LatAm Peso Index (LPI) and the $LUKAS Protocol: A Transparent Algorithmic Monetary Framework for Latin America

Whitepaper v0.1.0 – Public Draft

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Abstract

This document presents the initial public release of the LatAm Peso Index (LPI), a transparent algorithmic multi-currency basket designed to represent a regional unit of account for Latin America, and its on-chain implementation through the $LUKAS protocol. The paper outlines the socio-political context motivating this work, the cryptographic and economic architecture of LPI and $LUKAS, and the enabling role of Uniswap v4 hooks in stabilizing decentralized monetary systems at the liquidity layer. This version is intended as a pre-alpha research draft for open academic and engineering review.

Prelude: The LatAm Peso Manifesto

For more than a century, Latin America has lived within a monetary matrix of systemic opacity: inflationary policies without transparency, devaluations without accountability, and financial institutions that operate with information asymmetries that disadvantage citizens. Money is not a neutral tool but a socio-political technology that shapes power, mobility, and survival.

The emergence of decentralized cryptographic systems, beginning with the Cypherpunk movement [1], the design of Bitcoin [2], and the programmable economy of Ethereum [3], revealed a new possibility: monetary systems governed not by political discretion but by verifiable code, open algorithms, and collective governance.

Latin America now faces a historic inflection point. Repeated cycles of inflation, currency erosion, capital controls, and fragmentation are not anomalies but structural failures of opaque monetary governance [5, 6]. A new monetary framework is required—transparent, regional, algorithmic, and incorruptible.

We therefore affirm:

1. Transparent money is a human right.
2. Inflation without consent is economic coercion.
3. Monetary truth must be computed, not declared.

4. Sovereignty emerges from verifiable systems, not political promises.

5. Latin America deserves a regional, politically neutral unit of account.

The LatAm Peso Index (LPI) and the $LUKAS protocol offer a path toward monetary autonomy grounded in open-source, verifiable, censorship-resistant infrastructure.

IN CODE WE TRUST — EN PUEBLO CONFIAMOS — LA VERDAD NO SE NEGOCIA

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1. Introduction

Latin America exhibits chronic monetary instability: recurrent inflation, devaluations, capital flight, and institutional fragility [7, 8]. Traditional monetary systems centralize authority and obscure data, creating environments in which inflation acts as involuntary taxation on vulnerable populations [9].

Blockchain systems introduced alternative governance models: transparent, verifiable, globally auditable monetary rules [2, 4]. Stablecoins demonstrated the feasibility of decentralized units of account, though most reference the U.S. dollar and do not address regional monetary fragmentation.

This paper introduces:

- The **LatAm Peso Index (LPI)**, a transparent algorithmic basket of BRL, MXN, COP, CLP, and ARS.
- The **$LUKAS protocol**, a decentralized implementation of LPI.
- A stabilization mechanism powered by **Uniswap v4 hooks**, which allows programmable liquidity-layer monetary policy.

Our aim is to formalize LPI as a socio-technical foundation for a regional monetary layer.

2. Socio-Political Background

2.1 Institutional fragility

Latin American monetary institutions frequently face political capture, inconsistent policy regimes, and chronic inflationary pressures [5]. These conditions create cycles of instability that disproportionately impact lower-income citizens.

2.2 Opacity and trust failure

Traditional monetary systems conceal real-time data and revise inflation metrics ex post [10]. Cryptographic transparency provides an alternative model of institutional trust: verification rather than belief.

2.3 Regional fragmentation

The co-existence of BRL, MXN, COP, CLP, and ARS—with differing volatilities, liquidity depths, and capital controls—creates systemic friction across Latin America's $5T regional economy [11]. A regionally grounded unit of account could reduce this fragmentation.

3. The LatAm Peso Index (LPI)

3.1 Definition

The LPI comprises five currencies:

Currency	Weight	Rationale
BRL	40%	Largest economy, trade anchor
MXN	30%	High liquidity, global integration
COP	15%	Key regional actor
CLP	10%	Historically robust macro policy
ARS	5%	Volatility-adjusted inclusion

3.2 Transparency

The LPI value is:

$$I = \sum_i w_i p_i$$

where p_i are decentralized oracle readings. All computations occur on-chain.

4. The $LUKAS Protocol and Uniswap v4 Hooks

4.1 Architecture Overview

The protocol contains:

1. **Price Feed Layer** – TWAP oracles, cross-chain feeds.
2. **Index Contract** – deterministic on-chain LPI computation.
3. **Uniswap v4 Hook Stabilizer** – programmable liquidity-layer peg logic.
4. **Stabilizer Vault** – collateralized mint/burn, liquidity interventions.

4.2 Role of Uniswap v4 Hooks

Uniswap v4 introduces hooks that allow:

- pre- and post-swap programmable logic,
- dynamic liquidity behavior,
- real-time peg monitoring,
- automated stabilization.

Hooks act as *the technological enabler* for decentralized monetary policy at the AMM level, bridging algorithmic index governance with market execution.

4.3 Prior Work

Our mechanism relates to:

- Seigniorage shares [15],
- Algorithmic governance research [16],
- Basket-based currencies (e.g., IMF SDR) [14].

5. Sociopolitical Implications

5.1 Democratizing monetary transparency

On-chain FX data reduces information asymmetry and enables independent citizen verification.

5.2 Regional integration

A shared index lowers the cost of cross-border transactions, remittances, and trade.

5.3 Post-institutional legitimacy

Transparent algorithms may become new legitimacy anchors in politically fragile environments.

6. Research Agenda

- Cryptoeconomic modeling of LPI stability.
- Agent-based simulations of regional adoption.
- Uniswap v4 hook safety and adversarial testing.
- Governance frameworks resistant to capture.
- FX volatility calibration for emerging economies.

7. Conclusion

The LPI and $LUKAS protocol introduce a transparent, algorithmically governed regional monetary primitive. By leveraging Uniswap v4 hooks as a stabilization substrate, the protocol offers a novel mechanism for decentralizing monetary operations at the liquidity layer.

This version (v0.1.0) is an open research draft inviting collaboration from economists, cryptographers, political scientists, and engineers.

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