

Micromoney: Microeconomically Elastic Currency

Augusto Ada

augusto.ada@gmx.com

www.micromoney.org

Version 0.98

Abstract. The currency that moderates the money supply on a microeconomic tripod of liquidity (issuance + equity + loan) would finally fulfill the promise of a currency elastic to economic needs. In each commercial microeconomic cycle, a Currency Accretion Letter (CAL) creates the amount of units of currency (monetary liability) equivalent to the value to be created in the market (monetary asset), and extinguishes it when it is commercialized, publishing, from the uncertainty between estimated and realized, the liquidity ratio — this is the monetary credit (restricted to *ex-nihilo*) distinct from the other types of credit (restricted to the circulating legacy). A 2nd variant of CAL — public — finances the commonwealth to the extent of the liquidity room left by the 1st's — underlying public demand — thereby replacing taxes and establishing a monetary reserve based on the aggregate liquidity index. A 3rd variant replaces the underlying exchange demand with monetary accretions proportional to international creation — *split issuance* — providing ideal onshore and offshore liquidity even between too asymmetric currencies. Result: efficient market pricing of real monetary assets and liabilities instead of administered credit prices; interest only in exchange of time value; dividends only on value created; money offered where effectively demanded, free of deflation, inflation and/or debasement; Cantillon Effect and Triffin's Dilemma solved. Furthermore, it suffices that the transition from macromoney model to micromoney model takes into account the loss of utility value of the debasement already contracted for decades on end.

1. Introduction

When we talk about an elastic currency according to economic needs [Federal Reserve Act, Official title], we are talking about a currency whose money supply takes place according to the creation of value in the market, that is, in order to avoid barter and its effects [SMITH]. However, neither commodity money (such as gold and silver), nor fiat money (from the Latin "let it be done", the currency by decree), nor bank money (with or without a central bank), nor their digital mimetics (such as Bitcoin and others), have achieved this elasticity — far from it. The result has been a lack or excess of money supply, consequently, of liquidity. In fact, if we want an elastic currency, what we need is not a currency that moderates macroeconomically or, otherwise, without taking into account the commercial value created and traded on microeconomic cycles. This is because, before it can serve as a medium of exchange or a store of value, money must be a means of value creation — otherwise it does not eliminate barter, at most, it sophisticates it, hence the **inflexo** incapable of keeping up with even trivial microeconomic fluctuations, let alone eventual productivity shocks, given that always in check the very debasement that it contracts, perhaps for decades on end, while it seeks to roll over its inherent deficit. In fact, liquidity is not about expectation, but about its deviation — the mistake of every market, monetary, and fiscal system to date: to be unaware of it. So, let's retire the inflexo.

2. Commercial Monetary Accretion

In this topic, I implement direct reciprocity between the holder of value creation in the market and the monetary officer, in which, by means of a **Currency Accretion Letter (CAL)** aimed at the commercial microeconomic cycle, I establish the **microeconomic liquidity tripod** of the distinction between 3 types of credit: monetary, equity and banking.

"Time preference does not depend on money—it prevails in barter—; consequently, interest is not the price of money."

Ludwig von Mises

All self-respecting market production aims at the commercialization of the product for a value greater than the sum of the values of the inputs. Such creation of commercial value, without any other measure, is deflationary of the currency — that is: the same volume of money in circulation to support a greater volume of value in goods traded through it, which leads to the appreciation of the unit of account in relation to the goods, thus invalidating the pricing of reconciliations, mismatching its moments, volumes and deadlines. Discretionary inflation, therefore, would be nothing more than a late and unmeasured response to a deflationary process although day-to-day, silent — inherent to the productive process. The solution to this problem is to separate the types of credit — monetary, equity and banking — in order to link the money supply (*currency ex-nihilo*) to the creation of value in the market (*commerce ex-nihilo*), eliminating the (con)fusion between money supply, investment and borrowing and, in addition, capturing the liquidity ratio of each microeconomic cycle.¹

Calculation Basis

With each microeconomic cycle initiative aimed at creating market value, the additional commercial value to be realized or **emerging value** (ΔV_e) is obtained by subtracting the estimated cost of the product (C_e) from the estimated selling price (P_e) — that which only the market producer is ready to pricing amidst the uncertainty inherent to this specific economic calculation and based on local value per unit of account:

$$\Delta V_e = P_e - C_e$$

Equation 1 – Emerging value by initiative of a commercial microeconomic cycle.

Monetary Issuance

The emerging value in commercial product (ΔV_e) signals, in order to avoid a deflationary tendency of the currency, the issuance (I) of the equivalent additional value in monetary units ($\Delta \$$), that is, to be created and left under the tutelage of the producer so that it is fungible on cycle — this is the **monetary credit**, where its **asset** is the additional value in product and its **liability** is the additional value in currency, both *ex nihilo*s matched in moment, volume and term since the conception, therefore, free of interest:

$$I = \Delta \$ = \Delta V_e$$

Equation 2 – Issuance of elastic money.

¹As Aquinas teaches, the production of the thing in all its substance: without presupposed anything (divine creation), or; by transmutation (human creation). That is: if something is every presupposition (limited to pre-existing), there is no creation, but mere transformation. The *ex nihilo* enters as a logical consequence of the definition of creation, being empirical and measurable the occurrence of human creation.

Monetary Extinction

Product created, its commercialization, by removing the value created from the market, signals that the amount of money issued (I) must be returned by the producer to the **monetary balance** to be extinguished, this time in order to avoid an inflationary tendency of the currency, freeing up the liquidity space for a next cycle. This must be done by discounting I from the sales revenue (P_r), leaving the net revenue (R) to the producer:

$$R = P_r - I$$

Equation 3 – Extinction of elastic money.

That is, the currency returns to the base prior to the creation of wealth without accumulation or remnant of public or private monetary assets or liabilities, zeroing the position in the monetary balance.

Implicit Incentive

By adhering to the commercial CAL, the producer starts to count cycle-by-cycle with up to three sources of financing of the estimated cost of the product (C_e):

1. **Issuance** (I) with a representative of the monetary balance;
2. **Equity** (Q) by own and/or with third-party investor in the cycle;
3. **Borrowing** (B) with a bank loan restricted to the currency legacy (Topic 5).

What I call the **microeconomic tripod of liquidity**, in which:

$$C_e = I + Q + B$$

Equation 4 – Financing the total estimated cost of the product.

The first source, although limited to the emerging value ($I = \Delta V_e$), is free of interest and dividends. This and, in order to ensure skin in the game [TALEB, 2018], the amount in equity (Q) must be greater than or equal to the amount of issuance (I):

$$Q \geq I$$

Equation 5 – Skin in the monetary game

Furthermore, freed from the parafiscal nature of the taxation — abolished (Topic 3) —, the producer has the freedom to conceive the product, in addition to reaping the full value that comes to create (ΔV_r):

$$\Delta V_r = P_r - C_r$$

Equation 6 – Value Created

Liquidity Monitoring

Since dealing with futures, uncertainty is of the essence of economic calculation, in which the concept of liquidity arises to answer the question of how much a product would be accepted by the market without repricing it and without delay— what Menger called *saleability*. That is, the product can end up being traded for a price and term different from the one conceived, which implies the offer of commercial value-time, by extension, the money supply. Thus, the **liquidity ratio** can be obtained by crossing the emerging value (ΔV_e) and in what estimated term (ΔT_e) with the realized value (ΔV_r) and in what term (ΔT_r) — with ΔV_e and ΔT_e

being recorded when the cycle is proposed, and ΔV_r and ΔT_r recorded when this cycle is carried out in the market:

$$\mathcal{L} = \left(\frac{\Delta V_r}{\Delta V_e} \right) \cdot \left(\frac{\Delta T_e}{\Delta T_r} \right)$$

Equation 7 – Liquidity Ratio of the commercial microeconomic cycle.

Liquidity not as a matter of expectation, but of deviation from it, where:

- $\mathcal{L} < 1$ signals saleability below the account — lack of liquidity;
- $\mathcal{L} = 1$ signals saleability on top of the account — ideal liquidity;
- $\mathcal{L} > 1$ signals over-the-counter saleability — excess liquidity.

Not merely a test of product acceptance or a validation of the economic calculus underlying its pricing, but rather an indicator of whether more or less currency is destined to be—or could have been—created. A public-domain indicator that preserves commercial confidentiality and can only be gathered at the microeconomic level—emerging from the reconciliation efforts of independent agents acting on their awareness of the dispersed knowledge that no single person possesses in its entirety [Hayek, 1945]: *eco nomos*. An indicator, in addition to serving the reputation of the producer and, by extension, of the monetary officer in the eyes of the public, eliminates the price research², signaling the need or not for adjustment for the next cycles — the early, localized, multidimensional alert, which practically eradicates the occurrences of overfitting and certainly before they become systemic, that is, what could be defined as *antifragile* [TALEB, 2012]:

An economy that, by continuously learning from a myriad of small random mistakes,
remains inhospitable to big mistakes.

No wonder:

Once the **liquidity ratio** ↔ **microeconomic cycle** relationship is formalized, the dilemma of the Joint Hypothesis is resolved [BACHELIER; SAMUELSON; FAMA] applied to real monetary assets and liabilities, in addition, instead of statistical testing (the realm of overfitting), **micro tests of market liquidity**, validating:

-
- H1:** The markets are efficient (prices reflect all relevant information);
H2: The pricing model adopted is the correct one (fully captures the relevant risk).
-

— while preserving such hypotheses within their private formalities.³

²Not least because prices can and should vary for a myriad of reasons other than monetary, that is, either that, or the currency is not fulfilling the purpose of eradicating barter, at most sophistication. And, in fact, wouldn't the accumulation of claims on claims produced by modern macromoney be exactly the apex of barter sophistication? Barter just emigrated from the **telomarket** (of production products) to the **archmarket** (of production shares) and from there to the limbo of the gross settlement in real time of collateral of the public debt as a way of maintaining the planned collapse (**metamarket**)? That is.

³In fact, fiscal-banking assets and liabilities removed from the resolution of the monetary problem—alongside other factors of overfitting, such as administered prices (and administered prices always fail, let alone at the macroeconomic or intergenerational levels, precisely because they attempt to address the unknown—or, as Hayek aptly put it: knowledge that nobody possesses in its entirety).

Instrument

The following is an example of a **Commercial Currency Accretion Letter**:

CURRENCY ACCRETION LETTER BRL		CURRENCY ACCRETION LETTER BRL	
Commercial Microeconomic Cycle Arabica Coffee Harvest		AB12345678C Jatobá Farm	
Situation	APPROVED	Issuer	Godfrey of Saint-Omer V.S.A.
Since/Until	2026-07-16 / (to wit)	Holder	Fazenda Jatobá Ltda.
Estimated/Realized Term	12 months / (to wit)	Location	Patrocínio – MG
Estimated Product Cost	1,100,000.00	Custody	Banco do Brasil S.A.
Estimated Sale Value	1,390,000.00	Current Account	00125585599620298449000195
Emerging Value	290,000.00	Value	290,000.00
Issuance	290,000.00	Committed?	(not committed)
Equity	310,000.00	Administration Fee	0.5%
Borrowing?	2.00 % p.a. 500,000.00	Regional	TAP – Triângulo and Alto Paranaíba
Issued Money	0.00 %	Monetary Reserve	(not applicable)
Extincted Money	0.00 %	Domestic Currency	(not applicable)
Realized Product Cost	0.00 %	Exchange Rate	(not applicable)
Sale Value Produced	0.00 %	Additional Instructions: proceed with the creation of the deposits according to the attested schedule (more...)	
Sales Proceeds	0.00 %		
Value Created	0.00 % (to wit)	DO NOT ADVERTISE WITHOUT THE EXPRESS CONSENT OF THE HOLDER OR WITHOUT VERIFICATION OF AUTHENTICITY WITH THE MONETARY AUTHORITY	
Liquidity Ratio – £	(to wit)		
Attested by Mr. Godfrey of Saint-Omer 17/06/2026 14:38		Attested by Mr. Godfrey of Saint-Omer 17/06/2026 14:38	
Figure 1 - Fron of a commercial CAL.		Figure 2 – Back of a commercial CAL.	

Note that the Commercial Microeconomic Cycle is an *arabic coffee harvest*,⁴ to be funded by 290K of monetary credit (*issuance* equal to the *emerging value*), 310K of equity (owner's equity and/or third party capital), and 500K of bank credit (*borrowing*, loan under the terms of Topic 6), thus covering the 1,100M of the *estimated cost*, with an *estimated sale value* of 1,390M. Cycle realized, the *holder* separates the *issued money* amount (~290K) from the *sales proceeds* (~1,390M) and returns it to the *issuer* for extinguishment (*extinct money*), thereby zeroing out that CAL's position on the monetary balance sheet. Once this is done, the *holder* repays off the *borrowing* and pockets the remainder (~600k) — more than enough to repay the *realized product cost* and absorb the difference between the *emerging value* and the *value created*. Being the *liquidity ratio* (£) annotated and published to guide holders, issuers, and the general public on how much liquidity is in all dimensions (*sector, branch, location, regional, volume, term*, etc.).

3. Government Monetary Accretion

Here, I implement the diffuse reciprocity in which, by a public CAL aimed at governmental cycle, the commonwealth is funded to the extent of its effective demand given by the aggregate of values created and recorded by commercial CALs, thus replacing all taxes.

"The incentive for the provision of commonwealth arises when private individuals recognize mutual benefit and establish rules of reciprocity that avoid individual obstruction."

Elinor Ostrom

⁴It could be any other commercial product—improvement, good, or service—regardless of the term, provided it is based on probable cause.

Unlike the private initiative, the government does not produce anything for sale, so it does not itself have the means to measure the value it creates or to be created and at what time, depending on the aggregate of privately created values of those domiciled in its circumscription to know the effective demand for public creation to be supplied by common improvements. In fact, it is not by chance that taxes end up, sooner or later, draining all the private surplus: public demand arises from the aggregation of marginal private demands in which the public thing is legitimized by the sum of implicit private improvements [SAMUELSON, 1954]. Furthermore, it would be useless to have provided ideal liquidity to the private surplus (Topic 2) and then see it drained by taxes. Thus, a new mode of public revenue is necessary.

Well:

We have seen (Topic 2) that commercial CAL is an instrument of pricing and market value creation that does not result in a permanent monetary liability, since it uses scriptural currency credit to create liquidity to the extent of the commercial surplus and only as long as necessary to avoid externality against the currency. Then, from this liquidity space left by the private surplus at the locality, whether one likes it or not, *pari passu* to the generation of its public demand, it is now possible to provide permanent monetary issuance to fund the respective common improvement, thereby abolishing all taxes — and without any of this generating inflation or public debt, in addition, freeing private accounting from burden of tax compliance.

Government Microeconomic Cycle

For all monetary and fiscal purposes, the governmental microeconomic cycle will be of monthly recurrence, calculated every tenth day of the month by a monetary attaché with the government of each locality — that is, municipal or equivalent circumscription.

Calculation Basis

Given that public demand arises from the aggregation of marginal private demands, the basis for calculating this demand is those commercial CALs issued by free initiative of holders domiciled in the locality:

$$D = \sum \Delta V_r$$

Equation 8 – Underlying public demand is equal to the sum of the private values created.

Provision

As CALs record commercial microeconomic cycles lasting from weeks to several years, to obtain the provision for monetary issuance at locality of a future month, sum the values emerging (ΔV_e) from commercial CALs with cycles scheduled to end in the previous month:

$$\tilde{I}_t = \sum_{t-1} \Delta V_e$$

Equation 9 – Provision for the month equal to the sum of the emerging values of the previous month.

Monetary Issuance

To obtain the amount of currency to be issued in the month as revenue of the locality (I_t), add the values created (ΔV_r) of commercial CALs completed in the previous month:

$$I_t = \sum_{t-1} \Delta V_r$$

Equation 10 – Issuance of the month equal to the sum of the commercial values created in the previous month.

Note that, unlike the commercial monetary issue — which is based on emerging values (ΔV_e) —, the public monetary issuance is based on the values created (ΔV_r), which, for the purpose of permanent monetary accretion, is no longer with those uncertainties.

Aggregate Liquidity

The **aggregate liquidity ratio** is the weighted average of commercial liquidity ratios ($\mathcal{L}$) by the value created (ΔV_r):

$$\bar{\mathcal{L}} = \frac{\sum_{i=1}^n (\Delta V_{r_i} \cdot \mathcal{L}_i)}{\sum_{i=1}^n \Delta V_{r_i}}$$

Equation 11 – Aggregate liquidity ratio equal to the average of the liquidity ratios weighted by the values created.

Local Net Revenue

Not all issuance (I_t) is available to be spent by the local government, with part being retained as **monetary reserve** (S) and part destined for **federative discounts** (F) at source:

$$RL = I_t - S - F$$

Equation 12 – Local net revenue equal to monetary issuance minus monetary reserve minus federative discounts.

Monetary Reserve

To build resilience against adverse conditions, flow fluctuations, or external shocks—and to serve as a deterrent against currency speculation—a monetary reserve (S) is maintained, withheld from locality's revenue and held in a sub-account at the monetary authority's regional branch. The monthly withholding percentage is determined by the appointed liaison—acting under the monetary authority's mandate (Topic 5)—based on trends in the aggregate liquidity ratio ($\bar{\mathcal{L}}$) within the jurisdiction; for instance, increasing/reducing the retention of public revenue to the indication of surplus/lack of liquidity in the locality — another utility of the governmental CAL. This implies that the public agency whose actions impact local liquidity will not do so without suffering an equivalent opportunity cost.⁵ Furthermore, the monetary reserve remains available for withdrawals due to force majeure/Act of God, and there is no impediment to converting it into bonds (Topic 7) and back into cash—in the same or a different currency—at the discretion of the monetary authority's regional branch.

Federative Discounts

If this is the case and according to the percentages defined in the respective federative pact, the CAL provides for discounts in favor of the revenues of the federative entities of which the locality is part — such as those of the county, the state and the union. And so that the diffuse reciprocity (natural and proper to the common thing) is not lost along the way and, with that,

⁵The central government's unparalleled power to reallocate local liquidity through the issuance of public securities certainly persists—amidst other external disruptions to the liquidity monitored by CAL—albeit within the framework of the monetary authority's new mandate (Topic 5).

the liquidity, whatever the circumscription layer, it is forbidden to transfer public revenue, as well as this must be spent to the respective circumscription, that is, without embarking on a fiscal transfer or forced redistribution of liquidity or, in any other way, on the margins of catalaxis [WHATELY; MISES; HAYEK]. It implies that federated entities supervise each other and through their monetary attachés — a redirection of efforts by the federal, state and municipal revenue authorities, which, thus, continue to exist despite abolished taxes.

Instrument

The following is an example of a **Government Currency Accretion Letter**:

CURRENCY ACCRETION LETTER BRL			CURRENCY ACCRETION LETTER BRL		
Government Microeconomic Cycle AB12345678G 2026, August Patrocínio, MG			Government Microeconomic Cycle AB12345678G 2026, August Patrocínio, MG		
Status	ONGOING		Issuer	Geraldo de Ridefort V.SA.	
Since/Until	2026-07-01 / 2026-07-31		Holder	Municipality of Patrocínio-MG	
Term	2026, August		Location	Patrocínio – MG	
Provisioned	~127.65M		Custody	Banco do Brasil S.A.	
Issuance	127,705,396.00		Current Account	00102745599618468033000126	
Federative Discounts	30,00 %	(38,311,618.80)	Value	127,705,396.00	
County	10,00 %	12,770,539.60	Committed?	LDO and LOA 2026	
State	10,00 %	12,770,539.60	Administration Fee	0,05%	
Union	10,00 %	12,770,539.60	Regional	TAP – Triângulo and Alto Paranaíba	
Aggregate Liquidity – $\tilde{L}$	..1,003 $\asymp$ 1,001 $\asymp$ 0,998 $\nearrow$ 0,999		Monetary Reserve	10%	
Monetary Reserve	10,00 %	(12,770,539.60)	Domestic Currency	(not applicable)	
Local Net Revenue	60,00 %	76,623,237.60	Exchange Rate	(not applicable)	
Next Cycle	~76.81M		Additional Instructions: proceed with the creation of the deposit with the consent of the Secretary of Finan (more...)		
Next Three	~77.51M				
Next Six	~78.97M		DO NOT GIVE PUBLICITY WITHOUT VERIFICATION OF AUTHENTICITY WITH THE MONETARY AUTHORITY		
Next Twelve	~80.10M				
attested by V.Sa. Mr. Geraldo de Ridefort 30/06/2026 17:55			attested by V.Sa. Mr. Geraldo de Ridefort 31/07/2026 17:55		

Figure 3 - Front of a government CAL.

Figure 4 - Back of a government CAL.

As shown, this concerns the Government Microeconomic Cycle of August 2026 in the locality of Patrocínio, MG. The provision (~127.65M) reflects—via Eq. 9—the expected issuance volume; meanwhile, the actual issuance (127,705,396.00) follows Eq. 10—with the difference between provision and issuance being a natural byproduct of the uncertainty separating ΔV_r from ΔV_e in any business cycle (Topic 2). From this issuance, the following are retained:

- ➔ **By Federative Pact** enforced by *Federative Discounts*, in this example 30% (divided equally between county, state and union, 10% each, 12,770,539.60) and;
- ➔ **By Mandate of the Monetary Authority** (Topic 5), in this example invested in the *Issuer* V.Sa. Geraldo de Ridefort (monetary attaché), 10% as *Monetary Reserve* (12,770,539.60) on the basis of the *Aggregate Liquidity* series (... 1.003 $\asymp$ 1.001 $\asymp$ 0.998 $\nearrow$ 0.999) — the history of $\tilde{L}$ of the cycles already completed and settled (Eq. 11).

Remaining 60% as *Local Net Revenue* (76,623,237.60), the effective budget available to the municipality this month — no taxes, no debt, no rollover. Completing the assistance to local budget planning (*Committed* by LDO and LOA, the appropriation bills), the net revenue projections for the *Next Cycle*, *Next Three*, *Six* and *Twelve* cycles/months resort to Eq. 9 among others on growing horizons with the same uncertainty inherent to every provision.

Note that, under the CAL method and its micromoney, the Revenue Secretary and the Monetary Attaché regulate public revenue without stifling private enterprise, publishing unprecedented monetary and fiscal intelligence data while keeping the two spheres distinct. The monetary reserve ratio—calibrated by the attaché based on trends in the aggregate liquidity ratio (a subject formally addressed in Topic 5)—serves as the instrument through which the monetary authority fulfills its new mandate: not "price stability" or "full employment," but rather localized, optimal liquidity. This strips the central government and its agents of the ability to generate inflation or deflation — by doing what any government does best: spending every penny that enters into its cashier — thereby freeing everyone to focus on the quality, rather than the quantity, of public spending.⁶

In fact, with the distinction between types of reciprocity (direct, collective, and diffuse), the rules of commutative justice prevail and taxes are abolished, thereby eliminating—by extension—parataxation, including that associated with administered prices and debasement. With the government losing not only the instrument, but the need for and the incentive to put the halter on private initiative, keeping to the size it should have according to the effective aggregate demand of domiciles — now known, the very thing that legitimizes it. Moreover, once the era of taxes with representation (palliative to the era of taxes without representation) has been overcome, towards the era of representation without taxes, everything circumscription and localizable as if celebrating peace between Jefferson and Hamilton.⁷

4. International Monetary Accretion

On this topic, I use the Currency Accretion Letter – CAL to, through an adjustment in the monetary issuance circuit during the international microeconomic cycle, eliminate the underlying foreign exchange demand — solving Triffin's Dilemma.

"Inside and outside the Kingdom, the flows of industry and commerce must be unobstructed, the only way to ensure that as much currency enters it as is extracted from it."

Alexandre de Gusmão

Underlying foreign exchange demand is that which emerges from the creation of international value, that is, on a commercial microeconomic cycle that demands funding and/or reserve in domestic and international currencies. To date, all the lines that have proposed to eliminate or mitigate foreign exchange demand (Bancor, SDR, gold standard, etc.) have not only ignored it in its underlying cause but have also done so by trying to circumvent the asymmetry between domestic and international currencies by means of some intermediary unit of account, basket, custodian, lender or liquidator.

Well:

With the advent of micromoney and other measures in its wake, it is now possible to replace, through a bilateral agreement between the respective monetary authorities, the underlying exchange demand by technical adjustment in the CAL monetary issuance circuit — **split issuance** — accepting the asymmetry between domestic and international currencies

⁶It must certainly be restricted to diffuse reciprocity, lest the public entity face insolvency.

⁷This, incidentally, reinforces representation based on pure district voting while undermining the rhetoric that equates activism merely with the opportunity for popular or proportional voting.

while sizing, locating and issuing international reserves, thus implementing the true floating exchange rate on top of the circulating legacy.

Imagine a CAL of a commercial microeconomic cycle based in Brazil, say, Embraer, then importing part of its inputs from the US (Boeing, RTX, Pratt & Whitney, etc.) to finally export the product (planes) back (Porter Airlines, United, Delta, JetBlue, etc.):

CURRENCY ACCRETION LETTER USD			CURRENCY ACCRETION LETTER USD	
International Microeconomic Cycle OF12345678C Airplanes Lot Embraer			International Microeconomic Cycle OF12345678C Airplanes Lot Embraer	
Situation	COMPLETED		Issuer	William Marshal V.SA.
Since/Until	2023-05-01 / 2026-05-01		Holder	Embraer S.A.
Estimated/Realized Term	36 months / 34 months		Location	São José dos Campos – SP
Estimated Product Cost	550,000,000.00		Custody	JPMorgan Chase Bank, N.A.
Estimated Sale Value	685,000,000.00		Current Account	37625585599607689002000189
Emerging Value	135,000,000.00		Value	135,000,000.00
Issuance	135,000,000.00		Committed?	Contrato AA-2025 (10x E195-E2)
Equity	165,000,000.00		Administration Fee	0.1%
Borrowing?	2.00 % p.a. 250,000,000.00		Regional	NYK + VPL
Issued Money	100.0 %	135,000,000.00	Monetary Reserve	10%
Extincted Money	100.0 %	(135,000,000.00)	Domestic Currency	BRL
Product Cost Funded	100.0 %	551,789,123.46	Exchange Rate	VPL-Sale
Sale Value Produced	100.0 %	685,000,000.00	Additional Instructions: proceed with the creation of the deposits according to the attested schedule (more...)	
Sales Proceeds	100.0 %	685,000,000.00		
Value Created	98.7 %	133,210,876.54	DO NOT ADVERTISE WITHOUT THE EXPRESS CONSENT OF THE HOLDER OR WITHOUT VERIFICATION OF AUTHENTICITY WITH THE MONETARY AUTHORITY	
Liquidity Ratio – L		1.076		
Attested by V.Sa. Mr. William Marshal 2028-11-30 16h 57			Attested by V.Sa. Mr. William Marshal 2028-11-30 16h 57	

Figure 5 - Front of an international CAL.

Figure 6 - Back of an international CAL.

Note that, although the cycle is based in Brazil, the CAL is denominated in international currency (USD). In addition, on the back of the CAL, the instructions for *Regional, Monetary Reserve, Domestic Currency and Exchange Rate* — those of the international agreement between the respective regional offices of the monetary authorities, in this case, between NYK (New York, USA) and VPL (Vale do Paraíba and Litoral Norte, Brazil). Thus, following the same accounting as for a domestic cycle, the issuance is divided among the monetary denominations (split issuance):

- ➔ **Commercial Issuance:** Commercial monetary accretion according to the emerging value (US\$ 135,00M) in favor of Embraer's offshore account, NYK jurisdiction — extinguished on the commercialization of the product;
- ➔ **Public Issuance:** On the occasion and according to the amount effectively created (133,21MUSD), the public monetary accretion is made in favor of the locality of São José dos Campos – SP, with US\$ 13,32M created in an offshore account, NYK jurisdiction, as international monetary reserve, and the remainder created directly in R\$ (119,89MUSD converted to BRL at the exchange rate of the day), in a local account, VPL jurisdiction.

As can be seen, the CAL aimed at the international microeconomic cycle really dispenses with any unit of account, basket, custodian, lender or intermediate liquidator and yet eliminates the underlying exchange demand, while preserving the forex market thus restricted to the circulating legacy of both currencies — a genuine structural difference compared to what has been proposed or practiced until then and which makes the floating exchange rate in fact reflect the international economic needs of free enterprise.

Implications

It means that the issuer of the international currency will no longer have to accumulate growing deficits to provide liquidity to the world, let alone how much, nor will the issuer of the domestic currency have to continue to live with signs that arise exactly from the current need for foreign exchange transactions so that the value created internally is recognized/settled internationally.

For the issuer of non-international currency, the inability to borrow abroad in its own currency ceases to be a problem to the extent that the agreement via CAL eliminates the exchange rate mismatch that would otherwise result from the creation of international value without the creation of the additional equivalent in international currency and without the creation of the domestic underlying — the root of exchange rate crises, the same as other monetary liquidity crises, which we have overcome in the previous topics.

Furthermore, if there is no more exchange demand generated by the creation of commercial value, the exchange rate is "defended" by the creation of value in the market cycle after cycle, microeconomically. Instead of a general and somewhat disproportionate reserve, domestic and international reserves are properly located and no more than necessary for optimal liquidity from granular to aggregate according to liquidity ratios known domestically and internationally.

There is no small amount that this implies beyond technique:

International trade has always demanded an international currency, and this function, by definition, must fall on some issuer. What the CAL changes is not this natural and proper need of international trade, but the way it is fulfilled: by solving Triffin's Dilemma for itself – dispensing with the accumulation of a growing deficit to provide liquidity to the world – the issuer of the international currency solves, in the same cycle and at no additional cost, the exchange mishap of the trading partner. And all this by free initiative of the producers in the international market, with the agreement between the monetary authorities just validating the money supply necessary to avoid that externality against their currencies (Topic 2).

Moreover, without central tap, both currencies are created where international commercial value is created, solving dilemmas such as the Cantillon Effect and Triffin's Dilemma as well as eliminating the monetary cause from the Milkshake Effect.⁸ Positive sum gain at both ends, and simultaneous: there is no structural surplus or surcharges on one side to explain at the expense of the other, which disarms, by its own mechanics and not by rhetoric, any narrative of asymmetric exploitation around international issuance. Evidently, this has a geopolitical impact, potentially making CAL an instrument for projecting the institutional grammar that is embedded in it by design — which, by the way, is the Western grammar.

5. Mandate of the Monetary Authority

In this topic, I formalize the new mandate of the monetary authority on micromoney.

"It is not up to the monetary authority to be a planning body."

Jesús Huerta de Soto

⁸ In fact, the Milkshake Effect is not of the dollar itself, but of the American experiment as a whole.

With the advent of the CAL — even if adopted domestically or internationally only — the monetary authority's mandate changes from water to wine: from interventions such as the search for "full employment" or "output growth" and from reins such as the search for "price stability" or "fiscal/banking liquidity", to the search only for what is the purpose of currency:

Purpose of Currency: to supply enough money to avoid barter or its sophistication.

The variation in the aggregate liquidity ratio ($\bar{\mathcal{L}}$) is what is to be monitored (Topic 3), auditing the bookkeeping of the granular indices ($\mathcal{L}$) that compose it (Topic 2). In this sense:

Deflation becomes $\bar{\mathcal{L}} < 1$ moving away from 1 $\rightarrow$ deflationary pressure;
Inflation becomes $\bar{\mathcal{L}} > 1$ moving away from 1 $\rightarrow$ inflationary pressure;

— observable symptoms, not the mandate itself, the mandate being:

Mandate: $\min_{\{s_t\}} E[x_t^2], x_t \equiv \bar{\mathcal{L}}_t - 1$ subject to $x = 0$ as a fixed point.

— yes: optimal aggregate liquidity via reserve adjustment, yet without sacrificing liquidity at the microeconomic cycle level, on the contrary, drawing insights from its market liquidity microtests. Therefore, not a Taylor rule on P or on the supposed product/employment gap, but pure residual monetary gap, without any reference to "price level" or bank/fiscal rollover, but only to that liquidity according to Menger (Topic 2). Formally, in mathematical terms:

Lemma — Single Net Money Creation Channel

Abolished bank multiplier (Topic 6) + liquid-zero commercial CAL per cycle (Eq. 2, 3) $\Rightarrow$ the only permanent channel of change on the monetary base is $E_t = \Delta V_{r,t-1}$ (Eq. 9).

Axiom — Non-monetization

Outside the Lemma, it is permanently forbidden to create or extinguish money of the currency — even to acquire/monetize public or private securities, under any circumstance, including failure or fiscal crisis of any federative entity.

Corollary — Solvency Ceiling of the Sovereign Bond ⁹

$$B_t \leq \frac{\varphi \cdot E_{nacional,t}}{r^U}$$

Under Lemma + Axiom, the Sovereign Bond, like any other, no longer carries the premium of debasement, leaving pure credit risk ¹⁰ — no more risk of debasing, no more exorbitant privilege (Topic 7), less of the effect of concentration/displacement of liquidity.

⁹Focused on the monetary subject, it purposely does not discount current public spending to not enter into Treasury's subject.

¹⁰Explicit default, without a safety net, otherwise, who knows, with other federative entities in their monetary reserves.

Definitions

Symbol	Definition
x_t	$= \bar{L}_t - 1$ — quantitative mismatch
s_t	retained reserve fraction ($S_t = s_t E_t$)
φ	fixed fraction of federative discounts
Σ_t	$= \Sigma(t-1) + s_t E_t$
rl_t	$= E_t(1 - s_t - \varphi)$
κ	how much yesterday's deviation weighs on tomorrow's value
θ	how much the extra money on the street really affects liquidity
γ	how much the monetary authority (invested in the Attaché) decides to react.
μ	the minimum mattress that the reserve needs to have saved.

Hypotheses (of Transmission and Control)

H1 – Pure Quantitative Transmission

$$\Delta V_{rt} = \Delta V_{rt-1} \cdot (1 + \kappa x_{t-1}), \quad \kappa > 0$$

H2 – Liquidity Sensitivity to Public Spending ¹¹

$$x_t = \theta \cdot rl_t, \quad \theta > 0$$

H3 – Symmetric Reserve Rule ¹²

$$S_t = \bar{s} + \gamma x_{t-1}, \quad \gamma > 0$$

H4 – Reserve Capitalization Floor

$$\Sigma_t \geq \mu \cdot \bar{E}, \text{ for every } t$$

Linearized Recursion

$$x_t = \lambda x_{t-1} + \epsilon_t, \quad \lambda \equiv \theta(\kappa - \Gamma), \quad \Gamma \equiv \frac{\gamma}{1 - \bar{s} - \varphi}$$

where ϵ_t is a disturbance of purposely unspecified causes ¹³, mean-zero — H3 reacts to the observed signal of $\bar{L}$, not to the cause.

Theorem 1 (Convergence to Ideal Liquidity)

$\{x_t\}$ converges to zero, monotonically, iff:

$$(1 - \bar{s} - \varphi) \left(\kappa - \frac{1}{\theta} \right) < \gamma \leq (1 - \bar{s} - \varphi) \kappa$$

Proof: $x_t = \lambda^t x_0 \rightarrow 0$ iff $|\lambda| < 1$; $\lambda \geq 0$ prevents oscillation with signal reversal. Replacing $\lambda = \theta(\kappa - \Gamma)$ and isolating γ , you get the range above. ■

¹¹Purposely without a price term.

¹²Purposely agnostic to the origin of the deviation.

¹³A source of mismatch that does not come from the internal transmission of the cycle (H1), but exogenous to it: hoarding, change of speed, portfolio reallocation, anything outside the control of the holder at the opening/closing of the cycle — therefore outside the monetary purview.

Derivation of the Threshold of μ

For isolated shock $x_0 = x_{\min} < 0$, decaying geometrically under H3, the accumulated reserve withdrawal over the entire trajectory:

$$D(x_{\min}) = \frac{\gamma |x_{\min}|}{1 - \lambda} \bar{I}$$

Non-saturation condition :

$$\mu \geq \frac{\gamma |x_{\min}|}{1 - \lambda}$$

Theorem 2 (Symmetric Robustness with Reserve)

Under H1–H4, for any isolated shock x_0 with $|x_0| \leq x_{\min}$:

- $x_0 > 0$: $x_t \rightarrow 0$ geometrically, without stock constraint;
- $x_0 < 0$: $x_t \rightarrow 0$ geometrically, and $\Sigma_t \geq 0$ in every t , by the condition of μ . ■

Declared Limitations

1. Local, not global stability — shocks outside of $[-x_{\min}, x_{\min}]$ are not covered.
2. κ and θ are empirical parameters to estimate, not universal constants — estimating them requires a long series of CAL's, and the theorem is conditional on the correct calibration of γ and μ .
3. Deterministic, proportional — covers isolated shock and mean-zero disturbance; does not cover persistent, systematic bias (deliberated intervention)¹⁴.
4. Internacional layer (Topic 4) inherits Lemma by construction analogous to commercial, in this mandate iff included in the aggregate $\bar{\mathcal{L}}$ or, if not, audited separately line by line.

That is:

- ➔ κ and θ : **how the economy behaves** — not to be chosen, to be discovered by observing;
- ➔ γ and μ : **how the authority reacts to this behavior** — whether it chooses, within the limits that Theorem 1 proves to be stable, directly determines the percentage of *Monetary Reserve* that appears on the back of the CAL.

As can be seen, despite external disturbances to the liquidity monitored by CAL, these are purposely left unspecified — because of non-monetary causes, in addition to that, the bearer must be free to choose between the use cases¹⁵ of the money in your hands¹⁶. A term of disturbance ϵ_t deliberately unmodeled: $x_t = \lambda x_{t-1} + \epsilon_t$, where ϵ_t is noise from purposely unspecified causes — without presupposed distribution, without causal structure. The elegant point¹⁷, therefore formally detached, is that H3 does not need to know the origin of x : the rule

¹⁴Any constant flow that shifts x in the same direction period after period — intervention or its effect — falls outside the scope of this pilot version (simplified core). Either that, or the tug-of-war between sovereign policy and localized mandate — which would not be all bad, for example, the former seeking to concentrate or displace liquidity and the latter defending local liquidity.

¹⁵To reserve, to invest, to lend, to spend—one cannot create or destroy it in violation of the Lemma.

¹⁶That is, no matter what the authority would like to be done with them — which is what the current system ends up doing: it chooses in place of the bearers what should be done with the then money supply (now reserve, now invest, now lend, now spend, in short: xenonomy).

¹⁷Mathematically speaking.

$S_t = \bar{s} + \gamma x_{t-1}$ reacts to the observed signal of $\tilde{L}$, whether the mismatch originates from the internal transfer κ or from ϵ external.

In summary:

With micromoney, the mandate can boil down, in effect, to a linear controller that minimizes the expected quadratic deviation of aggregate/residual liquidity, without any reference to the price level, output gap, or employment—the opposite of a planning body.

6. Free Banking

In this topic, I discipline banking to free it to the reallocation of monetary legacy.

"Just as no group of men would allow themselves to be enslaved by arguments, so every change will be one worthy of their preservation."

Edmund Burke

It would be useless for monetary credit to have supplied the ideal quantity of money — according to the creation of value in the market and the public effective demand — if the banks, among others, continued to create and extinguish money as if it were a loan, let alone for consumption or to roll over deficits. Isolating the creation of money from the kind of credit that is natural and proper to it — monetary credit — other kinds of credit of another use:

To bring back together—through mutual arrangements matching timing, volumes, and terms—precisely what the market tends to disperse: currency already in circulation.

Therefore, without the effect of monetary creation or extinction, which requires a considerable change in banking praxis, starting with the fact that it is finally free from monetary, taxation and fiscal burdens. And, in fact, although bank matching of moments, volumes and terms on the circulating legacy is as essential to the finding of liquidity as monetary matching of moments, volumes and terms on the ex-nihilo — hence the CAL in its microeconomic tripod to combine such efforts — nevertheless, correspondences not only distinct in activity and purpose but also in fiduciary duty:

- ➔ **Monetary Correspondence** with the currency (of a public nature);
- ➔ **Banking Correspondence** with the mutual (of a private nature).

That is, banking correspondents will take care of the exchange of temporal value through money, which will no longer be confused with the creation and extinction of money, which is then the exclusive province of monetary correspondents — the only one with a license to create a bank deposit ex-nihilo. The price to be paid for a currency that is not only elastic, but as a denomination (USD, BRL, ARS, etc.), the common good par excellence and, as a circulating one (bearer cash), the private good par excellence — all free of interest other than on the exchange of temporal value and dividends other than on value created (Topic 2).

Bank Mutual

Composed of money deposits expressly apportioned by the free initiative of depositors for the purpose of:

- a) **Investment in commercial cycles** of third-party producers (via CAL);
- b) **Lending to commercial cycles** of third-party producers (via CAL);
- c) **Investment** in third-party infrastructure or production capacity;
- d) **Lending** to third-party infrastructure or production capacity;
- e) **Lending** to third-party consumers;

Among other modalities, as long as they have no monetary effect, forbidden to lend or invest what bank does not have in mutual.

Mobilization

In order for the bank to operate the match of moments, volumes and terms between depositors and borrowers of the mutual without being left to the gods and without being left to fend for itself, every deposit must enter the mutual without cost or promise of return and with the amount and date of redemption predetermined by the depositor.

Remuneration

Periodically, from the total interest and/or dividends it collects, the mutual will remunerate the depositor in proportion to the participation that the amount of the deposit represents in the mutual in the period, and from this remuneration, the bank deducts its management/brokerage fee.

Interest Rate

Zero-based interest rates fluctuate freely in the market, at the final discretion of each credit operation, prohibiting a banking cartel or with this effect, with the free interest policy being one of the key factors by which banks and mutuals will compete for depositors and borrowers.

Dividends

They vary according to the commercial microeconomic cycle invested and regardless of the statutory provision of the holder of the CAL, that is: one thing is the equity invested in a cycle of the holder, another thing is the equity invested in the holder (such as stock shares).

Custody and Guarantee

There is no obstacle to pure and simple custody — account or safe not for loan or investing. In any case, the bank, not the mutual, is responsible with its own resources for all the deposits in its custody and for the deposits invested or lent [FISHER]. Since the free custody and guarantee policy is one of the key factors in the competition for the confidence of depositors — certainly, bonds, FPB (Topic 7) or not, will have some role but not compulsory.

Profiling

There is no obstacle for the same bank to offer the public more than one mutual solution, that is, more than one mutual according to, for example, the profile or type of credit (investment or loan, risk, term, sector, region, ticket, liquidity, etc.).

Interbank

It is forbidden to raise, invest or lend between banks/mutuals. — at first glance a requirement that sounds utopian/dystopian, but perfectly feasible as a result of the transition from macromoney to micromoney as outlined (Topic 9).

Bank Reserve

At the discretion of the bank or association of banks to which it belongs — certainly, bonds, FPB (Topic 7) or not, will have some role in it as long as it is not compulsory.

This being the outline of the discipline¹⁸ of **free banking** under micromoney — not like advocated by Smith, Mises (1912), Hayek (1976), or Friedman (1986, 2001), even freer:

Banking free from the burdens of monetary and tax compliances, the systemic risk of *the depositum irregulare*¹⁹ and the compulsory rollover of public debt.

7. Full Paid-Up Treasury Bond (FPB)

Here, I discipline the ideal public bond under the advent of micromoney, so that it actually works as treasury and nothing else — optional, since the mandate of the monetary authority already has instruments against the monetization of the sovereign bond.

"If your only instrument is a hammer, every problem seems to you like a nail."

Abraham Maslow

As previously clarified (Topic 3), the State relies on insights derived from the free private sector to identify the legitimate public additions—such as common improvements—that naturally entail only costs; this explains the measure addressed in Topic 5, which prohibits the monetization of even Treasury's bonds. In fact, liquidity is not a matter of expectation, but of its diversion—this has been the flaw in all markets, monetary, and fiscal systems to date. From antiquity through the gold standard to the fiat standard, the error has persisted, and its effects have been compounded. Yet, the question remains:

How could the State have come to promise incomes, if it does not produce any surplus?

¹⁸As the focus of this article is the monetary problem, I leave the mathematical formalization of the discipline to the banking community.

¹⁹Florence, 1215: the same year in which the templar circulating credit emerged in the west, which the former saw as a competitor, until the clash of civilizations of 1312 that culminated in the dismissal of the latter and despite the already successive liquidity crises of the former — the remote origin of modern currency and taxation. Thus, micromoney does not cease to be redeeming and not only of scriptural money.

Simple:

In addition to being the only permanent institution (an important differential for those whose offer depends on collateralizing such a guarantee), the State, until then, had the mandate to create as much money (or collateral for it) as necessary to cover the deficits, thus recurring, inflating the unit of account via the banking channel among others (the primary buyers of the deficit in addition to compulsory dispatchers of the monetary authority), thereby eroding the purchasing power of future nominal payments (coupon and principal), thus diluting the debt over time — the planned debasing of the currency.

As for the bond itself, it would only function as an inert reserve if it is not monetizable and without paying interest or dividends — consequently, today's Treasury is not a treasury. In fact, government bonds do not pay interest to buy confidence — the fact that they are issued by the permanent institution would be enough for that. They pay interest to ensure the debasing of the currency, which makes them the only viable or permitted form of savings — and that's even though it's not a treasure. In fact, the promise of income from the public debt has never lacked any surplus on the part of the State — it is honored by rollover: at each maturity, the Treasury returns capital to the bearer by taking it from another bearer at the same time, in the same auction, without ever having its own reserve to do so. Continuous and uninterrupted rollover is not an eventual failure of the debt system with a maturity date — it is its ordinary mechanism of operation, and it is it, not just the debasement, that projects on the entire economy a scenario marked by daily distress.

Otherwise, let's see:

In the design of maturity on a certain date, the fixed income/loss mechanism — that which ensures that the inverse relationship between the price of the bond and the prevailing interest rate derives from the logic of pricing by discounted present value — serves as a rein to accelerate or slow down the debasement. Debasement, in turn, measured by research of price variation — that is: as if prices did not vary or should not vary for a myriad of reasons other than that of the planned debasement. As a result, the sovereign debt ends up functioning as an instrument for planning the entire economy at the same time as the bond escapes competition from all other securities. In practice, externalizing the cost and setting the minimum return while promising and honoring yields thus guaranteed — all without the issuer (the State) having to generate a single unit of surplus.

What began as discretionary inflation or deflation—ostensibly to temper fiscal-banking booms and busts—soon became the primary source of refinancing for the government and its compulsory and voluntary agents (banks, pension funds, among others). Consequently, interest rates and taxation became tools to either supply liquidity or mop up excess liquidity—not within the market, but within the system itself. To make matters worse, bureaucracy has moved to stifle productivity gains in the real economy to prevent them from undermining the debasement already locked in for decades—a scenario that would make debt rollovers impossible and cause collateralized assets to collapse. Hence the utility of the macromoney (fiat money), inelastic even to trivial microeconomic fluctuations, let alone productivity gains: to defend, at any cost, the debasement has already been baked in for decades to come. Productivity gains, however, that the creativity inherent in the production process—even when heavily regulated—persistently generates; nor could it be otherwise: as highlighted in section 2, relative deflation is chronic and constant (inherent to production itself), a phenomenon the current system, by its very design, is powerless to address. Combination that results in recurring illiquidity and, consequently, an accumulation of overlapping claims—hence the sophistication of barter at its apex, through formidable subsystems of brutal, real-time

settlement. On the other hand: or this way, or; drain all the private surplus via taxes, not in decades, but as soon as they occur — so hence the choice that postpone the political cost, under the Keynesian pretext of seeking "price stability" and "maximum employment" while stretching not economic cycles, but xenonomic ones: the reconciliation between autonomous (eco nomos) giving way to a reconciliation between marionets (xeno nomos).

And, in fact, the current system provides liquidity to banking and tax domiciles, hoping if not forcing the rest of the domiciles to adapt — the tail wagging the dog. If it was not designed for this, it ended like this:

Liquidity is drained from value-creating structures (archmarket and telomarket) to liquidity structures that create no value at all (metamarket).

Until the day of the inevitable correction, as it could not be otherwise, the market: arch or telo, where prices, administered or not, are tested sooner or later. Markets, thus, from time to time, rose to the pantheon of villainy although never consulted by the metamarket except in the form of macroeconomic abstractions supposedly based on the first ones, but as has been demonstrated so far: far from it.

Well:

With the advent of micromoney nipping the problem off at the root — that day-to-day production-to-trade deflation, wrapping the inflationary need in its wake (Topics 2 and 3) — not only is all this applied social engineering dispensable, but it would become even more counterproductive, so that a new modal of bond, if it is not absolutely necessary (given that the Mandate already abolishes its monetization), it would come in handy. And the principles that guide it are simple:

-
1. Treasure is inert;
 2. Money is not treasure;
 3. Bond may be it;
-

Furthermore:

The entity immune to the market should not have a license to compete with it.

And, in fact, if there is an "exorbitant privilege" it is that of the treasury bond honoring principal + interest through debasing, starting against we the people.²⁰ Once the risk of debasement is removed (Topic 5), there remains the risk of default by an issuer that will not even produce any surplus — and the treasury, inert by definition, should not expose this risk. Hence the proposal of the **Fully Paid-up Bond (FPB)** — a bond with no right to proportional returns or surpluses,²¹ which never pays interest or dividends or charges monthly fees, nor does it promise cash redemption on a certain date or obstruct the transfer of ownership. Wanted to the market as long as it remains as a long-term store of value of high liquidity, being

²⁰That is, in no way a privilege restricted to the issuer of international currency — he just depends less on taxation for it.

²¹Except, perhaps, in the event of liquidation of the State or Treasury itself — secession from or union with another State or Treasury.

the absence of maturity, it should be noted, what makes the FPB work like this, not the absence of interest in isolation: a bond without interest or dividend, but with redemption promised on the right date, would be structurally a pure discount on the face value — and, with it, the rollover already described would reappear, with the risk of technical default at maturity and the minimum yield tabulation that the proposed design eliminates precisely because it never promises, to anyone, a specific future event. With this, the only factor of demand for an FPB resides in a fact inexorable for all eternity and nothing more:

The only currency-denominated bond issued by the permanent institution.

It is necessary, however, to clarify what might seem to be a gap: if every private monetary surplus, extinguished as commercial monetary credit at the end of each commercial cycle (Equation 3), becomes the basis for calculating the issuance of cash intended to fund legitimate public demand (Equation 9) which, spent by the government, becomes permanently part of the common circulating legacy — free, from then on, of any specific cycle attached to it — then accumulating money for perhaps years on end becomes perfectly possible, without exposure to deflation, inflation or debasement that today drive away this option.

That is:

Since the currency is no longer the object of debasement, the bond does not exist to meet the lack of savings — the monetary circulating legacy itself already fulfills this function, let alone restored the ability of banks to decently remunerate deposits (Topic 6). Since the lack of savings does not justify the bond — this function the currency itself already fulfills — the function of the bond becomes another, and twofold:

- ➔ **To offer a negotiable, transferable and collateralizable asset** to whomever by prudential requirement needs it—pension fund, insurance company, foreign central bank (especially non-adopters of micromoney), etc.
- ➔ **To serve as the natural alternative to the hoarding** of money of the currency.

In fact, in the form of a FPB, the bond remains as the only instrument whose price, by fluctuating freely above or below the face value according solely to the market's confidence in the permanent issuing institution (the State), functions as a continuous referendum of that same confidence — a sign that the currency, being money of its own, could never issue and precisely because of its ability to maintain its value over time despite confidence in the government and at the same time free from the fate of Gresham's Law.

In addition, it is worth noting that nothing in the above mechanics prevents the demand for the FPB from being captured by law, and not by free market conviction — managing, for example, that the pension fund reserve a compulsory portion in public bonds, along the same lines as the financial repression practiced today via the regulatory treatment of capital on the sovereign debt. The difference, however, is not one of gender, but of degree: with no debasing channel available to the State, such capture, even if real, is restricted to the opportunity cost of the compulsorily parked capital, no longer reaching the nominal value of the bond itself. Certainly, some mechanical dissuasive to this capture rests on the percentage of monetary reserve (Topic 3, 4 and 5, among other utilities, against liquidity drainage by the government), the remedy is, as in the Milkshake Effect [JOHNSON], in the institutional discipline that prevents the State from recapturing by law what the mechanics have taken from it by design.

In any case, the need is extinguished and it is no longer possible to monetize bonds even by weight of gold and/or debase the currency by swapping a current deficit for perpetual public debt, — the State loses the practical ability to set minimum yields for securities issued by others. This, combined with the role of banks in the realm of micromoney (zero-cost funding), ultimately eliminates the spread, reducing the cost of reallocation to a matter that is almost purely logistical; this fosters agility in meeting actual demands for money and liquidity while obviating excessive reliance on real-time gross settlement subsystems, however robust they may be.

8. Accountability

In this topic, I summarize the micromoney accountability framework.

"What has been called 'planning' in political rhetoric is the suppression by the government of the plans of all other people outside the government."

Thomas Sowell

In any system in which someone carries the risk of someone else's decision, in which there is asymmetry between those who decide and those who suffer the consequence, conformity is useless, the duty of accountability is aesthetic, responsibility does not apply, in short: there is skin outside the game [TALEB, 2018].

Well:

Despite being the initial driver of commercial monetary accretion, the producer—or titleholder—is the last to reap the rewards of the microeconomic cycle, personally absorbing any market adjustments—nothing more, nothing less. Meanwhile, the monetary officer collects its fee—neither early nor late—and the government loses any incentive to obstruct the process, as its own revenue comes to depend on it. Furthermore, it is only fair that the monetary reserve is deducted from the single entity capable of unilaterally affecting the liquidity of all others: the State — given the monetary authority's new mandate, which is restricted to residual liquidity and specifically to safeguard local liquidity. Reinforcing this deterrent—whether public or private—is the fact that the recovery of monetary credit takes precedence over all other claims in insolvency proceedings. Thus, the foundations for effective accountability are established: compliance without stifling incentives, and vice versa, enabling the economic-monetary network to prosper through reconciliation among autonomous agents (an economy), rather than devolving into a reconciliation among puppets (xenonomy—the sort driven by a social engineer free from accountability).

9. Transition

In this topic, I outline how to migrate from macromoney to micromoney.

"The State without the means for some change does not have the means for its conservation."

Edmund Burke

Every monetary issue triggered by CAL — commercial, public or international — is put into effect with the creation of a bank deposit — in this, it is no different from the issuance by bank multiplier. And certainly, they differ in source, time, volume and term, what better place than a bank to merge them, right? It is this coincidence of habitat that allows the transition to

be gradual, local and without shock: from bank to bank, it is enough for the issuance by multiplier (repealed) to retreat to the extent that the issuance by CAL replaces it — until it is finally revoked, by the issuance and by the additional savings in the form of cash generated by the micromoney model. In addition, from location to location, it is enough for tax collection (repealed) to retreat to the extent that the CAL creates public revenue — until it is finally revoked. Neither of them needs to be decreed extinguished, let alone in a single day; both (multiplier and collection) cease to be in force when the last cycles of commercial value producers pass to the discipline of the CAL. Let's look at the details of these and other migration conventions and challenges:

Mandate Parameters Bootstrap

The parameters that govern the Mandate of the Monetary Authority (κ , θ , γ , μ) born without any history in the first public CAL of any circumscription, and they need their own maturation protocol — not an impossible instantaneous calibration.

Phase 0 — Bootstrap (Cycles 1 to N)

No historical series of $\bar{L}$, κ and θ are non-estimable by design — not because of method failure, but because of lack of data. The only choice of γ that remains within the stability range of Theorem 1 regardless of true κ , θ (as yet unknown) is:

$$\gamma = 0$$

That is, a monetary reserve fixed by convention — indistinguishable, in practice, from the single percentage that any circumscription would already apply by habit or by local federative rule. No new risk is introduced at this stage: it is the same degree of protection (or exposure) that the locality would already have without the formalized Mandate.

As for the reserve floor, the formula of Theorem 2 ($\mu \geq \gamma|x_{\min}|/(1-\lambda)$) degenerates to zero under $\gamma=0$ — precisely at the moment when $\Sigma_0=0$ and the shock vulnerability is maximum (Corollary). The formula does not apply to Phase 0 because it assumes γ active; in it, μ is fixed by regulatory convention, not by calculation:

$$\mu_{Phase 0} = 3 \text{ months of projected } \bar{E}$$

starting number analogous to the 30-day liquidity coverage requirement already practiced in international banking regulation — prudential convention prior to any specific calibration, replaceable as soon as Phase 1 allows calculation.

Phase 1 — First Calibration (from ~12 to 24 cycles completed)

Once the minimum number of points for a first informative regression has been gathered, even if of low power, it is published $\hat{\kappa}$, $\hat{\theta}$ with explicitly declared wide confidence interval — never as a definitive constant. γ is then activated, but at the lower end of the range that $\hat{\kappa}$ (discounted by the margin of error of the estimate) would indicate stable, never at the central point:

$$0 < \gamma_{Phase 1} \ll (1 - \bar{s} - \varphi) \hat{\kappa}$$

deliberately absorbing both the noise of the process and the estimation error of the parameters themselves — a double source of uncertainty that Phase 0 did not even need to consider, as it did not have any γ in operation.

The reserve floor now observes the largest between the conventional and the calculated:

$$\mu_{Phase\ 1} = \max\left(\mu_{Phase\ 0}, \frac{\gamma_{Phase\ 1} |x_{min}|}{1 - \hat{\lambda}}\right)$$

so that the activation of the model never reduces the protection already guaranteed by convention — it only reinforces it if the calculation indicates so.

Phase 2 - Maturity

Long enough series (owned or inherited from comparable regional, Topic 3) for full calibration via periodic bulletin, under the terms already established: κ , θ published with methodology, sampling window and confidence interval; γ , μ published to each governmental CAL, within the range that the current bulletin authorizes as stable.

In other words, the bootstrap of the four parameters follows the same grammar as the rest of the Transition: no single decree, absorbable steps, initial phase error contained within the same risk that the circumscription already ran before the CAL existed — never a new risk introduced by the mechanics of micromoney itself. What changes, phase by phase, is not the minimum protection guaranteed (constant, by convention, from day one), but the precision with which the reserve responds to the aggregate/residual liquidity ratio—from zero (Phase 0) to full (Phase 2), without ever exposing the locality to more risk than it already ran under the regime being replaced.

Regionals with no Precedent —The Case of the First Pilot

Where there is no comparable regional already operating under CAL to serve as prior (the case, by definition, of the first constituency to join), the only available reference is given macro legacy of the region itself under the previous regime — local M2 velocity, bank multiplier history, price series of the constituency —, the same aggregate abstraction that the rest of this paper rejects as the final measure of liquidity, but which here serves as a gross and temporary anchor, expressly provisional, replaced as soon as the real begins to accumulate in Phase 1. On the other hand, x_{min} — the largest liquidity shock that the regional government undertakes to absorb without saturating Σ — is independent of any series of $\bar{L}$ and can be informed, from Phase 0, by non-monetary history already available to any circumscription: frequency of climatic events, seasonality of local production, degree of sectoral concentration, etc. — takes in the future, if not replaced, enriched by liquidity big data from the micromoney method.

Capillarity of Monetary Correspondents

Today, the front line of productive credit — of instruction and administration more complex than the others — is already partially outsourced by banks to correspondents specialized in this — the main candidates to become agents of monetary credit. In effect, the network of monetary correspondents would be embodied by agents of the private sector accredited by the regional of the monetary authority — the issuers of the CALs in response to the proposals of holders of value creation in the market. In fact, given that monetary credit is immune to the incidence of interest, there will be no lack of affordability to remunerate its correspondence fee – attracting the necessary expertise as it creates capillarity close to the action. With bank credit, whenever it is the case, entering through the bank of the holder's preference and already instructed by monetary credit. During the transition, the instruction of monetary credit is separated into a specific department within the banks themselves in order to meet the demand – a demand that the network of monetary correspondents cannot yet meet because it does not yet exist as such. By doing so, it gradually freed up banks for legacy recirculation credit while separating public and private fiduciary duty (Topic 6). Alternatively, the monetary authority could also leave monetary credit permanently to the banks — the same

butler serving two masters, except with no further reason or incentive to neglect one or the other. It is a matter of assessing what arrangement in practice would work for both the currency and the mutual.

Bank Issuance Migration

In the US, since March 2020, the deposit reserve requirement has already been zeroed out (Regulation D, 12 CFR Part 204, pursuant to Section 19 of the Federal Reserve Act, 12 U.S.C. § 461(b)) — that is, the banking system already operates today without a formal lock on the multiplication of credit per deposit. The transition reverses this vector: as bank deposits are created from CALs, the reserve requirement on deposits corresponding to that same bank or wallet goes up, not down, gradually dispensing with the ability to create extra CALs deposits until it converges to 100% — at which point the bank, without ever ceasing to operate, operates exclusively as a correspondent of the bank loan already regulated in Topic 6, that is, it only reallocates currency already in circulation between depositor and borrower, without creating or destroying it. There is, therefore, no redemption, nationalization, no merger, no compulsory replacement of the portfolio: there is only the exchange, bank by bank, of one source of monetary creation for another, each according to the speed of adhesion of the account holders.

Migration of Public Revenue

Currently, the tax burden starts at 20% and can exceed 40% of the so-called GDP; this must disappear entirely, being gradually replaced by public issuance sufficient to sustain the genuinely commonwealth. As Government Monetary Accretion (Topic 3) begins to provide revenue for the federative circumscription, federal, state, and municipal tax rates (which are then repealed) recede — not by decree, but according to a schedule linked to the actual public issuance calculated month by month (Eq. 8 through 12). This process continues until the last remaining producers enter the system (the calculation base for public issuance). What, ultimately, will have revealed the appropriate size of the public budget for each entity of the federation — provided that everything not qualifying as diffuse reciprocity (that is natural and inherent to any common good) is excluded from the public budget.

Liquidation of Legacy

Commitments already contracted under the macromoney, that is, debts, term deposits, mortgages, and especially Treasury bonds (Treasury bonds, notes and bills issued under 31 U.S.C. Chapter 31), continue to be honored normally in their contracted maturities, without anticipation, without compulsory conversion and without reprofiling — the transition is not redemption, it is succession: the macromoney regime is not extinguished by decree, only vetoed for new contracts, shrinking by natural liquidation as their own maturities expire. Certainly, there will be commitments to be voluntarily reviewed by its parties — like those in the past, justified almost exclusively in the certainty that the government would ensure, at any cost to third parties, the debasement.

Judgment Day

The same antifragility that governs micromoney (Topic 2) governed the transition: small, local errors, absorbed one by one, in place of the large, systemic error, which the macromoney model had been damming and postponing for decades. The day comes when all monetary issuance is limited to the value created by society, in turn generating savings with high liquidity like never before, free of inflation, deflation or debasement. It is revealed how much each

federative entity, bank or commitment was exposed to the mechanics of state rollover. But calm down: it is not the end of the world, it is revelation. And it will not be on the same day for everyone, but when the time comes, the difference between the volume of money creation and unsettled legacy will be more than covered by accumulated savings and without the fate of hoarding. This, the goal embedded in micromoney by design (in a future version I will equate how and show the numbers).

Changes in Legislation

From the US federal framework, on the occasion of, say, the **Micromoney Act**, I list the provisions to be modified, the transitional provisions being demarcated as follows:

- ➔ **Federal Reserve Act** (Act of Dec. 23, 1913, ch. 6, 38 Stat. 251; 12 U.S.C. § 221 et seq.): New section authorizing the issuance of CAL by regional Federal Reserve Banks as a type of monetary credit distinct from creation by bank deposit (together with Section 16, 12 U.S.C. § 411, on the issuance of Federal Reserve notes); Section 19 (12 U.S.C. § 461(b)) — deposit reserve: transitional provision, schedule for progressive increase of the reserve requirement, now zero, to 100%, to the extent of the adoption of the CAL by institution; Section 14 (12 U.S.C. § 355) — open market operations: transitory provision, termination clause as the active management of the money supply becomes redundant, and; Section 2A (12 U.S.C. § 225a) — dual mandate of price stability and full employment: repeal, liquidity becoming measured by micro testing (Topic 2) and not pursued by aggregate target;
- ➔ **National Bank Act** (12 U.S.C. § 21 et seq.) and **Federal Deposit Insurance Act** (12 U.S.C. § 1811 et seq.) — redefinition of the corporate banking object restricted to the loan (Topic 6), without prejudice to other activities without monetary effect; transitional provision, remaining deposit insurance decreasing *pari passu* with the portfolio of deposits created by fractionation;
- ➔ **Depository Institutions Deregulation and Monetary Control Act** of 1980 (Pub. L. 96-221) — repeal of the power to make reserve flexibility superfluous by the above schedule;
- ➔ **Internal Revenue Code** (26 U.S.C. §§ 1, 11, 61 and 6012) — transitory provision, decreasing schedule of rates per district, linked to Local Net Income (Eq. 11), until repeal;
- ➔ **Second Liberty Bond Act** and other public debt rules (31 U.S.C. Cap. 31, §§ 3101 to 3105) — new authority for issuing the redeemed bond if the case (Topic 67); transitional provision, legacy bonds follow the original contracted maturity, without new issuances in the extinguished modality; no way for debit monetization (Topic 5).
- ➔ **Coinage Act / legal tender statute** (31 U.S.C. §§ 5103 and 5111 et seq.) — extension of legal tender to CAL-linked balances;
- ➔ **Bretton Woods Agreements Act** (22 U.S.C. § 286 et seq.) — enabling bilateral International Monetary Accretion agreements (Topic 4); transitional arrangement, swap lines, and SDR reserves in discontinuation as bilateral agreements enter into force pair-by-pair;
- ➔ **GENIUS Act, Clarity Act, Anti-CBDC Surveillance State Act, 21st Century ROAD to Housing Act** — reaffirm as necessary about stablecoins, commodity digital mimetics, the prohibition on the CBDC, among other related non-currency provisions.

Among other federal, state, and municipal provisions — such as those dealing with scope, budget, revenue, expenditure, and public finances. None of this requires a single date, single approval, or traumatic adjustment. Since I estimate one or two legislatures to complete the regulatory transition — much more a para-fiscal dismantling than the creation of new

regulation. And, if more legislature is needed, thus the window of opportunity to avoid the worst ever for macromoney, it would not be the end of the world.

In summary:

Structural Challenges, Policies to Match

Monetary systems are among the institutions most dependent on politically defended paths in the world. Replacing the current macroeconomic emission model with a system of microeconomic accretion will require:

- ➔ Legal and institutional agreement involving several countries (or at least one relevant economy willing to go first);
- ➔ Abandonment of central bank discretion, tax systems as currently structured, and large parts of the existing banking model;
- ➔ Coordination between producers, regional monetary authorities and international counterparties on a considerable scale — although it could be limited to a domestic transition only;
- ➔ Overcoming network effects: people and companies already use moderate money as such today; switching costs and coordination failures, especially in the metamarket, can be enormous if due care and diligence is not taken.

Certainly, even the most respected currency has not always had the means of change to preserve it as such, history is replete with elegant monetary proposals that have never gone beyond paper. Systemic substitution—it is good to be—rarely comes about by sheer intellectual persuasion; it usually requires a severe crisis that creates a temporary window—not expected to reach that point—followed by the political capture of that window by organized interests. None of this, however, has been able to impose a filter or barrier on those who have turned out to be unhappy only when it is too late. In fact, Hayek teaches, either this or social ruin:

New ways of doing something were not adopted because someone thought they were better, they were adopted because someone who practiced them got a return from it and his group also benefited and a third realized it.

Therefore, the theory is falsifiable, the importance of pilot projects without fanfare that, with the proper support of the monetary authority, among others, can be the object of the Hayekian social engagement test. After all, if no social idea should be carried out without first having faced and passed this test, there should be no obstacle to carrying out the test.

10. Conclusion

Key findings and evidence, limitations, next steps, and final considerations.

"The day before it's a breakthrough, it's a crazy idea."

Peter H. Diamandis

Central Purpose

The purpose of this work was to propose a new monetary model — the micromoney — capable of replacing the macroeconomic approach of administered prices, centralized and

subject to inflationary and deflationary distortions by a strictly elastic approach to microeconomic needs, seeking to base the creation and extinction of money on the flow of creation and realization of value in the market, rigorously separating the functions of issuance, equity and lending. Thus, liquidity without currency debasement, representation without taxation, free banking focused on legacy reallocation and treasury bonds just as reserves.

Hypothesis Validation and Problem Solving

The guiding question seems to have been resolved and the central hypothesis validated:

It is feasible to structure a self-regulating and anti-fragile monetary system in which the money supply expands and contracts in line with the real economy.

As well as decentralizing issuance at the level of the productive agents themselves and unifying local and international governance by proportional accretion convention:

The approach equates and solves historical dilemmas of monetary theory such as the Cantillon Effect and Triffin's Dilemma, freeing Milkshake Effect from monetary cause.

Key Findings and Evidence

It has been demonstrated that, to function as a medium of exchange and store of value, money must, first, be born as a means of creating value — either this or it does not eradicate barter, at most sophistication. In other words:

If barter is the height of illiquidity, the purpose of money is none other than to provide liquidity to the extent of eradicating it.

In addition, replacing the model of taxes with representation (a mockery of the model of taxes without representation) by the model of representation without taxes. And, in fact, unless a better judgment, it was formally demonstrated:

- ➔ **Elasticity and Stability:** the issuance of scriptural money ($\Delta\$$) backed by the emerging value ($\Delta V_e = P_e - C_e$) and its subsequent extinction at the time of sales revenue ($\Delta V_r = P_r - C_r - \Delta\$$) neutralize both the deflation inherent in additional production and the need for discretionary inflation that would otherwise follow in its wake, which, extended to international cycles, equates the Cantillon and Milkshake effects, as well as solves Triffin's Dilemma.
- ➔ **Liquidity without Price Locks:** by monitoring the liquidity ratio ($\mathcal{L}$) of each commercial microeconomic cycle through Currency Accretion Letters (CAL), the dependence on retroactive price ratios or late, inaccurate and illusory statistical surveys is eliminated, validating microtests of market efficiency (H1 and H0) directly on real monetary assets and liabilities free of overfitting; leaving only the residual uncertainty ($\bar{\mathcal{L}}_p$) to be resolved in the aggregate.
- ➔ **Public Costing without Taxes:** the Government CAL replaces taxation by converting the liquidity space left by private underline demand into permanent issuance for common

improvements, locating high liquidity reserves (S) based on residual uncertainty ($\bar{\mathcal{L}}_p$), in addition, eliminating parataxation.

- ➔ **Distinct and Harmonious Banking and Monetary Fiduciary Duties:** The free banking system under micromoney restricts bank credit to the pre-existing circulating legacy via loans without ex nihilo creation power, however, monetary credit continuously supplies banks with new payroll money from the creation of value by society, eliminating the systemic risk of *depositum irregulare*, interbank and compulsory rollover of public debt — maintaining the liquidity of domiciles in general, not only banking and fiscal domiciles.

Impact on Human Action

Arranged in two reciprocal layers: individual agency and diffuse coordination.

Individual Agency

- ➔ Producers capture the full value they create in each commercial cycle, because the Currency Accretion Letter (CAL) issues money equal to the expected emerging value, free of interest or dividends from that portion; Equity or equity investments and ordinary loans cover the remainder.
- ➔ Economic calculations become cleaner: the money supply expands and contracts in step with the actual creation and realization of value, so that existing contracts, incomes, savings, and prices are no longer quietly eroded or distorted by discretionary issuance.
- ➔ Personal freedom expands with the abolition of taxation (replaced by the public variant CAL) and the removal of parafiscal burdens that currently distort production choices.
- ➔ The skin in the game is explicit and withheld from direct reciprocity, aligning incentives without the hidden subsidies or penalties typical of central bank credit.

Diffuse Coordination

- ➔ Liquidity is provided exactly where effective demand appears and is extinguished when the corresponding value is sold, eliminating chronic shortages or surpluses that currently force deflationary pressure or compensatory inflation.
- ➔ Public goods are financed by a second public form of CAL that is based only on the residual liquidity space left by private activity; Therefore, the community finances infrastructure and common services in proportion to real economic capacity, and not through coercive taxation — rather: a state that, by design, not by coercion, cannot go bankrupt.
- ➔ The published liquidity rate of each cycle acts as a transparent, localized, and privacy-preserving public signal, allowing for effective micro-adjustments rather than the inertia and overadjustment of ineffective macro-corrections—a system, therefore, designed to be antifragile: learning from numerous micro-uncertainties rather than accumulating systemic fragility.
- ➔ Cross-border, a third international variant of CAL provides balanced onshore and offshore liquidity even between asymmetric currencies, dissolving the Triffin dilemma and the Cantillon effects that currently transfer liquidity and real resources not only to the margins of natural law, but also to the margins of the markets of participation in production (archmarket).
- ➔ Overall market prices for real monetary claims become efficient rather than managed, so interest reflects only pure time preference, and dividends reflect only newly created value—removing the capital misallocation and intergenerational debt dynamics inherent in macro monetary regimes.

In summary:

By making money a microeconomic instrument of reciprocity, rather than a macroeconomic instrument of discretion, both the individual's ability to create and retain value and the community's ability for coordination without chronic distortion are structurally enhanced.

Practical and Theoretical Value for the Area of Study

- **Theoretical:** Reconciles the Austrian School tradition of subjective value, economic calculation, and catalaxis with the modern formalization of market efficiency and decentralized finance, offering a definitive answer to the structural flaws of fiat currencies, commodity currencies, and inelastic cryptos.
- **Practical:** It provides a clear operational instrument — through the standardization, accounting, and bookkeeping of CALs in a monetary balance sheet open to the public and without giving up commercial secrecy — for monetary authorities, sovereign and local governments, and financial institutions to transition from the managed interest rate model to a transparent liquidity allocation, without para-fiscal bureaucracy.

Practical and Theoretical Value for Rule of Law in General

For a long time, the collective was considered public in nature — a categorization error. Collective reciprocity is private in nature; it concerns an indivisible object, yet susceptible to reciprocity by ownership of its proportional or ideal fractions. Only diffuse reciprocity is public in nature, concerning a common thing that is not only indivisible but also insusceptible to reciprocity based on ownership of proportional or ideal shares. Both forms of reciprocity stem from the network effect of direct reciprocities—reconciliations each one between two private parties. Collectivism, therefore, is the subversion of collective reciprocity itself through the eradication of diffuse reciprocity by wrapping direct reciprocities. Fiat-money and taxation are the most normalized products of this categorization error. And the universally applicable rule to avoid it— and the interventionism associated with it— is:

Contract only based on reciprocity: (a) *direct*; (b) *collective*, if direct reciprocity does not apply; (c) *diffuse*, if neither direct nor collective reciprocity applies.

Moral of the story: if there is a practice of **subsidiarity** — Pius XI would agree — it is so.

Study Limitations and Current Perspectives

Although the conceptual and mathematical framework seems consistent to me, the study is in a predominantly analytical and theoretically outlined stage. Its main limitations lie in the absence of:

- **Validation of Hypotheses and Predictions:** refutation by other researchers and practitioners.
- **Scale Simulations:** Testing the behavior of the aggregate liquidity ratio ($\bar{\mathcal{L}}_{\Delta V}$) under stress from exogenous shocks; simultaneous defaults or losses in multiple trading cycles; effectiveness of the money reserve in deterring speculative attacks against the currency; its effect on bank and fiscal liquidity.

- ➔ **Transitory Regulatory Modeling:** Details of the temporary coexistence during the migration phase between redeemed state bonds and the legacy liabilities of the tax-banking regime, and; between public revenues by issuance and by collection.

Next Steps

To enrich and consolidate the proposal, I suggest the following R&D fronts:

- ➔ **Technological Protocol:** Specification of decentralized book-entry networks for CALs and respective monetary transactions; autonomous/assisted monitoring and settlement with preservation of commercial secrecy; Liquidity big data and AI open to the public.
- ➔ **Pilot Project / Regulatory Sandbox:** Execution of an isolated experimental environment at the municipal or county level (taking advantage of the circumscription design of the Government CAL) to validate the issuance of commercial monetary credit in a real production chain and evaluate the reception and impact of this credit in the community.
- ➔ **International and Cross-Border Case Studies:** Deepening of International CAL mechanisms applied to trade flows between economies with pronounced exchange rate asymmetry (e.g. USA and Argentina) and dollarized economies (e.g. El Salvador) as well as interoperability between macromoney and micromoney models.
- ➔ **Geopolitical Impact Study:** given that CAL architecture exports specific institutional grammar— the Western grammar—, compare its capacity to do it with the capacity of:
 - The current model of creating the USD (public deficit / gross settlement in real time);
 - The IMF's conditionality model (fiscal adjustment in exchange for bailout);
 - The CCP's debt diplomacy (autarkic infrastructure in exchange for strategic collateral).

Final Thoughts

1930, Keynes confesses his view on the need for centralized liquidity and credit planning, imagining an ideal situation in which a central committee would have comprehensive, real-time access to all information and balance sheets of private business.

2030, goodbye fetish: the CAL formally demonstrates that there is no reason to break commercial privacy, let alone the delight of a central planner free of effective accountability—and that it would work even if it were recorded on paper of bread.

The question is:

Why the delay in formalizing what had already been confessed for almost a century?

That is, Keynes himself had admitted that he did not have what he understood by "necessary knowledge" (the use of knowledge by society would only be the object of contemporary study years later [HAYEK, 1945]), but the impossibility of economic calculation under the centrally planned society was already demonstrated [MISES, 1920].

That story:

Modernity is full of intellectuals who withdraw from the very object of study of which they are an inseparable part [CARVALHO, 2013]. Keynes' "animal spirit" moved him as if in normalization of deviation: — *Just like that, let's run the economy!* The sentence gained inertia: it was all that the class [FAORO] wanted to hear, right as bureaucrats and academics often contract with each other, let alone mutual degeneration [CARVALHO, 2000]. On the other hand,

the denunciation of this *civil religion* — in which the subject is never the subject, the only subject is the revolution [ALINSKY]. Therefore, without an environment, let alone academic, bureaucratic or political, to isolate the root of the problem and reach the appropriate trade-off [SOWELL]. In its place, the destructive criticism of everything that exists [KANT; MARX; HORKHEIMER], certainly, followed by reactions, if not sanguine, phlegmatic — in practice: functional apathy — not only the State, but society itself without the means for the changes that would ensure its preservation [BURKE].

However, considering what is evident and real, the logical and acceptable conclusion is that economics is not about maximizing/minimizing scarcity/abundance, it is about reconciliation between autonomous people [HAYEK, 1973-1979] — as the name implies: *eco nomos* [ARISTOTLE]. At each reconciliation, barter being the cause of illiquidity, the purpose of money is none other than to provide it with liquidity (saleability) [MENER] — not only a means of exchange and a store of value, but a means of value creation! Everything indicates opportunity of a microeconomic order, not a macroeconomic one — each one an agent with its own ruler of value-time [WEISER], and there is no need to speak of universal value per unit of account [MISES], of knowledge only of the agent himself in a knowledge base that no one holds in totality [HAYEK, 1945].

Activism to the contrary, however, has made use of the promotion of a false incompatibility between public (objective, in this case, of the monetary denomination) and private (subjective, in this case, of the bearer amount) that reinforces the belief in civil control and clothes its own with an aura of abnegation as if immune to their own "animal spirits" [KEYNES], thus accepted by the public as monopolists of both the right and the duty to "attack the problem" [HAYEK, 1988]. In practice, a *carte blanche*: without correspondence between the right of one duty of another, there is no legal relationship, there is no right to claim, there is no way to isolate the spheres of direct, collective or diffuse reciprocity for purposes of commutative justice — eliminating the balance between intrapart, interparties and intersubjective burdens and bonuses and the incentives for such [ARISTOTLE; HOHFELD].

In fact, equilibrium can only be achieved by reconciliation between autonomous people taken two by two by their own free initiatives, in mutual consent and without degenerating into negative externalities [AQUINO; SUÁREZ; GROTIUS; MILL], hence its individual and collective (private spheres) and diffuse (public sphere) conciliatory effects [VICTORY; PIGOU; SAMUELSON; OSTROM]. Under this conceptual shield, the bilateral concert, far from being closed in on itself, radiates positive externalities, from the conciliation of private interests to diffuse harmony [SMITH; MISES; HAYEK], resulting in the tranquility of order [AUGUSTINE] — the process of natural law that, not by chance, micromoney carries by design, that is:

Consisting of the reproduction of natural order in a human artifact, the CAL with its micromoney does nothing but codify and perpetuate the process of natural law on the practical plane of reality, in this case, economic-monetary.

It is worth noting what enabled me to decode the currency—the law of the artifact, its first principles —: the return to the foundations of natural law. Without this, for instance, decades of experience in modeling credit systems and the like would have been of little use—serving only to prolong a system that had already run its course, with no reasonable alternative on the horizon. Well, then: unless I am mistaken, we now have one.



References:

Scholarly Works, Books, and Articles

- AGOSTINHO, Santo. *Confessions*. Translated by Henry Chadwick. Oxford: Oxford University Press, 1991.
- ALINSKY, Saul D. *Rules for radicals: a pragmatic primer for realistic radicals*. New York: Random House, 1971. [1971].
- AQUINO, Tomás de. *Summa Theologiae: Latin text and English translation, introductions, notes, appendices and glossaries*. Cambridge: Blackfriars; New York: McGraw-Hill, 1964-1981.
- ARISTOTLE. *Nicomachean Ethics*. Translated by Luciano de Nero. São Paulo: Martin Claret, 2002. (Book V - On Justice).
- BACHELIER, Louis. *Théorie de la speculation*. Annales Scientifiques de l'École Normale Supérieure, 3rd series, t. 17, p. 21-86, 1900.
- BODIN, Jean. *Response of Jean Bodin to the paradoxes of M. de Malestroit (1568)*. Paris: Armand Colin, 1932 [1568].
- BÖHM-BAWERK, Eugen von. *Positive Theorie des Kapitals*. Innsbruck: Wagner'schen Universitäts-Buchhandlung, 1889. v. 2. (Kapital und Kapitalzins).
- CARVALHO, Olavo de. *The Garden of Afflictions: from Epicurus to the resurrection of Caesar: essay on materialism and the degradation of the State*. 3. ed. Rio de Janeiro: Record, 2000.
- CARVALHO, Olavo de. *The least you need to know not to be an idiot*. 1. ed. Rio de Janeiro: Record, 2013.
- BURKE, Edmund. *Reflections on the Revolution in France*. London: J. Dodsley, 1790.
- CANTILLON, Richard. *Essay on the Nature of Commerce in General*. London: Fletcher Gyles, 1755.
- FAMA, Eugene F. *Efficient Capital Markets: A Review of Theory and Empirical Work*. The Journal of Finance, v. 25, n. 2, p. 383-417, 1970.
- FAORO, Raimundo. *The owners of power: formation of Brazilian political patronage*. 5. ed. São Paulo: Globo, 2012.
- FISHER, Irving. *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crises*. New York: Macmillan, 1911.
- FISHER, Irving. *100% Money*. New York: Adelphi Company, 1935.
- FRIEDMAN, Milton; SCHWARTZ, Anna Jacobson. *A Monetary History of the United States, 1867-1960*. Princeton: Princeton University Press, 1963.
- FRIEDMAN, Milton; SCHWARTZ, Anna J. *Has government any role in money?* Journal of Monetary Economics, Rochester, v. 17, n. 1, p. 37-62, jan. 1986.
- FRIEDMAN, Milton. *Monetary freedom in the digital age*. Cato Journal, Washington, D.C., v. 21, n. 3, p. 333-340, 2002 [1].
- GRESHAM, Thomas. *The Life and Times of Sir Thomas Gresham*. Compiled by John William Burgon. London: Robert Jennings, 1839. 2 v. (Contains the original 1558 correspondence to Queen Elizabeth I).
- GROTIUS, Hugo. *De Jure Belli ac Pacis Libri Tres*. Volume I: A Photographic Reproduction of the Edition of 1646. Washington, D.C.: Carnegie Institution / Reimpressão por Clark, New Jersey: The Lawbook Exchange, 2013. [1646]
- GUSMÃO, Alexandre de. *Representation on the Means of Reestablishing Commerce and Industry of the Kingdom*. Lisbon, 1750.
- HAYEK, Friedrich A. *The Use of Knowledge in Society*. The American Economic Review, v. 35, n. 4, p. 519-530, 1945.
- HAYEK, Friedrich A. *Law, legislation and liberty: rules and order*. London: Routledge & Kegan Paul, 1973. v. 1.
- HAYEK, Friedrich A. *Denationalisation of Money: An Analysis of the Theory and Practice of Concurrent Currencies*. London: Institute of Economic Affairs, 1976.
- HOHFELD, Wesley Newcomb. *Fundamental Legal Conceptions as Applied in Judicial Reasoning*. New Haven: Yale University Press, 1919 [1913, 1917].
- HORKHEIMER, Max; Adorno, Theodor W. *Dialectic of enlightenment: philosophical fragments*. Edited by Gunzelin Noeri. Translated by Edmund Jephcott. Stanford: Stanford University Press, 2002. [1947].
- HUERTA DE SOTO, Jesús. *Currency, Bank Credit and Economic Cycles*. Translated by André Luiz Ribeiro. São Paulo: Instituto Ludwig von Mises Brasil, 2012 [1998].
- KANT, Immanuel. *Critique of pure reason*. Translated and edited by Paul Guyer and Allen W. Wood. Cambridge: Cambridge University Press, 1998. [1781].
- KANT, Immanuel. *The Metaphysics of Morals*. Translated and edited by Mary J. Gregor. New York: Cambridge University Press, 1996 [1797].
- KEYNES, John Maynard. *A Treatise on Money*. 2 vols. London: Macmillan & Co., 1930.
- KEYNES, John Maynard. *The General Theory of Employment, Interest and Money*. London: Macmillan, 1936.

LOCKE, John. Two Treatises of Government. Edited with an Introduction and Notes by Peter Laslett. Cambridge: Cambridge University Press, 1988 [1689].

MACLEOD, Henry Dunning. The Theory and Practice of Banking. Londres: Longman, Brown, Green, Longmans, and Roberts, 1858.

MARX, Karl. Letters from the deutsch-französische jahrbücher. In: MARX, Karl; ENGELS, Friedrich. Collected works: Volume 3 (1843-1844). New York: International Publishers, 1975. p. 133-145. [1844].

MASLOW, Abraham H. The Psychology of Science: A Reconnaissance. New York: Harper & Row, 1966.

MENGER, Carl. Principles of Economics. Auburn: Ludwig von Mises Institute, 2007 [1871].

MILL, John Stuart. On Liberty. Edited by Elizabeth Rapaport. Indianapolis: Hackett Publishing Company, 1978 [1859].

MISES, Ludwig von. The Theory of Money and Credit. Indianapolis: Liberty Fund, 1980 [1912].

MISES, Ludwig von. Economic Calculation in the Socialist Commonwealth. Auburn: Ludwig von Mises Institute, 1990 [1920].

MISES, Ludwig von. Human Action: A Treatise on Economics. New Haven: Yale University Press, 1949.

MUNDELL, Robert. Uses and Abuses of Gresham's Law in the History of Money. Journal of International Economics, [s. l.], v. 2, n. 2, p. 1-14, 1998.

NAKAMOTO, Satoshi. Bitcoin: A Peer-to-Peer Electronic Cash System. Decentralized Business Review, 2008.

ORESME, Nicholas. De Moneta. Edited by Charles Johnson. Londres: Thomas Nelson and Sons, 1956. (Original publicado em 1355).

OSTROM, Elinor. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press, 1990.

PUFENDORF, Samuel von. On the Law of Nature and Peoples (De Jure Naturae et Gentium). Translated by H. B. Cavalcanti. Brasília: Alexandre de Gusmão Foundation, 2013 [1672].

SAMUELSON, Paul A. The Pure Theory of Public Expenditure. The Review of Economics and Statistics, v. 36, n. 4, p. 387-389, 1954.

SAMUELSON, Paul A. Proof That Properly Anticipated Prices Fluctuate Randomly. Industrial Management Review, v. 6, n. 2, p. 41-49, 1965.

SMITH, Adam. An Inquiry into Nature and Causes of the Wealth of Nations. London: W. Strahan and T. Cadell, 1776.

SMITH, Adam. The Theory of Moral Sentiments. London: A. Millar, 1759.

SOWELL, Thomas. Knowledge and Decisions. New York: Basic Books, 1980.

TALEB, Nassim Nicholas. Antifragile: Things That Gain from Disorder. New York: Random House, 2012.

TALEB, Nassim Nicholas. Skin in the Game: Hidden Asymmetries in Daily Life. New York: Random House, 2018.

TOLKIEN, J. R. R. On Fairy-Stories. In: TOLKIEN, J. R. R. *The Monsters and the Critics, and Other Essays*. Edição de Christopher Tolkien. London: HarperCollins, 2006. p. 109-161.

TRIFFIN, Robert. Gold and the Dollar Crisis: The Future of Convertibility. New Haven: Yale University Press, 1960.

WHATELY, Richard. Introductory Lectures on Political Economy: delivered in Easter term, MDCCCXXXI. London: B. Fellowes, 1831.

WIESER, Friedrich von. Natural Value. London: Macmillan and Co., 1893 [1889].

Legal Diplomas and Normative Documents

UNITED STATES. 21st Century ROAD to Housing Act.

UNITED STATES. Anti-CBDC Surveillance State Act.

UNITED STATES. Digital Asset Market Clarity Act.

UNITED STATES. Federal Reserve Act. Act of Dec. 23, 1913, ch. 6, 38 Stat. 251, codified at 12 U.S.C. § 221 et seq. (including Official title, Section 2A, Section 14, Section 16, and Section 19/Regulation D 12 CFR Part 204).

UNITED STATES. Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act).

UNITED STATES. Internal Revenue Code. Title 26, U.S. Code (26 U.S.C. § 1, § 11, § 61 e § 6012).

UNITED STATES. Public Debt Acts. Title 31, U.S. Code, Chapter 31.

UNITED STATES. National Bank Act. Codified at 12 U.S.C. § 21 et seq.

UNITED STATES. Federal Deposit Insurance Act. Codified at 12 U.S.C. § 1811 et seq.

UNITED STATES. Depository Institutions Deregulation and Monetary Control Act of 1980. Pub. L. 96-221, 94 Stat. 132.