Historical Stablecoins

A protocol for coins that hold the purchasing power of the past

Version 0.1 — Working Draft

Abstract

Every dollar stablecoin makes the same silent promise: one token equals one dollar, *today*. Historical Stablecoins makes a different promise. A token denominated USD-1912 is designed to always hold the purchasing power that one US dollar commanded in the year 1912 — roughly thirty-four of today's dollars, and rising every month as inflation continues. The protocol is a fork of Liquity's immutable, governance-free borrowing system, with a single substitution at its core: the peg target is no longer the nominal dollar but a Consumer Price Index ratio that expresses historical purchasing power in present-day terms. The result is a family of fully collateralized, ETH-backed, decentralized tokens whose only purpose is to make inflation legible — to let anyone hold, trade, and watch a unit of 1912, 1950, or 1995 money drift against the currency of the present. This document describes the mechanism, its single irreducible trust assumption, and the deliberate decision to make the system a public good rather than a profit vehicle.

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1. Motivation

Inflation is abstract. People are told that money loses value over time, shown charts of indices climbing, and asked to imagine the cumulative effect across a century. The numbers rarely land, because they are presented as history rather than as something one can hold in a wallet and watch move.

A stablecoin is, mechanically, just a number that a system defends. Conventional stablecoins defend the number "one dollar." There is no technical reason the defended number must be the present dollar. If the defended number is instead "one dollar of 1912 purchasing power, expressed in today's currency," the resulting token becomes a living instrument of the very thing inflation charts try and fail to communicate. Holding one USD-1912 and watching it require thirty-four, then thirty-five, then thirty-six present dollars to redeem is a more direct argument than any graph.

This project is, openly, a piece of monetary-political art as much as it is financial infrastructure. It is built to demonstrate an idea. But to demonstrate the idea honestly, the tokens must actually

work — they must be genuinely redeemable and genuinely hold their stated purchasing power, not merely display a calculated figure on a website. A coin that claimed to hold 1912 value while in fact floating freely would refute its own thesis. Everything in the design follows from that constraint.

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2. Design philosophy

Three commitments shape every decision below.

The mechanism is a commons. The core protocol takes no fee for any founder or company, is immutable once deployed, and is governed by no one. Nobody can change the rules under which collateral is held, and nobody can rescue the system if it fails — the same property that makes it ideologically clean makes it unforgiving. This is inherited directly from Liquity and preserved deliberately.

Trust is minimized, not eliminated. The protocol pegs to a fact about the world — the price level — that does not exist on-chain and must be carried there by someone. This is an irreducible trust assumption. The design's job is to make that assumption as small, as bounded, and as observable as possible, never to pretend it is absent.

Profit motive is channeled, not removed. Following Liquity, the system relies on self-interested participants — liquidators, arbitrageurs, borrowers — to do its work. What distinguishes this project is that the *protocol's own revenue* is directed to a public purpose rather than to a speculative token, for reasons both thematic and practical.

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3. The peg mechanism

3.1 Inheriting Liquity

The protocol forks Liquity v1. Users lock ETH as collateral in a position called a trove and mint stablecoins against it, subject to a minimum collateral ratio. The peg is defended by two forces. Redemption: any holder may swap one stablecoin for its face value in ETH (less a fee), which establishes a hard price floor enforced by arbitrage — if the token trades below target, redeeming it for ETH is profitable, and the resulting buy pressure restores the peg. Liquidation: troves that fall below the minimum collateral ratio are closed against a Stability Pool of deposited stablecoins, keeping the system solvent as collateral prices move.

None of this machinery is modified. Troves, the Stability Pool, liquidation logic, and the redemption arbitrage loop are preserved as deployed and audited.

3.2 The single substitution

In Liquity, "one token equals one dollar" is not written as a constant. It emerges from the arithmetic: a trove's collateral ratio is computed from the ETH:USD price fetched by the `PriceFeed` contract, and because debt is denominated in tokens and the price is denominated in dollars per ETH, the unit "one token = one dollar" falls out automatically.

The entire conceptual change of this project is to alter the *meaning of the price number* that `PriceFeed` returns. Instead of reporting the ETH:USD price, it reports the price of ETH expressed in base-year purchasing power:

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price_returned = ETH_USD_price × CPI_baseYear / CPI_today
```

Concretely, if ETH is $3,000 and the inflation ratio (CPI_today / CPI_1912) is 34.25, the feed reports 87.59 instead of 3,000. Every downstream calculation — collateral ratios, liquidation thresholds, redemption amounts — then treats one token as one unit of 1912 purchasing power, with no other code touched. A holder redeeming one USD-1912 receives 1 / 87.59 = 0.0114 ETH, worth about $34.25, exactly the intended purchasing power.

3.3 Two inputs, two sources

The feed therefore needs two numbers. The volatile one — ETH:USD — is taken from existing, battle-tested oracle infrastructure (Chainlink primary, with a fallback), exactly as Liquity does. This is the most heavily secured data point in DeFi and is not something the project should source itself.

The second number — the inflation ratio — does not exist in any external oracle, because no existing stablecoin pegs to purchasing power and therefore none publishes it. This number must be supplied by the project's own oracle. It is the single irreducible custom component, and Section 5 is devoted to it.

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4. The coins

A currency qualifies as a *real, redeemable* coin only if an authoritative body publishes its price index, via a machine-readable feed, as a series unbroken to the present month. All three

conditions are required: without a living monthly link to the present, the redemption mechanism has no current target to defend.

This gate is strict, and it excludes many evocative candidates. There is no continuous price series linking the Roman denarius, the Byzantine solidus, or the Golden Age guilder to the present month; no institution carries them forward. They cannot be redeemable coins, however romantic. A deeper irony underlies this: the currencies that best held their value belong precisely to the pre-statistical eras that kept no index, while the currencies with unbroken modern data are the ones that *lost* value and prompted governments to start measuring. The project's most rhetorically powerful examples are structurally the ones it cannot peg.

The launch set comprises three coins chosen to tell different stories.

USD-1912 is the flagship. The year is the last full year before the Federal Reserve Act of December 1913 — "the dollar the year before the central bank." Its base value sits one year before the official US CPI series begins in 1913, so the 1912 figure is a documented historical estimate (drawn from the Rees cost-of-living index as compiled by the Federal Reserve Bank of Minneapolis) rather than part of the continuous series. This seam is disclosed openly rather than hidden. The live numerator is the official BLS CPI-U series, which updates monthly. The current ratio is approximately 34×.

GBP as a real coin is constrained by data: the UK's official index reaches back only to about 1950, with earlier figures modelled and explicitly indicative. The original aspiration of GBP-1864 — chosen for sterling's peak global dominance during the cotton boom of the American Civil War — cannot be a redeemable coin, because no authoritative machine-readable series links 1864 to the present, and because "peak global dominance" measures the currency's external value, not the domestic purchasing power a peg requires. GBP therefore launches either from 1950 as a real coin or remains an explicitly labelled, non-redeemable display piece.

JPY-1995 is the conceptual heart of the set. Japan's purchasing power peaked in the mid-1990s and then stayed nearly flat for a generation through the deflationary Lost Decades, so a coin pegged to 1995 yen sits at a ratio close to 1.0 — barely above a plain modern yen. Placed beside USD-1912 at 34×, it quietly demolishes the assumption that inflation is a law of nature. It is also the safest coin to operate, since the gap between its peg and its underlying currency is small.

The pairing of USD-1912 and JPY-1995 — one currency that eroded relentlessly, one that did not — is the strongest form of the project's argument, rendered as two numbers sitting side by side.

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5. The oracle: the system's one soft point

5.1 Honest framing

The protocol's contracts are bedrock; the component that feeds them the inflation ratio is not. An attacker would not assault the immutable contracts — they would target the oracle. This is the well-known oracle problem, unsolved in general, and this document does not claim to solve it. The aim is containment.

5.2 Why it cannot be outsourced or derived

The inflation ratio is a fact about the world that keeps happening: new CPI prints monthly, and that information enters the blockchain only if someone places it there. No on-chain quantity can be manipulated arithmetically to recover next month's price level; ETH's price moving tells us nothing about the cost of bread. The base-year value can be frozen at deployment because it is history and never changes. The current value cannot be frozen or derived, because at deployment it does not yet exist. Someone must carry each monthly print on-chain. That carrier is irreducible.

5.3 Why it is nonetheless the easy kind of oracle

The redeeming feature is that this oracle is slow. CPI updates twelve times a year, from a single authoritative government source, in small and predictable increments — typically a few tenths of a percent per month, and historically never more than a few percent even in the worst inflationary episodes. This is the most forgiving oracle profile imaginable, the opposite of the sub-minute, high-volatility ETH:USD feed where oracle attacks usually occur.

5.4 Containment

Four mechanisms bound the damage a bad update can do, none of which require trusting the updater's honesty because they are enforced by the immutable contract itself.

Bounded change. The contract rejects any update moving the ratio more than a strict threshold — for example, 3% — in a single month. Because a legitimate monthly CPI move is far smaller, any large deviation is self-evidently an error or attack and bounces automatically.

Timelock. A pushed update becomes visible for a delay period before it takes effect, giving participants time to observe a malicious change and exit before it bites.

Multi-signature control. The key authorized to push updates is held by several independent maintainers who must co-sign, so no single compromised machine can move the number.

Public verifiability. The off-chain adapter's computation is published openly, so anyone can independently recompute the ratio from public CPI data and confirm that the on-chain value

matches the stated methodology. Combined with the timelock, a bad push is detectable before it takes effect.

The honest summary: the system is trust-minimized, not trustless. There is an irreducible party who faithfully translates real-world CPI into an on-chain number. For a protest-art project this is acceptable and even thematically apt — a coin about the contested meaning of money's value, ultimately anchored by human stewardship of a contested number. The one thing the project will never do is hide this seam.

5.5 The chaining problem

A price index measures movement relative to an arbitrary reference period set to 100, called the base. Agencies periodically *rebase* — re-reference to a new period — and long series are sometimes assembled from segments computed on different bases. Dividing two index values from different bases produces nonsense. The fix is chaining: converting all segments to one common reference using the linking factor at each overlap, so any two points become comparable.

Crucially, ratios between two years are independent of the base used, which makes the conversion safe when done correctly — but it is precisely the step most prone to a silent, catastrophic error. A missed rebase factor between the US 1967-base historical estimate and the 1982–84-base live series would distort the peg by roughly a factor of three. All chaining therefore lives in the off-chain adapter, is published openly, is unit-tested against official inflation calculators, and is cross-checked across independent rulers before any value is frozen. The contract receives only the final, validated ratio and never performs chaining itself.

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6. Governance: GitHub, not a token

The protocol mechanism is immutable and ungoverned. But the translation of messy, rebased, periodically revised historical price data into a single canonical ratio is an irreducible matter of scholarly judgment — the one place the system genuinely requires ongoing human decisions. This is a code-and-data question, and it is governed where such questions naturally live: in the open, on a public repository, through proposals, review, and version history.

A critical boundary separates two things that "update the code as consensus forms" could mean. The safe meaning is refining the *off-chain adapter* — the script that reads the data, performs the chaining, and computes the ratio. This may evolve freely; the deployed contract never changes and simply receives a better-computed number. The dangerous meaning is changing the *deployed contract*, which would require the contract to be upgradeable, which would reintroduce

a trusted party able to rewrite redemption logic or redirect funds. The project rejects this entirely. The architecture is an immutable contract paired with a GitHub-governed adapter: all human consensus-forming affects only the input the contract reads, never the contract's code.

A residual trust point remains even so — whoever holds the key that pushes the agreed ratio on-chain could push something other than the merged consensus. This is exactly why the on-chain guardrails of Section 5.4 exist independently of the social process. GitHub decides what the number should be; the contract's bounded-change and timelock limits cap how much damage a wrong number can do. Belt and suspenders.

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7. Economics and the public-good decision

7.1 What the protocol earns

Liquity generates revenue at two points: a one-time borrowing fee when stablecoins are minted, and a redemption fee when stablecoins are swapped for ETH. Both are governed by a floating rate that rises with redemption activity and decays over time. In the original protocol, both fee streams flow to a staking contract that pays holders of a secondary token, which is how the original builders and investors captured value.

7.2 The fee is also a stability mechanism

The redemption fee is not merely revenue. Its floating rate rises during a redemption rush, which dampens bank-run dynamics. Setting fees to zero would not be a neutral act of generosity — it would remove a stability throttle. The project therefore preserves the floating fee and its decay logic byte-for-byte, and changes only the destination of the proceeds.

7.3 Where the money goes

The project deploys no speculative token. The fee streams are redirected to an `OracleTreasury` contract whose purpose is to reimburse the gas cost of the monthly CPI updates and to hold any surplus for maintenance, behind the same multi-signature held by the repository's maintainers. Surplus beyond operating costs may be directed by the maintainers to public-goods or monetary-education purposes.

This decision is deliberate and has both a thematic and a practical rationale. Thematically, a coin protesting the debasement of money that simultaneously enriched its founders through a speculative token would invite obvious and fair cynicism. Practically, a fee-bearing token that people buy expecting returns carries far greater regulatory weight than the stablecoin itself, and unpaid maintenance is how projects die — so the one real recurring cost, keeping the oracle alive,

is funded by the system's own activity. The design tells a clean story: the protocol pays for its own connection to truth.

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8. Failure modes

The project states its risks plainly.

Collateral collapse. If ETH falls faster than liquidations can clear undercollateralized troves, and the Stability Pool is too thin to absorb the overflow, the system can become globally undercollateralized and the token can depeg downward. A niche protest coin will have a thinner Stability Pool and fewer liquidation keepers than a large protocol, making this tail fatter, not thinner. Because the protocol is immutable and ungoverned, there is no administrator who can intervene — the property that makes it clean is the property that means no one can rescue it. An inflation-protest coin that can itself collapse in a crisis is an irony the project would rather state than conceal.

Oracle failure. A stale or manipulated inflation feed is the primary attack surface. The containment of Section 5.4 bounds but does not eliminate this risk. The project must also choose, deliberately, how the system behaves when the CPI feed dies: halting (safer against economic discontinuity, but freezes liquidations) versus degrading to the last known good ratio (preserves function, mirrors Liquity's own last-good-price pattern). The project adopts the last-known-good-ratio approach with staleness bounds, never a silent snap to a nominal peg.

The rising-peg drift. Because the peg rises with accumulated inflation, a trove left untouched for years slowly grows riskier on its own even with flat ETH. This is gradual, not a shock, but borrowers must understand it.

Base-year estimate risk. For coins like USD-1912 whose base year precedes the authoritative series, the frozen base value is a documented historical estimate. This is disclosed, not hidden, and the live numerator always rides the authoritative monthly series.

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9. What this project is, and is not

It is a fully collateralized, ETH-backed, decentralized family of tokens that genuinely hold historical purchasing power and can genuinely be traded and redeemed. It is a public-good protocol that takes no rent for anyone and funds only its own truthful operation. It is, candidly, a political and educational instrument — an argument about money made tradeable.

It is not a store of value to rely upon, not a hedge to recommend, not free of risk, and not trustless. It carries the full collateral risk of any ETH-backed borrowing protocol and one irreducible trust assumption in its oracle. Nothing in this document is financial or legal advice. A testnet demonstration is art; the moment real ETH and real users are involved, the system is real financial infrastructure with real liquidation and oracle risk, and its satirical framing changes nothing about how it must be operated or how regulators may view it.

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10. Roadmap

The intended build order is incremental and verification-first. First, fork Liquity v1 and run it unmodified on a current testnet to understand troves, the Stability Pool, and redemptions firsthand. Second, using the testnet's manual price-feed mock, replace the price target with a manually set inflation-adjusted value and confirm the whole system defends the historical peg. Third, build the monthly, bounded-change, timelocked oracle and its openly published off-chain adapter, with chaining logic cross-checked against official inflation calculators. Fourth, deploy USD-1912 end to end. Fifth, deploy JPY-1995 as the contrasting coin. Only after extended testnet operation and independent review would any mainnet deployment with real value be contemplated, and only with the failure modes of Section 8 fully understood by all participants.

This is a working draft of a hypothetical protocol for discussion and demonstration purposes. It describes a political-art project and is not an offering of any financial instrument, nor financial or legal advice. Figures are illustrative and subject to verification against primary sources.