closed-unit monetary space, resistant to fiat volatility and globally invariant.

From a systemic perspective, EGA introduces a programmable model for reserve-driven monetary sovereignty. At sufficient scale, the aggregate gold mass of the EGA reserve becomes comparable to the bullion reserves of small sovereigns. If the reserve reached, for example, 100,000 XAUT, it would represent approximately 3.11 metric tons of gold, positioning the EGA reserve among the lower quartile of national holdings. This illustrates the scalability of protocolized reserve economics: an autonomous smart contract, functioning analogously to a sovereign, 'national' treasury, capable of issuing a gold-backed currency without governance, policy, or inflationary discretion.

## 6 Risks and Considerations

EGA's collateral foundation relies on XAUT (Tether Gold), an ERC-20 token representing allocated physical gold.

While EGA's protocol logic is immutable and non-custodial, its systemic soundness remains contingent upon XAUT's operational integrity.

# 7 Conclusion

This initial draft of the EGA whitepaper is meant to establish a conceptual understanding of the high-level design and architecture of the proposed protocol. It should not be considered complete or final. The version 1.0 of this paper will be published for public review and community input on `https://github.com/elevadoxyz`.

## A Monetary base definition

Let the total EGA supply $S_t$ represent the circulating monetary base, and the total XAUT reserve $R_t$ represent the reserve asset base.

The EGA monetary base (in ounces) is therefore:

$$M_t = S_t = \frac{R_t}{\mathrm{NRV}_t}$$

Because $\mathrm{NRV}_t$ is non-decreasing, the effective gold value of the monetary base per unit rises over time. In contrast to fiat systems, EGA's monetary base contracts in real terms as the reserve ratio strengthens.

## B Seigniorage in ECM

Transaction fees retained in the reserve generate 'protocol seigniorage'. Let cumulative deposits and withdrawals to date be $\sum D_i$ and $\sum W_i$.

Total seigniorage in ounces is:

$$\Sigma_t = \alpha \sum D_i + \beta \sum W_i$$

This seigniorage increases $R_t$ while leaving $S_t$ reduced relative to raw deposits, creating endogenous appreciation in reserve density. Economically, EGA transforms frictional cost into structural reinforcement.

## C Dynamic reserve equation

Differentiating $R_t = R_{t-1} + \alpha D_t + \beta W_t$ over discrete time yields a difference equation:

$$\Delta R_t = \alpha D_t + \beta W_t$$

Assuming expected transaction flows $E[D_t] = d$ and $E[W_t] = w$, the steady-state reserve growth rate is:

$$g_R = \frac{\alpha d + \beta w}{R_t}$$

If $g_R > 0$), reserve expansion is perpetual, producing compounding gold mass even under stationary transaction volumes.

## D NRV elasticity

Define the elasticity of NRV with respect to reserve accumulation as:

$$\varepsilon_{NRV,R} = \frac{d\ln(\mathrm{NRV})}{d\ln(R)} = 1 - \frac{d\ln(S)}{d\ln(R)}$$

When issuance is slower than reserve growth, $\varepsilon_{NRV,R} > 0$, meaning EGA appreciates in gold terms. A perfectly inelastic NRV ($\varepsilon = 0$) corresponds to constant reserve per share, impossible under positive fees.

## E Reserve velocity

Analogous to monetary velocity, define reserve velocity $v_R$ as the ratio of transactional turnover (minting + redemption) to reserve stock:

$$v_R = \frac{D_t + W_t}{R_t}$$

High $v_R$ increases seigniorage accumulation and thus the NRV growth rate. EGA rewards economic activity not through inflation, but through reserve densification.

## F Equivalent real yield

The effective gold-denominated yield for EGA holders over interval $[t_0, t_1]$ is:

$$y_g = \frac{\mathrm{NRV}t_1 - \mathrm{NRV}t_0}{\mathrm{NRV}_{t_0}}$$

Because $\mathrm{NRV}t_1 \geq \mathrm{NRV}t_0,\ \ y_g \geq 0$. This yield substitutes for nominal interest; it is endogenous, deflationary, and realized via reserve growth rather than debt issuance.

## G Real versus nominal gold yield

If gold itself appreciates at fiat rate $g_{Au,USD}$, then the fiat-denominated EGA yield is:

$$y_{USD} = y_g + g_{Au,USD} + y_g g_{Au,USD}$$

Thus, EGA magnifies gold's role: holders obtain both intrinsic gold appreciation and protocol-induced compounding, reinforcing EGA's role as a superior gold savings instrument.

## H Stability Condition

Let $\lambda_t = \frac{R_t}{S_t} = \mathrm{NRV}_t$. Stability requires that minting and redemption activities preserve monotonicity:

$$\frac{\partial \lambda_t}{\partial D_t} > 0, \quad \frac{\partial \lambda_t}{\partial W_t} > 0$$

Given positive $\alpha, \beta$, both derivatives are positive; hence no user action can reduce per-unit backing. This defines EGA's stability invariant.

## I Fee-to-reserve conversion ratio

The effective conversion of transactional volume into EGA reserve growth is:

$$\eta = \frac{\alpha D_t + \beta W_t}{D_t + W_t}$$

At equilibrium $D_t = W_t$, $\eta = \frac{\alpha + \beta}{2} = 1.5\%$. This implies that 1.5 % of gross transactional flow becomes permanent reserve reinforcement.

## J Expected NRV growth path

Assuming constant flow intensity $f$ (total ounces transacted per period) and initial reserve $R_0$, expected reserve after $n$ periods is:

$$R_n = R_0 + n(\alpha + \beta)\frac{f}{2}$$

Given $S_n \approx S_0$, the approximate EGA NRV trajectory is:

$$\mathrm{NRV}_n \approx \frac{R_0}{S_0} + n\frac{(\alpha + \beta)f}{2S_0}$$

This linear approximation holds under low growth; under high flow, compounding dominates.

## K Compounding limit

Under geometric compounding of transaction volumes, with growth factor $\gamma > 1$, cumulative EGA reserve becomes:

$$R_n = R_0 + (\alpha + \beta)\frac{f_0(\gamma^n - 1)}{2(\gamma - 1)}$$

Thus $R_n \to \infty$ as $n \to \infty$ for persistent activity, ensuring infinite asymptotic reinforcement of the gold base.

## L ECM and deflationary pressure

Because the NRV rises while supply contracts in gold terms, EGA exerts deflationary pressure analogous to a shrinking money supply.

The deflation rate in gold units is approximated by:

$$\pi_g = -\frac{d(\mathrm{NRV})}{\mathrm{NRV}}$$

Negative $\pi_g$ implies a real increase in purchasing power per EGA. Fundamentally, this mirrors the classical deflation of full-metallic standards.